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

Instagram @rasproindonesia

www.new.rasproindonesia.com

Membangun PPRA / PGA di Rumah Sakit

Ronald Irwanto Natadidjaja

RASPRO Indonesia Study Group and Education for Antimicrobial Stewardship & Resistance

Trisakti – RASPRO Indonesia Antimicrobial Stewardship (TRIASE) Learning Centre

Fakultas Kedokteran Universitas Trisakti

@rasproindonesia

www.new.rasproindonesia.com

Agenda

I. Latar belakang : Mikrobiologi & Tekanan Seleksi

II. Dari Regulasi Makro menuju Ekosistem

   a. Regulasi Makro : Evolusi

   b. Regulasi Mikro : Kesulitan dan Kebutuhan

   c. Sistem : eRASPRO Manual menuju Digital

   d. Ekosistem : Dampak Timbal Balik menuju Desain Mikro

III. Infrastruktur – Implementasi – Evaluasi Pelaksanaan PPRA / PGA

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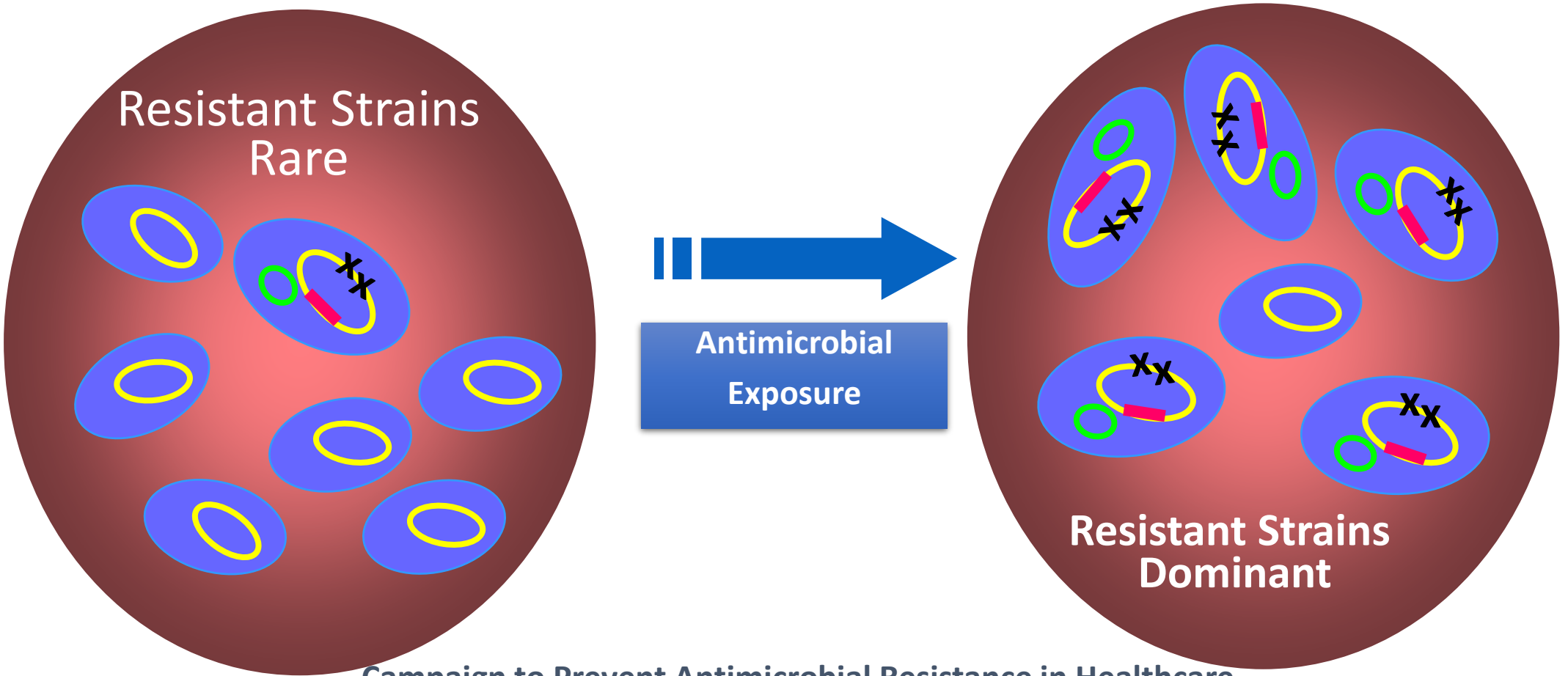
RASPRO indonesia

I. Mikrobiologi & Tekanan Seleksi

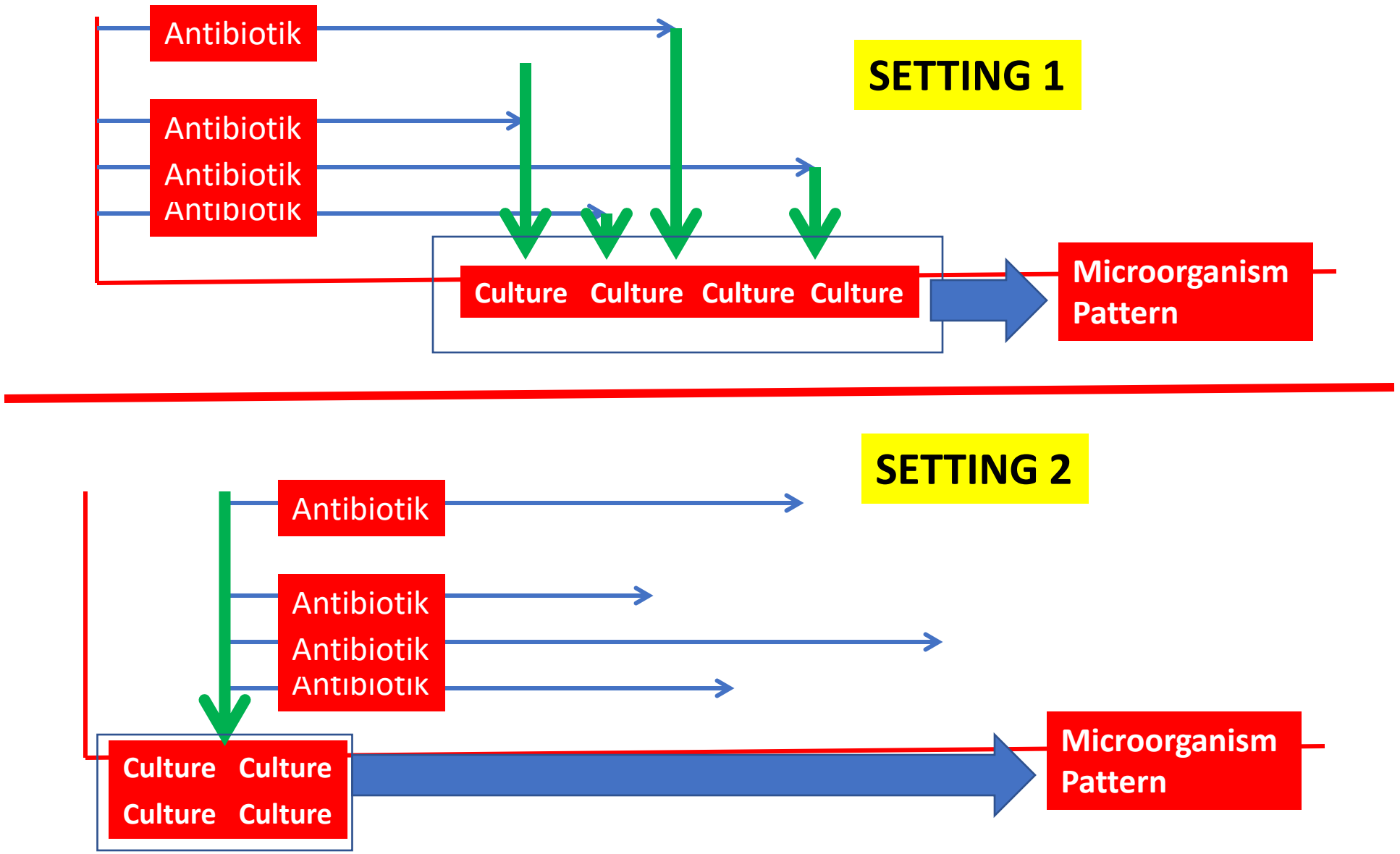
Mechanism of Antimicrobial Resistance:
"Selective Pressure" for Antimicrobial-Resistant Strains



