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Formal Education

- **Universitas Indonesia**, Subspesialis / Konsultan Penyakit Tropis & Infeksi, Lulus 2013
- **Universitas Indonesia**, Spesialis Penyakit Dalam (Internist), Lulus 2009
- **Universitas Trisakti**, Dokter Umum, Lulus 2002
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Organization

- **Kepala Departemen Ilmu Penyakit Dalam**, Fakultas Kedokteran Universitas Trisakti, 2013-2020, 2025-sekarang
- **Pendiri** dan **Perintis** RASPRO Indonesia Study Group, **Yayasan Pelita RASPRO Indonesia** untuk studi resistensi antimikroba dan penggunaan antimikroba bijak di Indonesia
- **Ketua PPI** RSPI Bintaro Jaya
- **Internist-Konsultan**, RSPI Puri Indah, RSPI Bintaro Jaya, dan Tzu Chi Hospital – Pantai Indah Kapuk
- **Bendahara**, Perhimpunan Ilmu Kedokteran Tropis dan Penyakit Infeksi Indonesia (PETRI), Jakarta, 2016-2023
- **Sekretaris Jenderal (Sekjen)**, Pengurus Pusat Perhimpunan Pengendalian Infeksi Indonesia (PERDALIN), 2016-2022
- **Tim Ahli** Pokja Pencegahan dan Pengendalian Infeksi (PPI), Kemenkes RI, 2017-2024

Instagram @rasproindonesia

www.new.rasproindonesia.com

Konsep Dasar Resistensi Antimikroba

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

Internist – Infectious Disease (ID) Specialist

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RASPRO Indonesia Study Group and Education for Antimicrobial Stewardship & Resistance

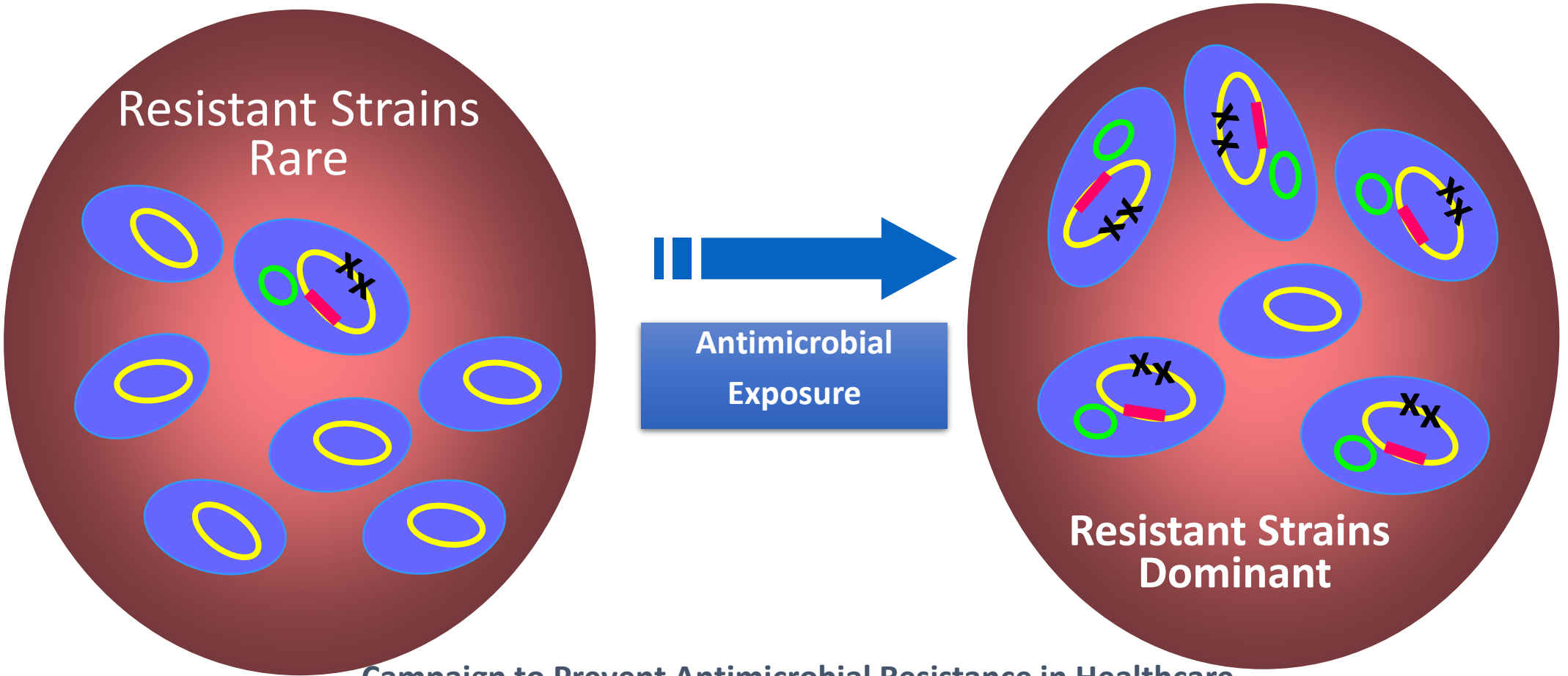
Trisakti – RASPRO Indonesia Antimicrobial Stewardship (TRIASE) Learning Centre