Campaign to Prevent Antimicrobial Resistance in Healthcare Settings, CDC 2002

Fungsi Kultur

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


Antibiotik
Antibiotik
Antibiotik
Antibiotik
SETTING 1
Culture Culture Culture Culture
Microorganism Pattern
SETTING 2
Antibiotik
Antibiotik
Antibiotik
Antibiotik
Culture Culture
Culture Culture
Microorganism Pattern

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

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II. Dari Regulasi Makro menuju Ekosistem

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 01.7 / MENKES / 1596 /2024

GLOBAL - BIROKRATIF

SOP – Job Desk Infrastruktur2 Birokratif
Alur Kerja PGA
Alur Pengambilan Sampel
Alur Peresepan Antimkroba
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

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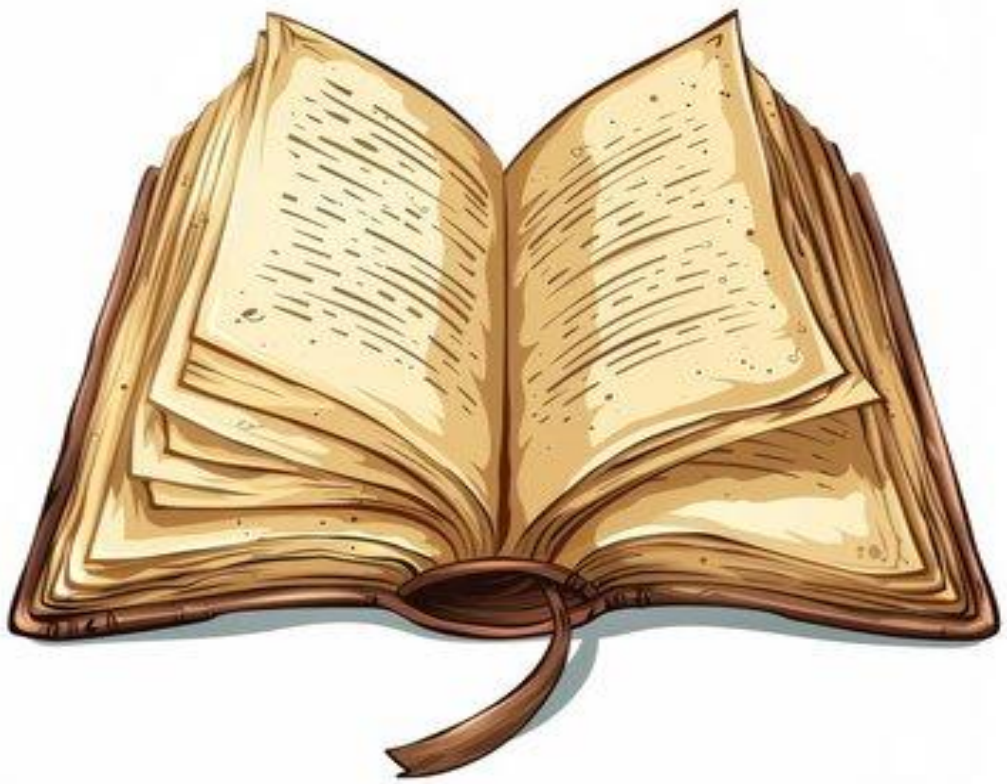
RASPRO indonesia

II. Dari Regulasi Makro menuju Ekosistem

a. Regulasi Makro : Evolusi

Regulasi MAKRO

GLOBAL - BIROKRATIF



Permenkes 8/2015
Permenkes 28/2021
Buku Panduan PGA di RS Kemenkes RI 2021
KMK No HK.01.07/MENKES/1128/2022

Evolusi

Permenkes 8 / 2015

Buku Panduan PGA di RS Kemenkes RI 2021

Audit Retrospektif → **Audit Prospektif**

MENTERI KESEHATAN
REPUBLIK INDONESIA

KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA
NOMOR HK.01.07/MENKES/1128/2022
TENTANG
STANDAR AKREDITASI RUMAH SAKIT

a. Pengelolaaan Kegiatan Peningkatan Mutu, Keselamatan Pasien, dan Manajemen Risiko

1) Standar PMKP 1

Rumah sakit mempunyai Komite/Tim Penyelenggara Mutu yang kompeten untuk mengelola kegiatan Peningkatan Mutu dan Keselamatan Pasien (PMKP) sesuai dengan peraturan perundang-undangan.

2) Maksud dan Tujuan PMKP 1

Peningkatan mutu dan keselamatan pasien merupakan proses kegiatan yang berkesinambungan (*continuous improvement*) yang dilaksanaan dengan koordinasi dan integrasi antara unit pelayanan dan komite-komite (Komite Medik, Komite Keperawatan, Komite/Tim PPI, Komite K3 dan fasilitas, Komite Etik, Komite PPRA, dan lain-lainnya). Oleh karena itu Direktur perlu menetapkan Komite/Tim Penyelenggara Mutu yang bertugas membantu Direktur atau Kepala Rumah Sakit dalam mengelola kegiatan peningkatan mutu, keselamatan pasien, dan manajemen risiko di rumah sakit.

Dalam melaksanakan tugasnya, Komite/ Tim Penyelenggara Mutu memiliki fungsi sesuai dengan peraturan perundang-undangan yang berlaku.

h. Program Pengendalian Resistansi Antimikroba

1) Standar PKPO 8

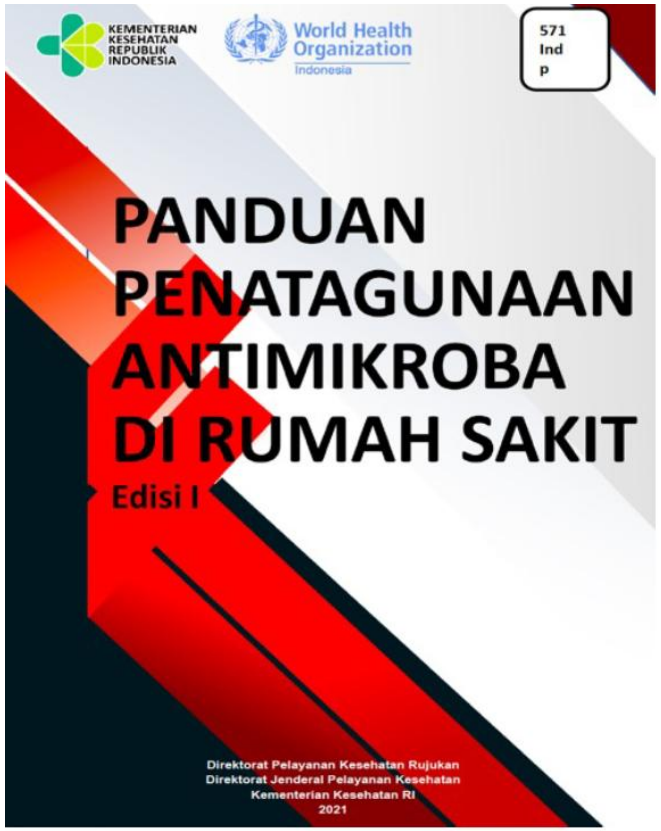
Rumah sakit menyelenggarakan program pengendalian resistansi antimikroba (PPRA) sesuai peraturan perundang-undangan.