@rasproindonesia

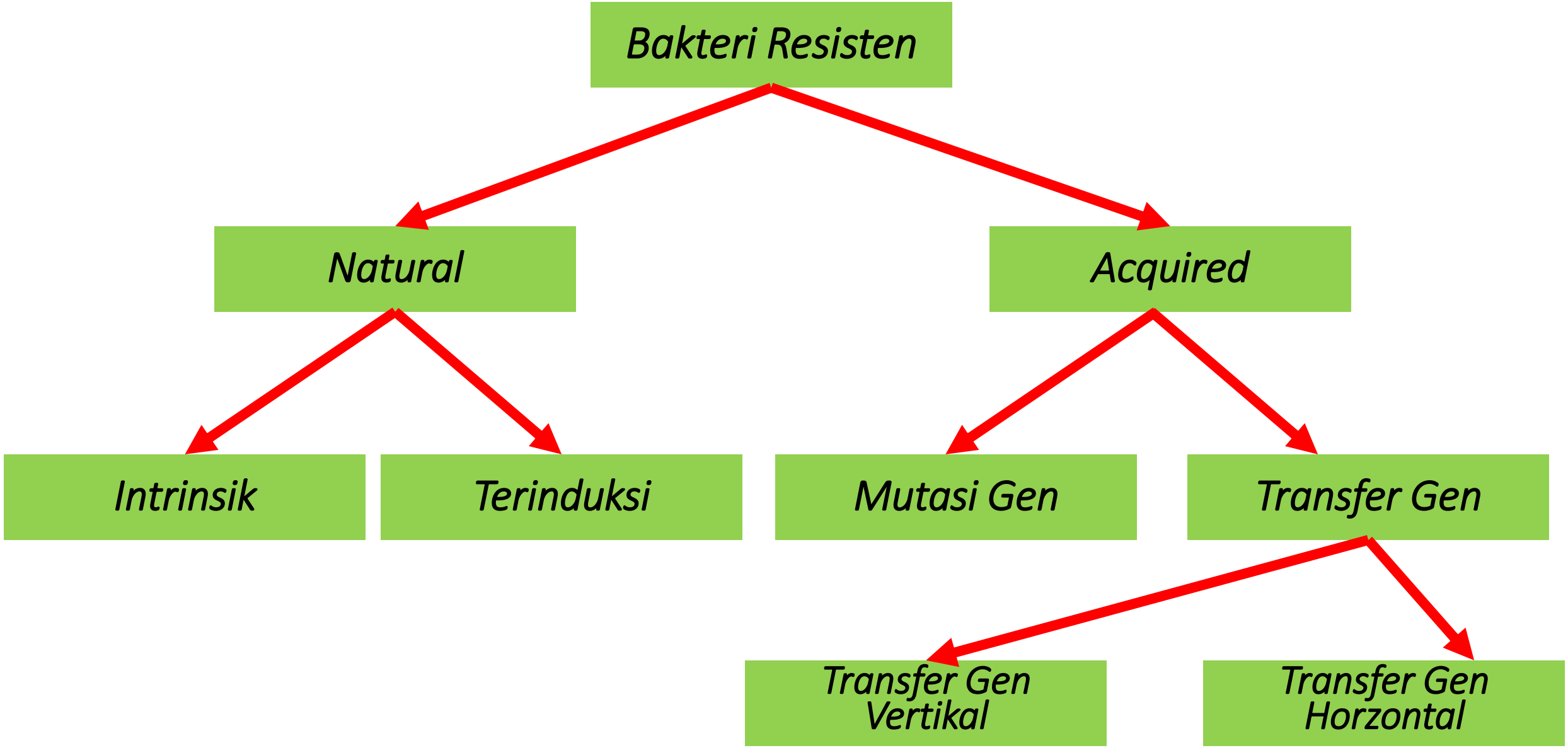
Instagram

www.new.rasproindonesia.com

Mechanism of Antimicrobial Resistance:
"Selective Pressure" for Antimicrobial-Resistant Strains



Campaign to Prevent Antimicrobial Resistance in Healthcare Settings, CDC 2002


Bakteri Resisten
Natural
Acquired
Intrinsik
Terinduksi
Mutasi Gen
Transfer Gen
Transfer Gen Vertikal
Transfer Gen Horzontal

ORIGINAL ARTICLE BACTERIOLOGY

Multidrug-resistant, extensively drug-resistant and pandrug-resistant bacteria: an international expert proposal for interim standard definitions for acquired resistance

A.-P. Magiorakos[1], A. Srinivasan[2], R. B. Carey[2], Y. Carmeli[3], M. E. Falagas[4,5], C. G. Giske[6], S. Harbarth[7], J. F. Hindler[8], G. Kahlmeter[9], B. Olsson-Liljequist[10], D. L. Paterson[11], L. B. Rice[12], J. Stelling[13], M. J. Struelens[1], A. Vatopoulos[14], J. T. Weber[2] and D. L. Monnet[1]