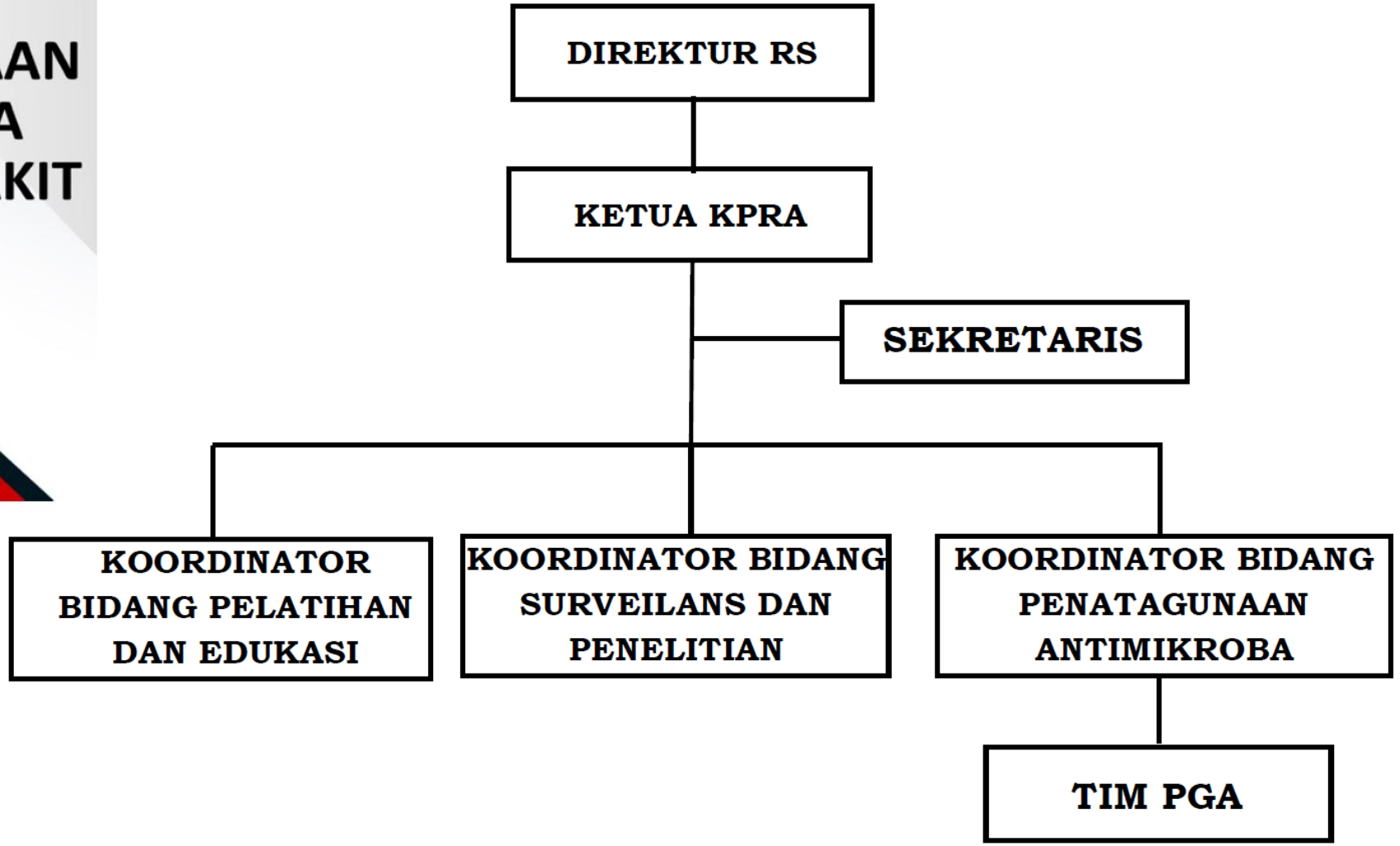
2) Maksud dan Tujuan PKPO 8

Resistansi antimikroba (*antimicrobial resistance* = AMR) telah menjadi masalah kesehatan nasional dan global. Pemberian obat antimikroba (antibiotik atau antibakteri, antijamur, antivirus, antiprotozoa) yang tidak rasional dan tidak bijak dapat memicu terjadinya resistansi yaitu ketidakmampuan membunuh atau menghambat pertumbuhan mikroba sehingga penggunaan pada penanganan penyakit infeksi tidak efektif. Meningkatnya kejadian resistansi antimikroba akibat dari penggunaan antimikroba yang tidak bijak dan pencegahan pengendalian infeksi yang belum optimal. Resistansi antimikroba di rumah sakit menyebabkan menurunnya mutu pelayanan, meningkatkan morbiditas dan mortalitas, serta meningkatnya beban biaya perawatan dan pengobatan pasien.

Tersedia regulasi pengendalian resistensi antimikroba di rumah sakit yang meliputi:

a) kebijakan dan panduan penggunaan antibiotik
b) pembentukan komite/tim PRA yang terdiri dari tenaga kesehatan yang kompeten dari unsur:
   (1) Klinisi perwakilan SMF/bagian;
   (2) Keperawatan;
   (3) Instalasi farmasi;
   (4) Laboratorium mikrobiologi klinik;
   (5) Komite/Tim Pencegahan Pengendalian Infeksi (PPI);
   (6) Komite/tim Farmasi dan Terapi (KFT)


KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
World Health Organization
Indonesia
571
Ind
p
PANDUAN PENATAGUNAAN ANTIMIKROBA DI RUMAH SAKIT
Edisi I
Direktorat Pelayanan Kesehatan Rujukan
Direktorat Jenderal Pelayanan Kesehatan
Kementerian Kesehatan RI
2021


DIREKTUR RS
KETUA KPRA
SEKRETARIS
KOORDINATOR BIDANG PELATIHAN DAN EDUKASI
KOORDINATOR BIDANG SURVEILANS DAN PENELITIAN
KOORDINATOR BIDANG PENATAGUNAAN ANTIMIKROBA
TIM PGA

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RASPRO indonesia

II. Dari Regulasi Makro menuju Ekosistem

b. Regulasi Mikro : Kesulitan dan kebutuhan

Regulasi MIKRO

EKSKLUSIF - OPERASIONAL

SOP – Job Desk Infrastruktur2 Birokratif
Alur Kerja PGA
Alur Pengambilan Sampel
Alur Peresepan Antimkroba
Alur Pre-otorisasi & Audit Prospektif
dll

PPK

PPAB

It is sometimes difficult to draw a direct relationship between system interventions and their effects. In the hospital sector, many of the studies of the efficacy of AMS have reported on structural and process measures (such as the presence of guidelines and reduction in antimicrobial use)

McGowan JE. Antimicrobial stewardship: the state of the art in 2011 – focus on outcome and methods. Infect Control Hosp Epidemiol 2012;33(4):331–7. 7.
MacDougall C, Polk R. Antimicrobial stewardship programs in health care systems. Clin Microbiol Rev 2005;18(4):638–56.

Komisi Akreditasi Rumah Sakit

Journal of Hospital Accreditation, 2019
Vol 01, Edisi 2, hal 36-40
Tanggal Publikasi, 31 Juli 2019

Artikel Penelitian

Survei Persepsi Kebutuhan dan Hambatan Rumah Sakit dalam Menjalankan Fungsi Panitia Pengendalian Resistensi Antibiotik

RONALD IRWANTO[1,2], DJOKO WIDODO[2], AZIZA ARIYANI[3], HADIANTI ADLANI[2]

[1] Fakultas Kedokteran, Universitas Trisakti, Jakarta
[2] Perhimpunan Kedokteran Tropis dan Penyakit Infeksi Indonesia
[3] Pengurus Pusat Perkumpulan Pengendalian Infeksi Indonesia

Hasil: Pada survei ini diperoleh 26.92% dari 156 rumah sakit yang telah menjalankan program PPRA di rumah sakit. 65.38% menyatakan hanya sebagian dokter yang duduk sebagai anggota PPRA mampu melakukan tugasnya. 40.48% dari responden rumah sakit yang telah menjalankan program PPRA mengatakan bahwa tidak adanya sistem implementasi merupakan kesulitan utama dalam menjalankan program PPRA. Sementara 61.90% mengatakan anggota PPRA rumah sakitnya baru setengah mampu melakukan restriksi antibiotik. 93.86% dari 114 responden rumah sakit yang belum menjalankan program PPRA menyatakan saat ini yang paling dibutuhkan adalah konsep yang jelas untuk menjalankan program PPRA.

	Jumlah (n)	Persentase (%)
Persepsi Responden Terhadap Kemampuan Dokter sebagai Anggota PPRA di Rumah Sakit		
Mampu	36	23.0%
Sebagian Mampu	102	65.38%
Tidak Mampu	12	7.69%
Tidak Tahu	6	3.85%
TOTAL	**156**	**100.00%**
Persepsi Terhadap Hambatan dalam Pelaksanaan Program di RS yang Sudah Menjalankan PPRA		
Membuat PPAB	8	19.05%
Praktik Implementasi PPAB	17	40.48%
Restriksi Antibiotik	14	33.33%
Evaluasi Antibiotik	3	7.14%
TOTAL	**42**	**100.00%**
Persepsi Responden Terhadap Kemampuan Anggota PPRA dalam Melakukan Restriksi AB		
Sepenuhnya Mampu	6	14.29%
Belum Sepenuhnya Mampu	26	61.90%
Belum mampu	9	21.43%
Tidak tahu	1	2.38%
TOTAL	**42**	**100.00%**
Persepsi Kebutuhan dalam Pelaksanaan PPRA bagi Rumah Sakit yang Belum Menjalankan PPRA		
Konsep pelaksanaan program yang jelas	107	93.86%
Restriksi Antibiotik	1	0.88%
Evaluasi dan Pelaporan Penggunaan Antibiotik	1	0.88%
Pengambilalihan Tanggung Jawab Pemberian Semua Antibiotik oleh PPRA	5	4.39%
TOTAL	**114**	**100.00%**

Journal of Hospital Accreditation, 2019
Vol 01, Edisi 2, hal 36-40

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II. Dari Regulasi Makro menuju Ekosistem

a. Sistem : eRASPRO Manual menuju Digital

SISTEM

KOMITMEN - KONTINUITAS

Integrated Guiding - Monitoring – Evaluating – Reporting – Action Plan

Futuristic Fashion in Antimicrobial Used - The WHO "Kick of" in 2023

- **Shifting WATCH to ≥ 60% ACCESS**

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RESERVED

Aztrenonam
Ceftazidime Avibactam
Ceftaroline Fosamil
Ceftolozane Tazobactam

Imipenem cilastatin-relebactam

Fosfomycin IV
Colistin
Polymixin B
Tygecycline

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.

WATCH

Quinolones
Azithromycin

2nd , 3rd& 4th Generation of Cephalosporin

Piperacillin Tazobactam
Carbapenems

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.

ACCESS

Ampicillin Sulbactam
Ampicillin
Amoxicillin Clavulanate
Amoxicillin

1st Generation of Cephalosporin

Amikacin
Gentamycin

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

World Health Organization

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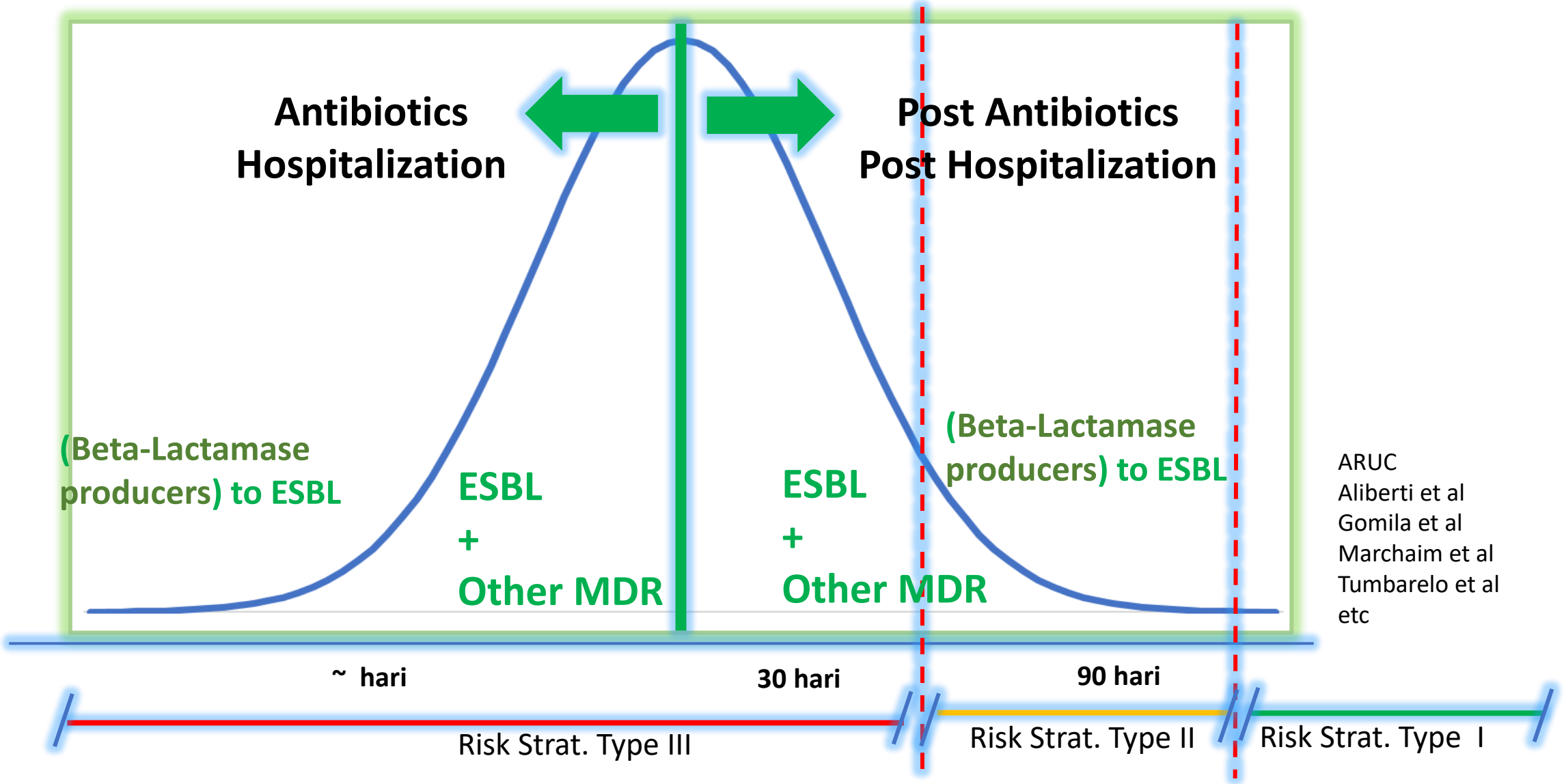
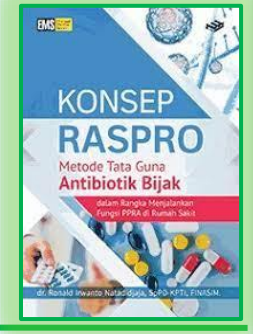
USAID MEDICINES, TECHNOLOGIES, AND PHARMACEUTICAL SERVICES (MTaPS) PROGRAM

Improved Access. Improved Services. Better Health Outcomes.

A Technical Guide to Implementing the World Health Organization's AWaRe Antibiotic Classification in MTaPS Program Countries

Goals of AWaRe Categorization: The overall goal is to reduce the use of antibiotics in the Watch and Reserve groups (the antibiotics most crucial for human medicine and at higher risk of resistance) and to increase the use of Access antibiotics where availability is low. The first goal of AWaRe is to have all countries report antibiotic use, through the Antimicrobial Resistance Surveillance System (GLASS), by 2023, and the second is for 60% of global antibiotic consumption to come from medicines in the Access category.[7] Currently, 65 countries track antibiotic use but only 29 meet the 60% Access national consumption goal.[8] Evidence shows that meeting the 60% goal will result in not only better use of antibiotics but also reduced costs and increased access. Reaching this threshold by 2023 will contribute to countries' achievement of the health-related Sustainable Development Goals.