1) European Centre for Disease Prevention and Control, Stockholm, Sweden, 2) Office of Infectious Diseases, Department of Health and Human Services, Centers for Disease Control and Prevention, Atlanta, GA, USA, 3) Division of Epidemiology, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, 4) Alfa Institute of Biomedical Sciences (AIBS), Athens, Greece, 5) Department of Medicine, Tufts University School of Medicine, Boston, MA, USA, 6) Department of Clinical Microbiology, Karolinska University Hospital, Stockholm, Sweden, 7) Infection Control Programme, University of Geneva Hospitals, Geneva, Switzerland, 8) Department of Pathology and Laboratory Medicine, University of California Los Angeles Medical Center, Los Angeles, CA, USA, 9) Department of Clinical Microbiology, Central Hospital, Växjö, 10) Department of Bacteriology, Swedish Institute for Infectious Disease Control, Solna, Sweden, 11) The University of Queensland Centre for Clinical Research, Royal Brisbane and Women's Hospital, Brisbane, Qld, Australia, 12) Warren Alpert Medical School of Brown University, Providence, RI, 13) Department of Medicine, Brigham and Women's Hospital, Boston, MA, USA and 14) Department of Microbiology, National School of Public Health, Athens, Greece

MDR

- **Resistensi Didapat (Acquired)**
- **>=1 jenis antibiotik pada >=3 golongan antibiotik**

MDR was defined as acquired non-susceptibility to at least one agent in three or more antimicrobial categories, XDR was defined as non-susceptibility to at least one agent in all but two or fewer antimicrobial categories (i.e. bacterial isolates remain susceptible to only one or two categories) and PDR was defined as non-susceptibility to all agents in all antimicrobial categories. To ensure correct application of these definitions, bacterial isolates should be tested against all or nearly all of the antimicrobial agents within the antimicrobial categories and selective reporting and suppression of results should be avoided.

Antimicrobial category	Antimicrobial agent	MDR	XDR	PDR
Aminoglycosides	Gentamicin		X	X
	Tobramycin			X
	Amikacin			X
Carbapenem	Imipenem	X	X	X
	Meropenem		X	X
	Doripenem		X	X
Cephalosporins	Ceftazidime			X
	Cefepime	X	X	X
Fluoroquinolones	Ciprofloxacin	X	X	X
	Levofloxacin			X
Penicillins-βlactam	Pip-tazo			X
	Ticar-clav		X	X
Monobactam	Aztreonam		X	X
Phosphonic Acid	Fosfomycin			X
Polymycin	Colistin			X
	Polymyxin B			X

Multidrug-resistant, extensively drug-resistant and pandrug-resistant bacteria: an international expert proposal for interim standard definitions for acquired resistance

A.-P. Magiorakos[1], A. Srinivasan[2], R. B. Carey[2], Y. Carmeli[3], M. E. Falagas[4,5], C. G. Giske[6], S. Harbarth[7], J. F. Hindler[8], G. Kahlmeter[9], B. Olsson-Liljequist[10], D. L. Paterson[11], L. B. Rice[12], J. Stelling[13], M. J. Struelens[1], A. Vatopoulos[14], J. T. Weber[2] and D. L. Monnet[1]

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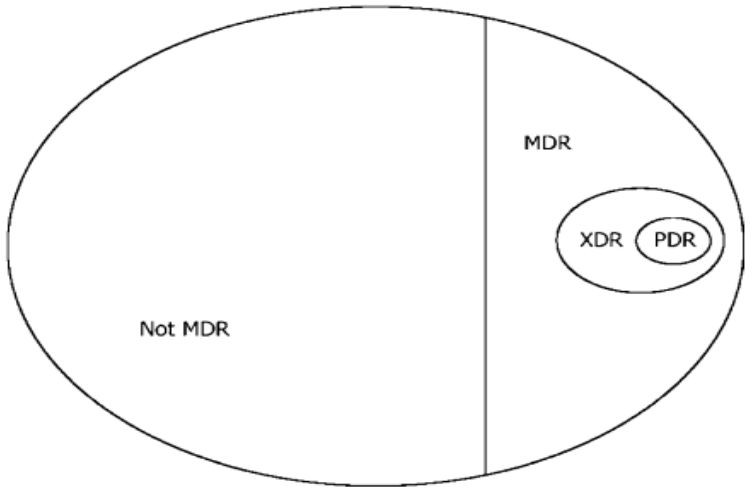

FIG. 1. Diagram showing the relationship of MDR, XDR and PDR to each other.