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	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 RASPRO indonesia Risk Stratification 
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

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

Musikatavorn 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.201407-305OC

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

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Risk Stratification Type 1

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

RASPRO Manual Model

RASPRO Digital Model

Parallel & Integrated with Hospital IT

Formulir RASPATUR 1.0

Ketentuan

Nama Pasien

Nomor RM

Fokus Infeksi

Spesimen

Antibiotik diber

1. ……

2. ……

RASPRO Alur Antibiotik Awal (RASAL 1.0)

Copyright: Ronald Irwant

NO.	SPESIFIKASI	FLOW	KET.	TINDAKAN
1.	Fokus infeksi dengan gejala infeksi	Tidak	henti	Tidak perlu antibiotik
		Ya		Fokus Infeksi : .....
2.	Klinis progresif Sepsis / Septic Shock / Febril Netropenia / Terkategori HAIs	Ya	henti	Antibiotik Stratifikasi Risiko Tipe III
3.	Perforasi			
4.	Encephal			
5.	(Immunoc riwayat ko			
6.	(Immunoc riwayat pe			
7.	(Immunoc penggunaa instrumen			
8.	(Immunoc riwayat ko			
9.	(Immunoc riwayat pe			
10.	(Immunoc riwayat pe			

RASPRO Alur Antibiotik Lanjutan (RASLAN 1.0)

Copyrig

NO.	SPESIFIKASI	FLOW	KETERANGAN	TINDAKAN
1.	Gejala infeksi masih ada	Tidak	Henti (Isi AB awal - AB	De-eskalasi antibiotik sesuai kultur / step-down antibiotik ke stratifikasi risiko yang lebih rendah / pindah IV
2.	Klinis progresif Sepsis / Syok Sepsis / Febril Netrope HAIs			
3.	Komplikasi perforasi organ			
4.	Komplikasi ensefalopati et causa infeksi bakterial			
5.	Gejala infeksi perbaikan paska 3-7 hari pemberian an			

RASPRO Formulir Antibiotik Berkepanjan

Ketentuan :
1. Digunakan pada pasien yang diberikan antibiotik di luar panduan antibiotik dalam jangka waktu yang lebih dari yang ditetapkan se
2. Diisi oleh dokter / klinisi peresep obat
3. Untuk kalangan sendiri.
4. Bukan untuk *policy* restriksi antibiotik, melainkan untuk identifi panduan antibiotik

I. **Identitas Pasien**
Nama Pasien : .....
Umur : .....
Jenis Kelamin : .....
No. RM : .....

II. **Indikasi Penggunaan Antibiotik**
A. Ada, sebutkan .....
B. Tidak ada

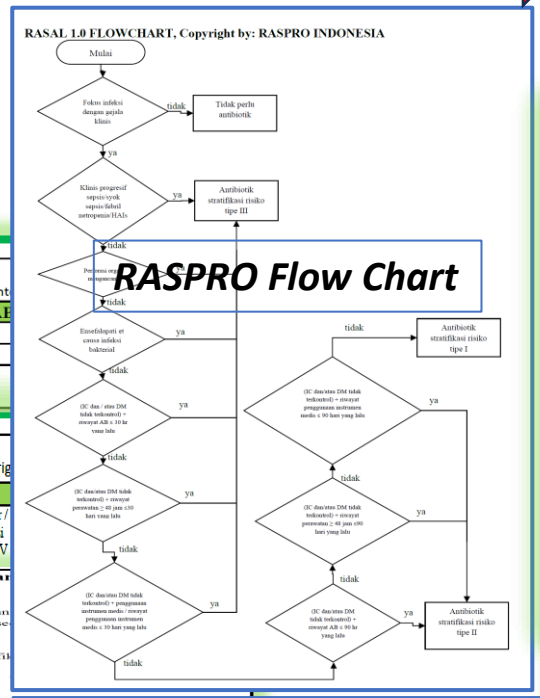
III. **Bila Terdapat Indikasi Penggunaan Antibiotik**
Fokus Infeksi : .....
Gejala Infeksi Saat Ini : a. Negatif
b. Positif, sebutkan

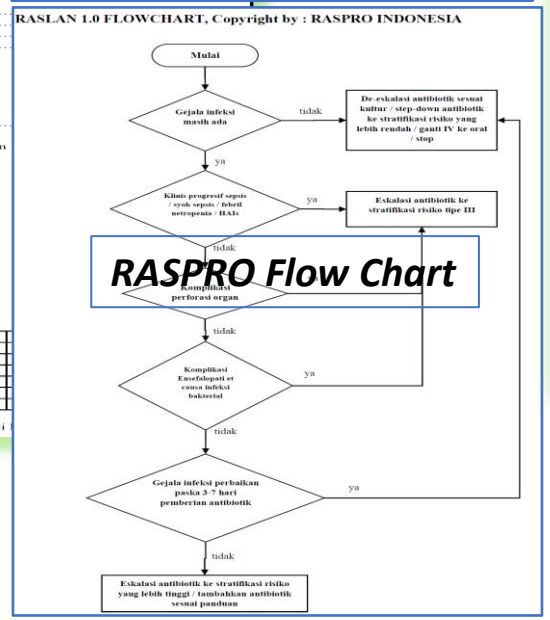
IV. **Komorbid**
A. Ada
B. Tidak ada
Bila ada : (boleh diisi lebih dari satu)
a. Diabetes melitus
b. Imobilisasi
c. Retensi sputum
d. Keganasan
e. Febrile Netropenia
f. Penggunaan instrumentasi
g. HIV / AIDS
h. Autoimune
i. Lain-lain, sebutkan .....

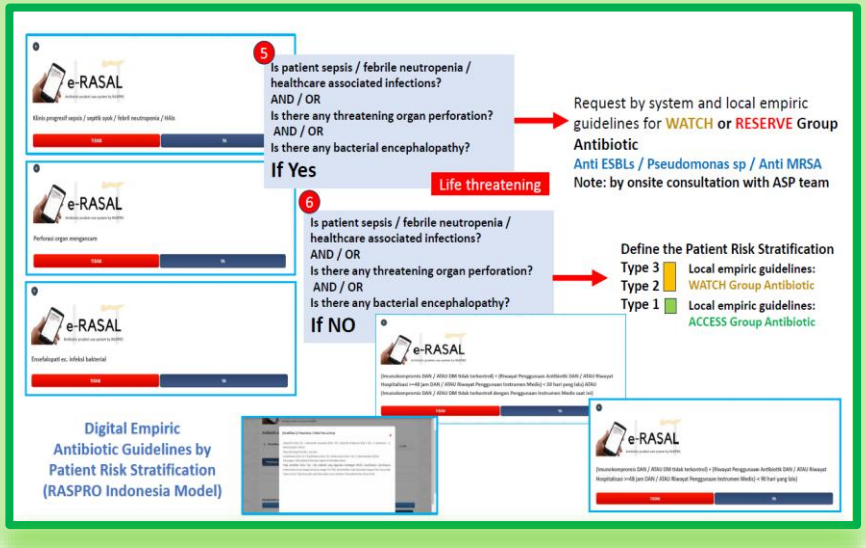
V. **Antibiotik yang Digunakan**

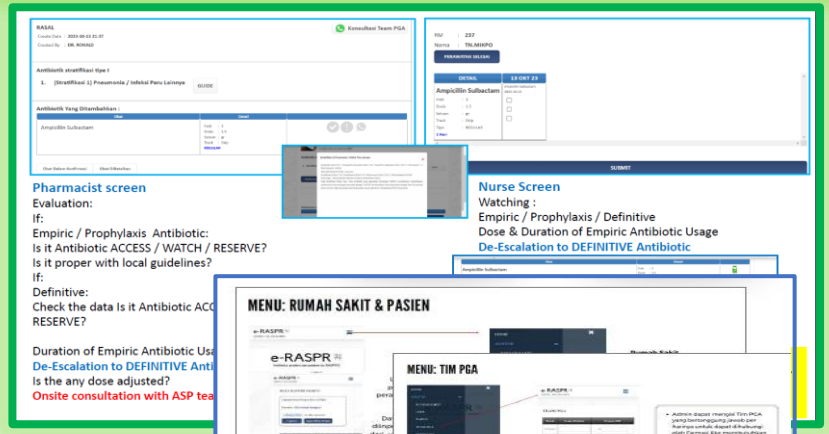
	Jenis	Dosis
1.		
2.		
3.		
4.		
5.		
6.		

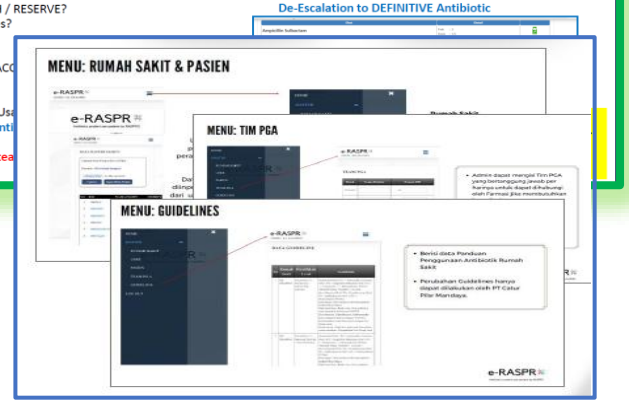
Alasan penggunaan antibiotik di luar panduan / jangka waktu di











Digital Model
e-RASPRO Parallel & Integrated System

- **Clinical**

Site of infection:

Bacterial:

"Big Four": Pneumonia, UTI, SSTI, Intra-Abdominal

Others: Intracranial, Central Line Associated BSIs, etc

Viral:

Upper respiratory tract

Lower respiratory tract – viral pneumonia

GI Tract

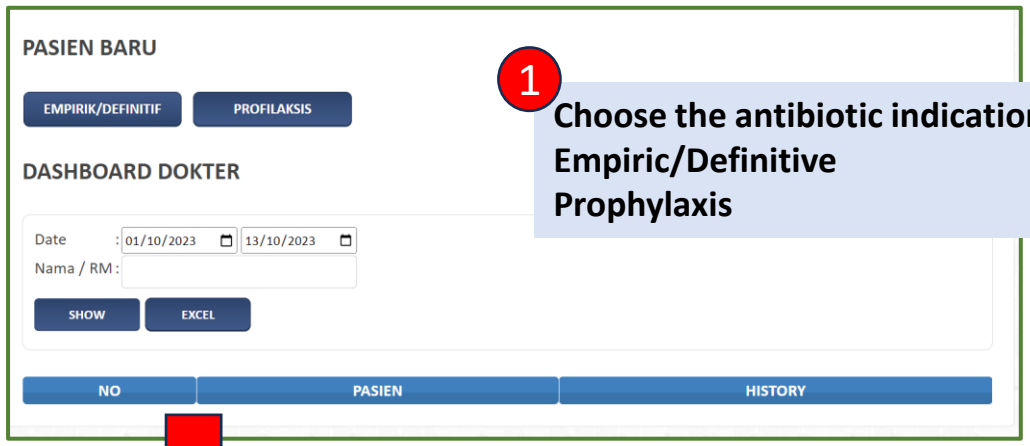
Unspecified

- **Laboratory**

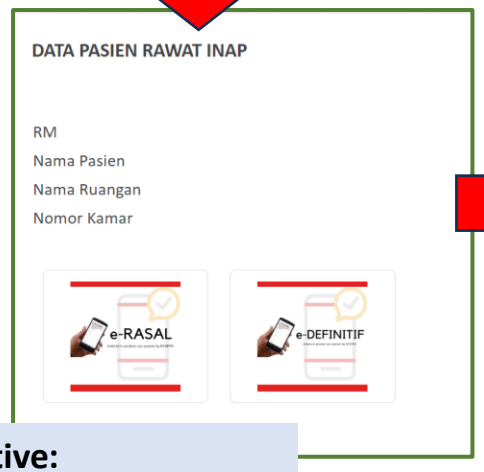
Full Blood Count, CRP, Procalcitonin

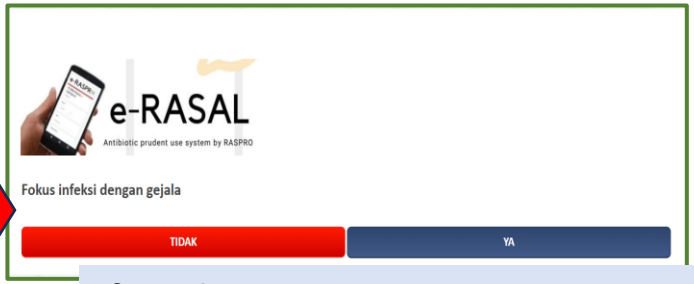
PCR

If the infection syndrome caused by viral such as Influenzae, Dengue, COVID-19, others
→ The antibiotic should be **RESTRICTED**



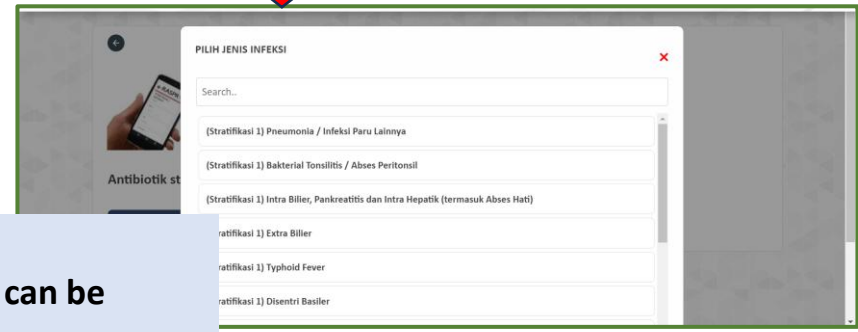
1 **Choose the antibiotic indication:**
Empiric/Definitive
Prophylaxis



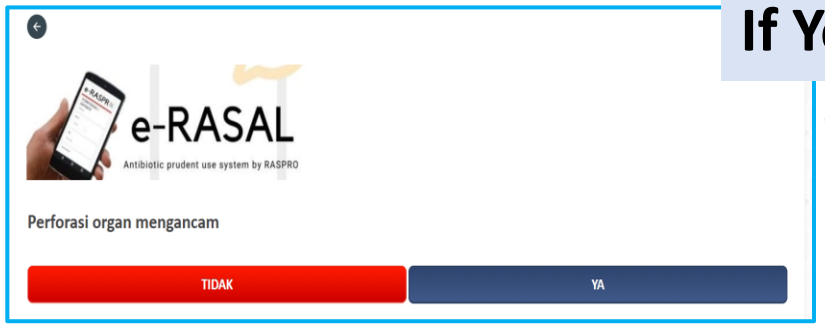


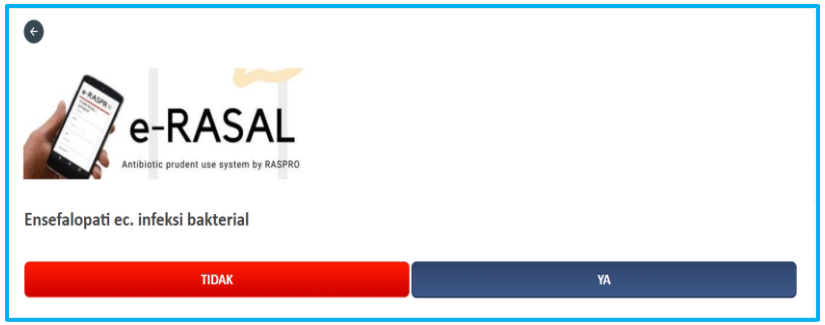
3 **If we choose empiric:**
Define the bacterial focus of infection

2 **If we choose empiric/definitive:**
Confirmation:
empiric (e-RASAL) or
definitive (e-definitive)



4 **Choose the focus of infection**
1,2,3 and more focus of infection can be covered by the system





5

Is patient sepsis / febrile neutropenia / healthcare associated infections?
AND / OR
Is there any threatening organ perforation?
AND / OR
Is there any bacterial encephalopathy?

If Yes

Life threatening

Request by system and local empiric guidelines for **WATCH** or **RESERVE** **Group Antibiotic**

Anti ESBLs / Pseudomonas sp / Anti MRSA

Note: by onsite consultation with ASP team

6

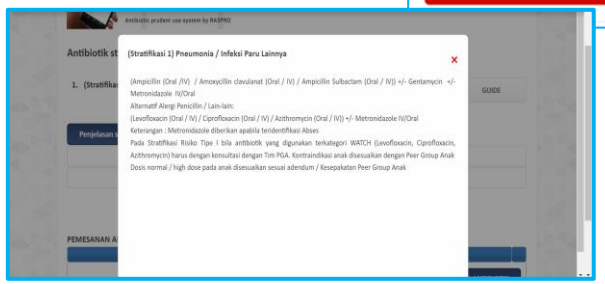
Is patient sepsis / febrile neutropenia / healthcare associated infections?
AND / OR
Is there any threatening organ perforation?
AND / OR
Is there any bacterial encephalopathy?