Antimicrobial category	Antimicrobial agent	Results of antimicrobial susceptibility testing (S or NS)
Aminoglycosides	Gentamicin	
	Tobramycin	
	Amikacin	
	Netilmicin	
Antipseudomonal carbapenems	Imipenem	
	Meropenem	
	Doripenem	
Antipseudomonal cephalosporins	Ceftazidime	
	Cefepime	
Antipseudomonal fluoroquinolones	Ciprofloxacin	
	Levofloxacin	
Antipseudomonal penicillins + β-lactamase inhibitors	Ticarcillin-clavulanic acid	
	Piperacillin-tazobactam	
Monobactams	Aztreonam	
Phosphonic acids	Fosfomycin	
Polymyxins	Colistin	
	Polymyxin B	

Criteria for defining MDR, XDR and PDR in *Pseudomonas aeruginosa*
MDR: non-susceptible to ≥1 agent in ≥3 antimicrobial categories.
XDR: non-susceptible to ≥1 agent in all but ≤2 categories.
PDR: non-susceptible to all antimicrobial agents listed.
http://www.ecdc.europa.eu/en/activities/diseaseprogrammes/ARHAI/Pages/public_consultation_clinical_microbiology_infection_article.aspx.

TABLE 4. ***Pseudomonas aeruginosa*; antimicrobial categories and agents used to define MDR, XDR and PDR (worksheet for categorizing isolates)**

ORIGINAL ARTICLE BACTERIOLOGY

Multidrug-resistant, extensively drug-resistant and pandrug-resistant bacteria: an international expert proposal for interim standard definitions for acquired resistance

A.-P. Magiorakos[1], A. Srinivasan[2], R. B. Carey[2], Y. Carmeli[3], M. E. Falagas[4,5], C. G. Giske[6], S. Harbarth[7], J. F. Hindler[8], G. Kahlmeter[9], B. Olsson-Liljequist[10], D. L. Paterson[11], L. B. Rice[12], J. Stelling[13], M. J. Struelens[1], A. Vatopoulos[14], J. T. Weber[2] and D. L. Monnet[1]

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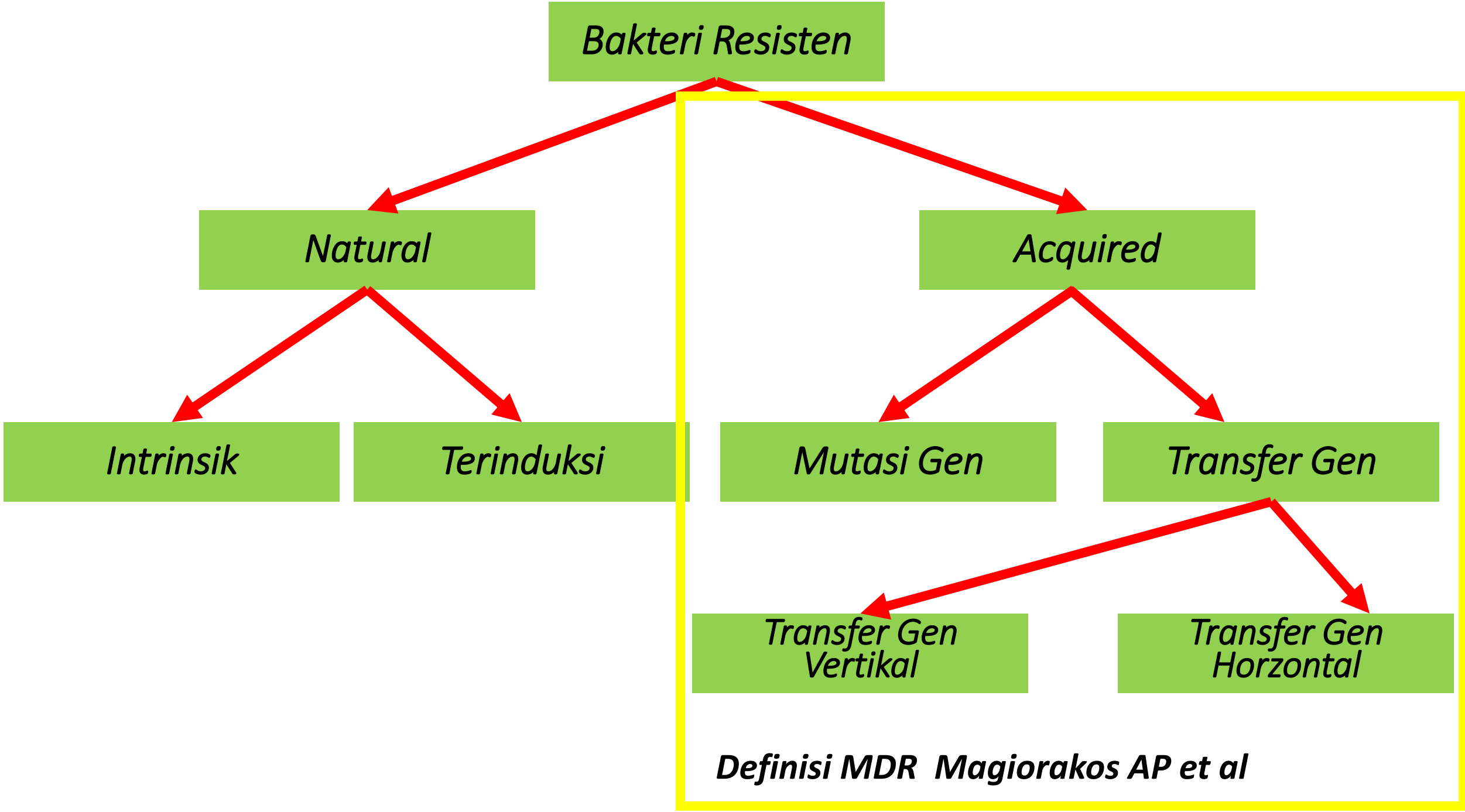