If NO

Define the Patient Risk Stratification

Type 3
Type 2 — **Local empiric guidelines: WATCH Group Antibiotic**

Type 1 — **Local empiric guidelines: ACCESS Group Antibiotic**



Digital Empiric Antibiotic Guidelines by Patient Risk Stratification (RASPRO Indonesia Model)

e-DEFINITIF

Antibiotic prudent use system by RASPRO

Obat	Detail
Ampicillin Sulbactam	Frek : 3 Dosis : 1.5 Satuan : gr Track : Drip REGULAR

e-RASAL | e-RASLAN | e-RASPRAJA | e-RASPATUR | e-RASGRASI | e-PROFILAKSIS

Clinicians should “click” here if need to add antibiotic combination or change the empiric antibiotic by Risk Stratification system

Spesimen *

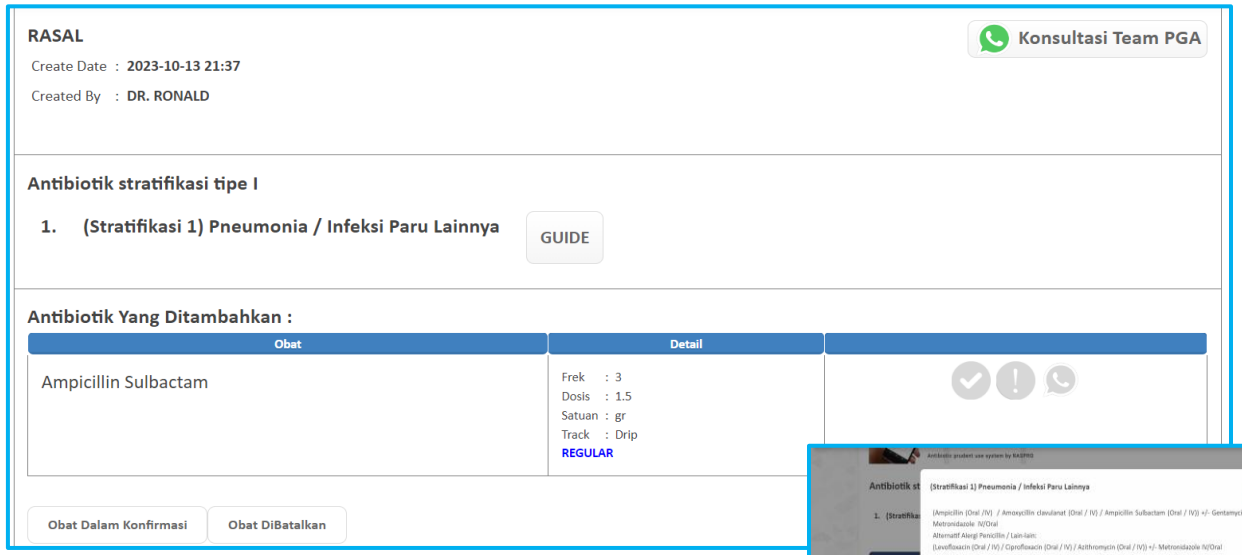
TENTUKAN FOKUS INFEKSI

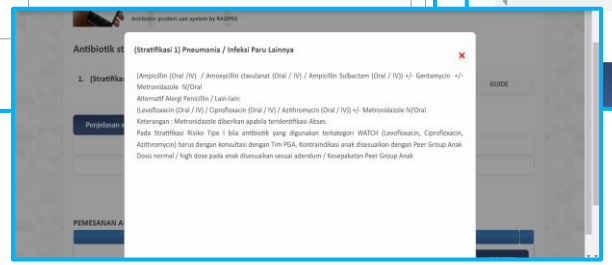
PILIH JENIS INFEKSI

Search..

- Pneumonia / Infeksi Paru Lainnya
- Bakterial Tonsilitis / Abses Peritonsil
- Intra Bilier dan Intra Hepatik (termasuk Abses Hati)
- Extra Bilier
- Typhoid Fever
- Disentri Basiler

Antibiotic De-Escalation
Timing
Focus of Infection
Specimen from site of infection





Pharmacist screen

Evaluation:

If:

Empiric / Prophylaxis Antibiotic:

Is it Antibiotic ACCESS / WATCH / RESERVE?

Is it proper with local guidelines?

If:

Definitive:

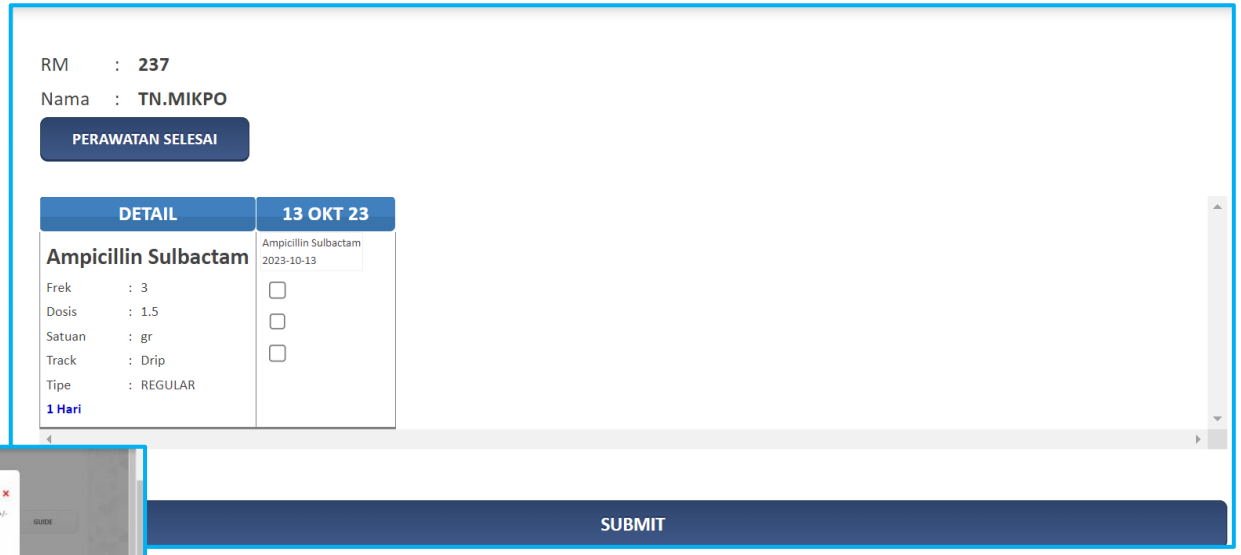
Check the data Is it Antibiotic ACCESS / WATCH / RESERVE?

Duration of Empiric Antibiotic Usage

De-Escalation to DEFINITIVE Antibiotic

Is the any dose adjusted?

Onsite consultation with ASP team if it's needed



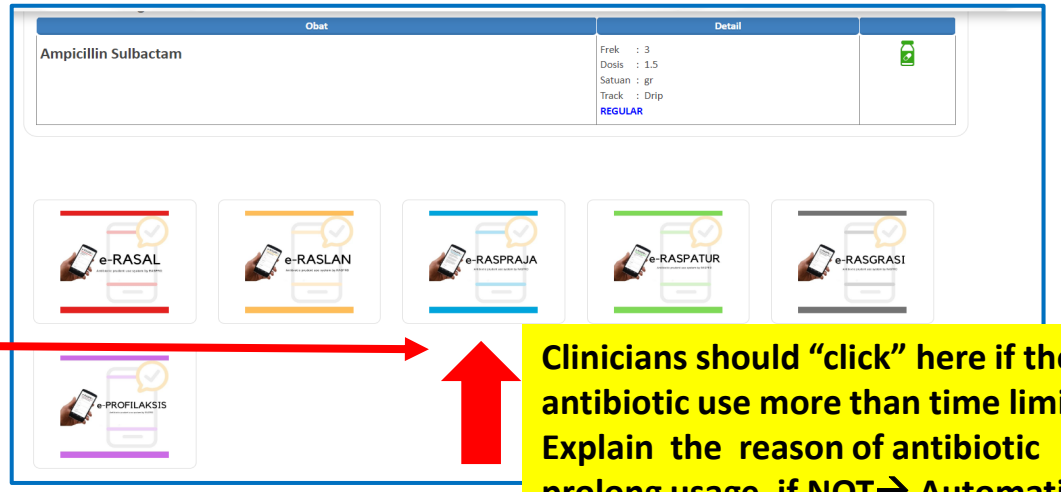
Nurse Screen

Watching :