Bakteri Resisten
Natural
Acquired
Intrinsik
Terinduksi
Mutasi Gen
Transfer Gen
Transfer Gen Vertikal
Transfer Gen Horzontal
Definisi MDR Magiorakos AP et al

- Gram Positif :

  MRSA (resisten beta laktam bukan melalui produksi Beta Lactamases)
- Gram Negatif :

  Beta-Lactamases :

  ESBLs

  Carbapenemase Producers

  Non Beta-Lactamases :

  Permeabilitas Membran

  Efflux Pump

- Gram Positif : Stapylococcus aureus
- Gram Negatif :

  E.coli

  Klebsiela sp

  Pseudomonas sp

  Acinetobacter sp

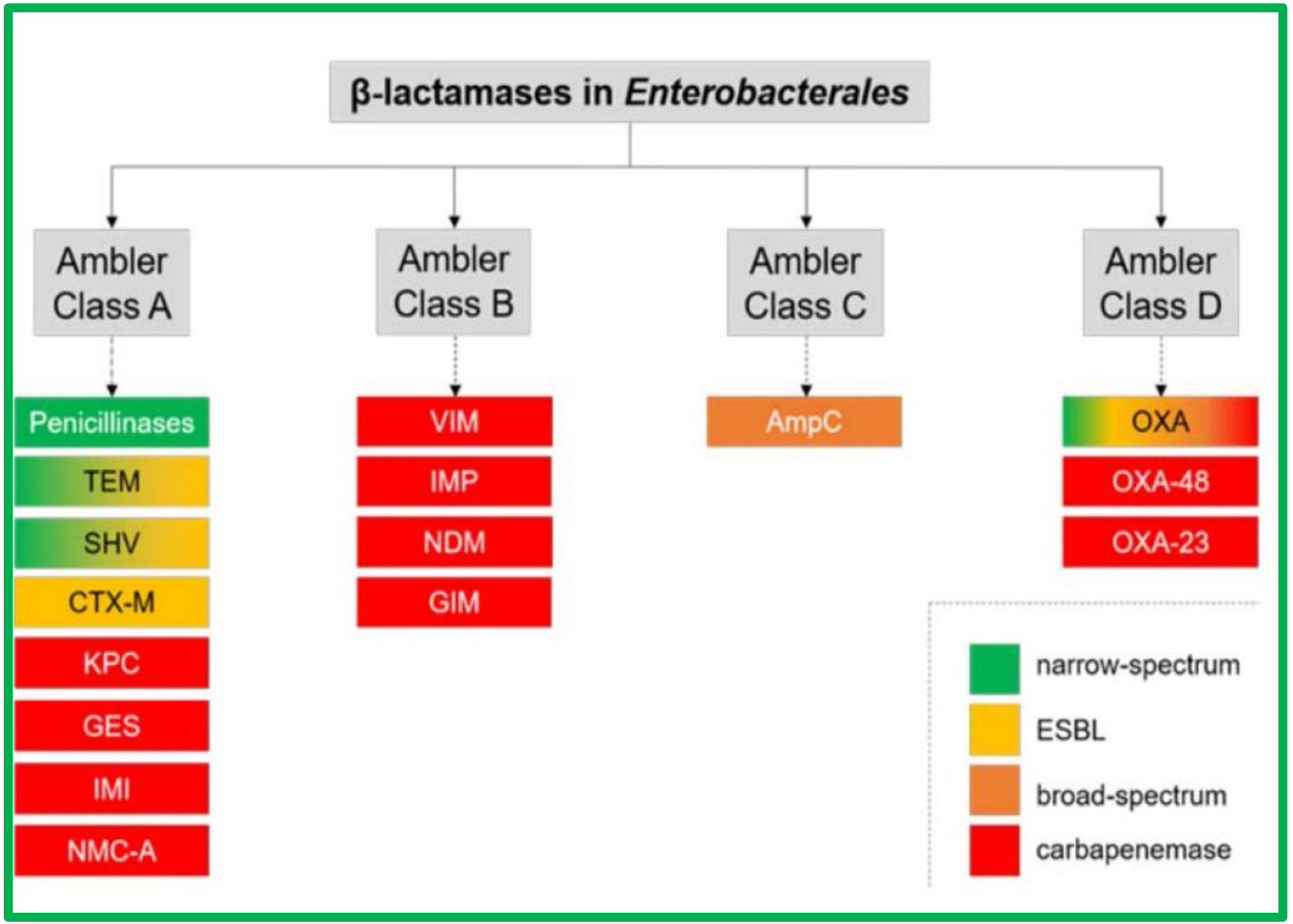
Non Beta- Lactamases : Examples

Genotype	Mechanism	Phenotype	Effect
mecA Gene *MRSA*	Change in Penicillin Binding Proteim https://doi.org/10.3390/antibiotics14080771	Beta Lactam Resistant	Beta Lactam Resistant
Change in OprD	Membrane permeablity Research, Society and Development, v. 11, n. 13, e287111335164, 2022 (CC BY 4.0) | ISSN 2525-3409 | DOI: http://dx.doi.org/10.33448/rsd-v11i13.35164	Carbapenem Resistant – Non Carbapenemase	Carbapenem Resistant
Mex A B C	Efflux Pump *Microorganisms* **2023**, *11*, 2211. https://doi.org/10.3390/microorganisms11092211	Carbapenem Resistant – Non Carbapenemase	Carbapenem Resistant

Beta- Lactamases : Examples

Genotype	*Mechanism*	*Phenotype*	*Effect*
TEM CTX-M	ESBL	Beta Lactam Resistant ESBL	Beta Lactam Resistant
KPC NDM etc…	Carbapenemases	Carbapenem Resistant - Carbapenemase	Carbapenem Resistant

Beta Lactamases



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

Komisi Akreditasi Rumah Sakit

Journal of Hospital Accreditation, 2021
Vol 03, Edisi 2, hal 114-118
Tanggal Publikasi, 25 Juli 2021

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 ADLANI[2], HADI SUMARSONO[2,3]

[1]Departemen Ilmu Penyakit Dalam FK TRISAKTI, Jakarta

[2]RASPRO Indonesia Study Group

[3]Ikatan Apoteker Indonesia

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

	Multisensitif		MDR				Prediksi	
			ESBL		Non ESBL			
	n	%	n	%	n	%	Sesuai	Tidak Sesuai
Gram Negatif								
Acinetobacter sp.	0	0,00	0	0,00	4	10,00	4	0
Pseudomanas sp.	0	0,00	0	0,00	7	17,50	7	0
Klebsiela pneumonia	15	26,32	2	22,22	6	15,00	21	2
Escheceria 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

ORIGINAL ARTICLE

Bali Medical Journal (*Bali MedJ*) 2021, Volume 10, Number 3: 1031-1036
P-ISSN.2089-1180, E-ISSN: 2302-2914

Bali Medical Journal
www.BaliMedicalJournal.org
Published by Bali Medical Journal

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 Kusuma[2], Gede Bangun Sudradjad[3], Lies Nugrohowati[4]

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[2]Izza Cikampek Hospital, West Java, Indonesia;
[3]Nganjuk Local General Hospital, East Java, Indonesia;
[4]Hermina Hospital, Depok, West Java, Indonesia;

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Accepted: 2021-12-05
Published: 2021-12-30

ABSTRACT

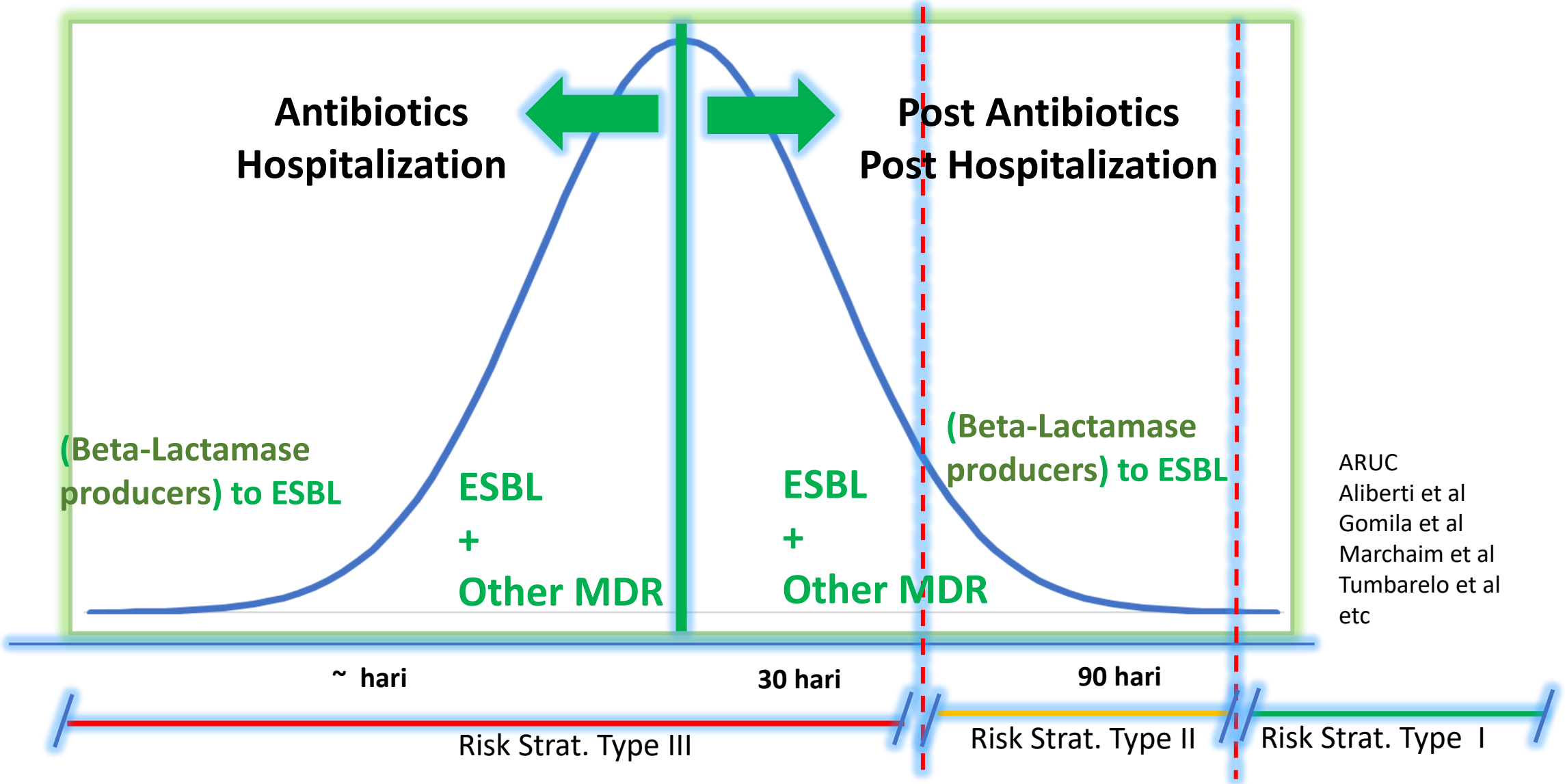
Background: The Indonesian Regulation on the Prospective Antimicrobial System (*Regulasi Antimikroba Sistem Prospektif/ RASPRO*) is a novel program. Its role has been reinforced by the Indonesian Ministry of Law and Human Rights Stipulation, which may predict the risk of sepsis events. Our study aimed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

Keywords: *RASPRO*, stratification, risks, sepsis.
Cite This Article: Natadidjaja, R.I., Kusuma, A.S., Sudradjad, G.B., Nugrohowati, L. 2021. 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 Medical Journal* 10(3): 1031-1036. DOI: 10.15562/bmj.v10i3.2561


Antibiotics
Hospitalization
Post Antibiotics
Post Hospitalization
(Beta-Lactamase producers) to ESBL
ESBL
+
Other MDR
ESBL
+
Other MDR
(Beta-Lactamase producers) to ESBL
ARUC
Aliberti et al
Gomila et al
Marchaim et al
Tumbarelo et al
etc
~ hari
30 hari
90 hari
Risk Strat. Type III
Risk Strat. Type II
Risk Strat. Type I

Risk Stratification Type 3

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

Empiric Antibiotic for Severe Case or Suspected ESBLs or Other MDRO

RESERVE | RESERVE | WATCH | WATCH

Risk Stratification Type 2

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

Empiric Antibiotic for Suspected (Beta Lactamase Producers) to ESBLs

WATCH | WATCH | WATCH | ACCESS

Risk Stratification Type 1

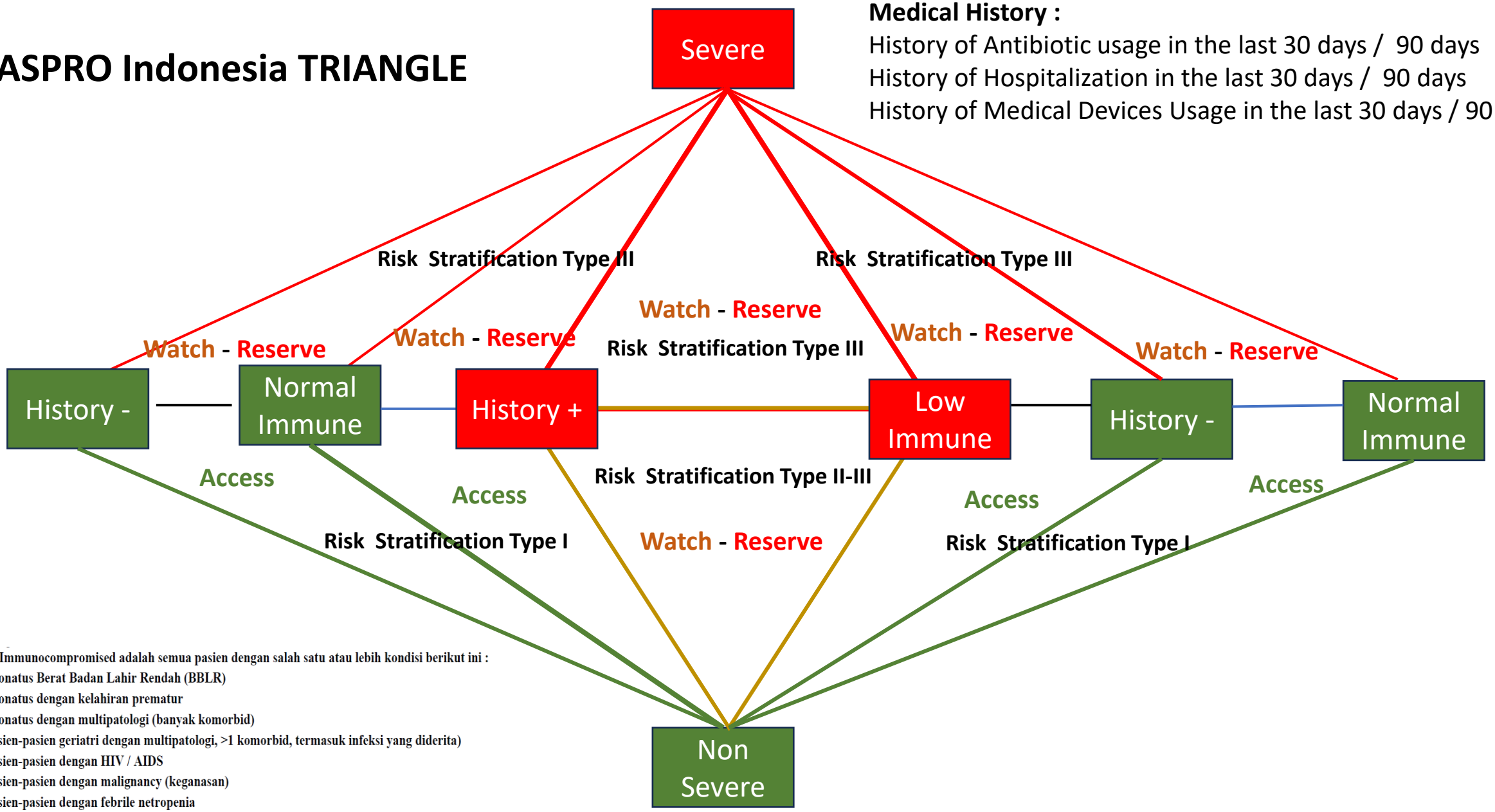
Non Risk Stratification Type 3 and / or 2

RASPRO indonesia
Risk Stratification

Empiric Antibiotic for Multi-Sensitive Organism

ACCESS | ACCESS | ACCESS | ACCESS | ACCESS

RASPRO Indonesia TRIANGLE



Medical History :

History of Antibiotic usage in the last 30 days / 90 days
History of Hospitalization in the last 30 days / 90 days
History of Medical Devices Usage in the last 30 days / 90 days

Pasien Immunocompromised adalah semua pasien dengan salah satu atau lebih kondisi berikut ini :

1. Neonatus Berat Badan Lahir Rendah (BBLR)
2. Neonatus dengan kelahiran prematur
3. Neonatus dengan multipatologi (banyak komorbid)
4. Pasien-pasien geriatri dengan multipatologi, >1 komorbid, termasuk infeksi yang diderita)
5. Pasien-pasien dengan HIV / AIDS
6. Pasien-pasien dengan malignancy (keganasan)
7. Pasien-pasien dengan febrile netropenia
8. Pasien-pasien dengan penyakit kronis / infeksi kronis / infeksi berulang, sirosis hati dan gagal ginjal kronik
9. Pasien-pasien dengan autoimmune dan/atau penggunaan immunosupresan lama

JURNAL BIOMEDIKA DAN KESEHATAN
(JOURNAL OF BIOMEDIKA AND HEALTH)

Vol. 8 No. 2 (2025) pp. 127-141 e-ISSN: 2621-5470

ORIGINAL ARTICLE

A Quantitative Survey on Antibiotic Prescribing Pattern in Three Indonesian Hospitals Using Digital Antimicrobial Stewardship

Survei Pola Kuantitas Peresepan Antibiotik di Tiga Rumah Sakit di Indonesia dengan Penatagunaan Antimikroba Digital

Ronald Irwanto Natadidjaja[1,2,3], Widyawati Lekok[2,8], Aziza Ariyani[1], Hadianti Adlani[1,4,5], Raymond Adianto[1], Ronaningtyas Maharani[1], Hadi Sumarsono[1], Yenny Yenny[2,3], Jihan Samira[2,3], Nany Hairunisa[2,3], Husnun Amalia[2,3], Meutia Atika Faradilla[2,3], Tubagus Ferdi Fadilah[2,3], Joice Viladelvia Kalumpiu[2,3], Yuliana Yuliana[2], Sri Mulyani[5], Desi Anggiat[5], Triyoko Septio Marja[5], Iin Indra Pertiwi[6], Dianawati Dianawati[6], Grace Nerry Legoh[7], Alvin Lekonardo Rantung[7]

Table 2. Initial Risk Stratification of Patients Receiving Antibiotics that Had Been Filled Out in the Digital Forms within 3 Months Following the Implementation of e-RASPRO in Three Hospitals

Risk Stratification	Hospital A 3 Months Oct – Dec 2021		Hospital B 3 Months Dec 2021 – Feb 2022		Hospital C 3 Months Nov 2022 – Jan 2023	
	Number	%	Number	%	Number	%
Type 1	284	90.16%	692	83.98%	1,472	81.15%
Type 2	31	9.84%	15	1.82%	84	4.63%
Type 3	-	0.00%	117	14.20%	258	14.22%
Total	315	100.00%	824	100.00%	1,814	100.00%

@rasproindonesia

www.new.rasproindonesia.com

Youtube: **RASPRO Medik & Antibiotik**

THANK YOU!