Empiric / Prophylaxis / Definitive

Dose & Duration of Empiric Antibiotic Usage

De-Escalation to DEFINITIVE Antibiotic



Clinicians should "click" here if the antibiotic use more than time limit. Explain the reason of antibiotic prolong usage. if NOT→ Automatic Stop Order (ASO) will be enforced

RASPRO Model on AWARE Categories Hospital Setting

Digital Mode

Empiric
Step Up
Step Down

Guidelines
Strat Risk Type I
Strat Risk Type II
Strat Risk Type II

Patient with bacterial Infection / preoperative

Empiric

- ACCESS → FREE by Indication
- WATCH → Supervision – Restricted by Indication PGA team agreement
- RESERVE → Supervision – Restricted by Indication PGA team agreement

De-escalation

Definitive

- ACCESS → FREE by Indication
- WATCH → Supervision – Restricted by Indication PGA team agreement
- RESERVE → Supervision – Restricted by Indication PGA team agreement

Prophylaxis

- ACCESS
- If there is a special case, outside regulation → Supervision PGA team agreement

Automatic STOP Order if not reasonable

Integrated Assessment (FORKIT)

e-RASPRO Digital Antimicrobial Stewardship Implementation

INDONESIA

HERMINA HOSPITAL GROUP - INDONESIA

27 User Hospitals with Centralized Monitoring in Jakarta

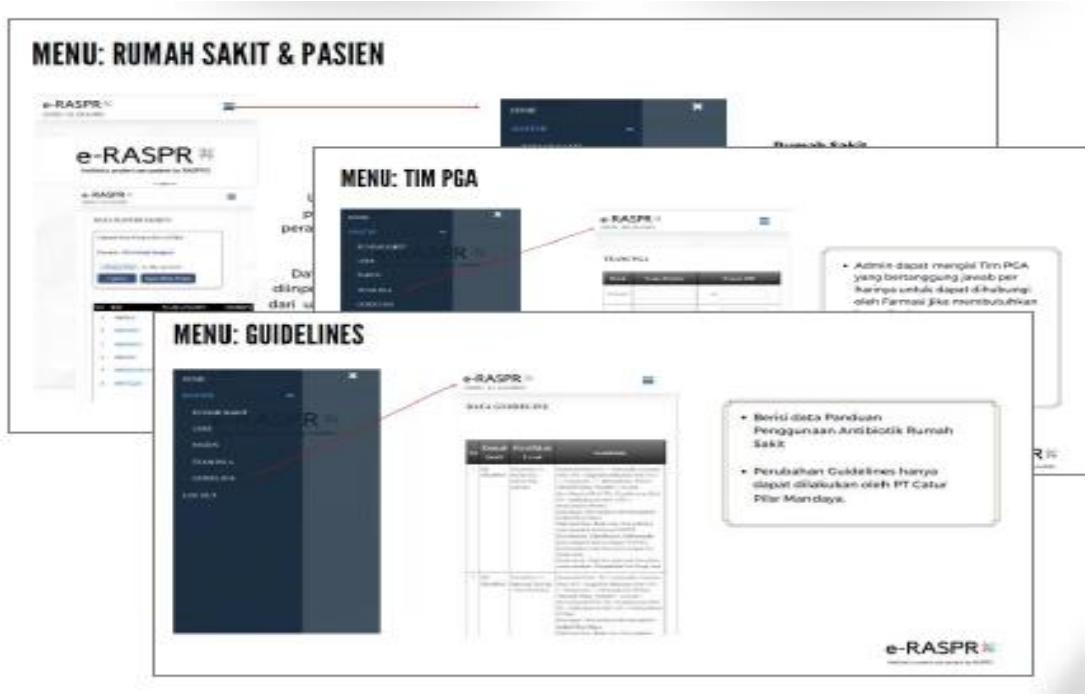
- RS. Hermina Jatinegara
- RS. Hermina Grand Wisata
- RS. Hermina Bogor
- RS. Hermina Galaxy
- RS. Hermina Bekasi
- RS. Hermina Daan Mogot
- RS. Hermina Ciputat
- RS. Hermina Kemayoran
- RS. Hermina Tangerang
- RS. Hermina Ciruas
- RS. Hermina Serpong
- RS. Hermina Depok
- RS. Hermina Banyumanik
- RS. Hermina Pandanaran
- RS. Hermina Makassar
- RS. Hermina Ubaya
- RS. Hermina Jogjakarta
- RS. Hermina Solo
- RS. Hermina Tangkuban Perahu
- RS. Hermina Padang
- RS. Hermina Pasteur
- RS. Hermina Arcamanik
- RS. Hermina Sukabumi
- RS. Hermina Karawang
- RS Hermina Bitung
- RS Hermina Purwokerto
- RS Hermina Bitung

RS Tugu Ibu
(e-RASPRO Beta Version mode)

RS Mardi Rahayu

RS. Marzoeki Mahdi

RSUD Cempaka Putih



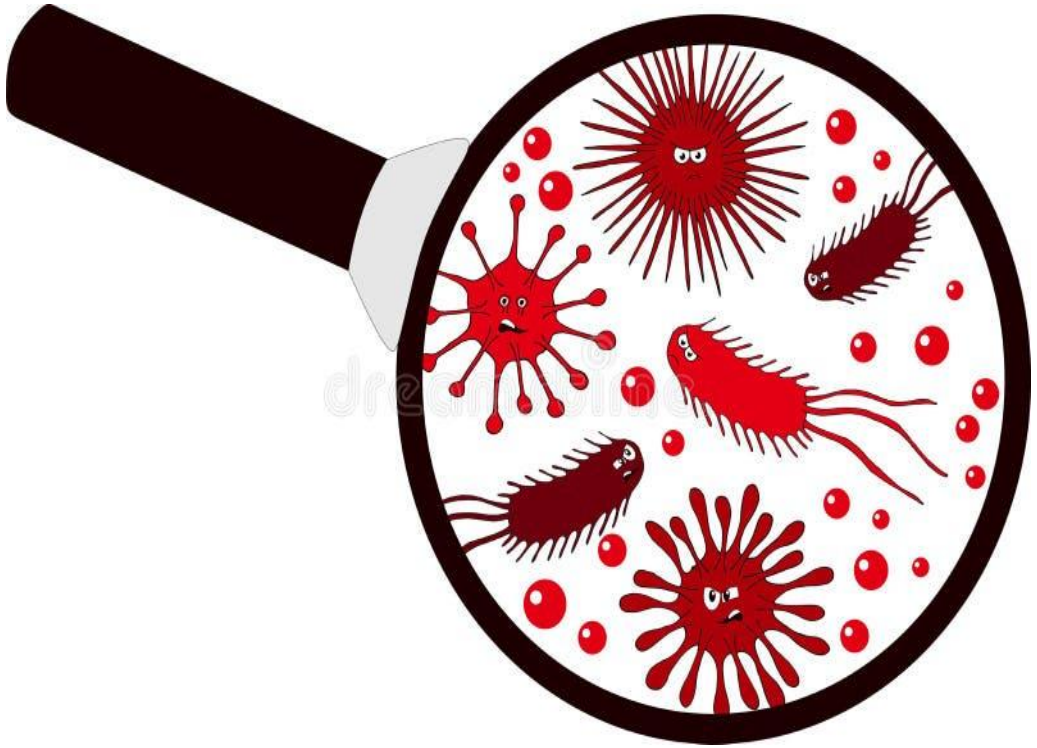
UNIVERSITAS TRISAKTI

RASPRO indonesia

II. Dari Regulasi Makro menuju Ekosistem

a. EkoSistem : Dampak Timbal Balik menuju Desain Mikro

EKOSISTEM



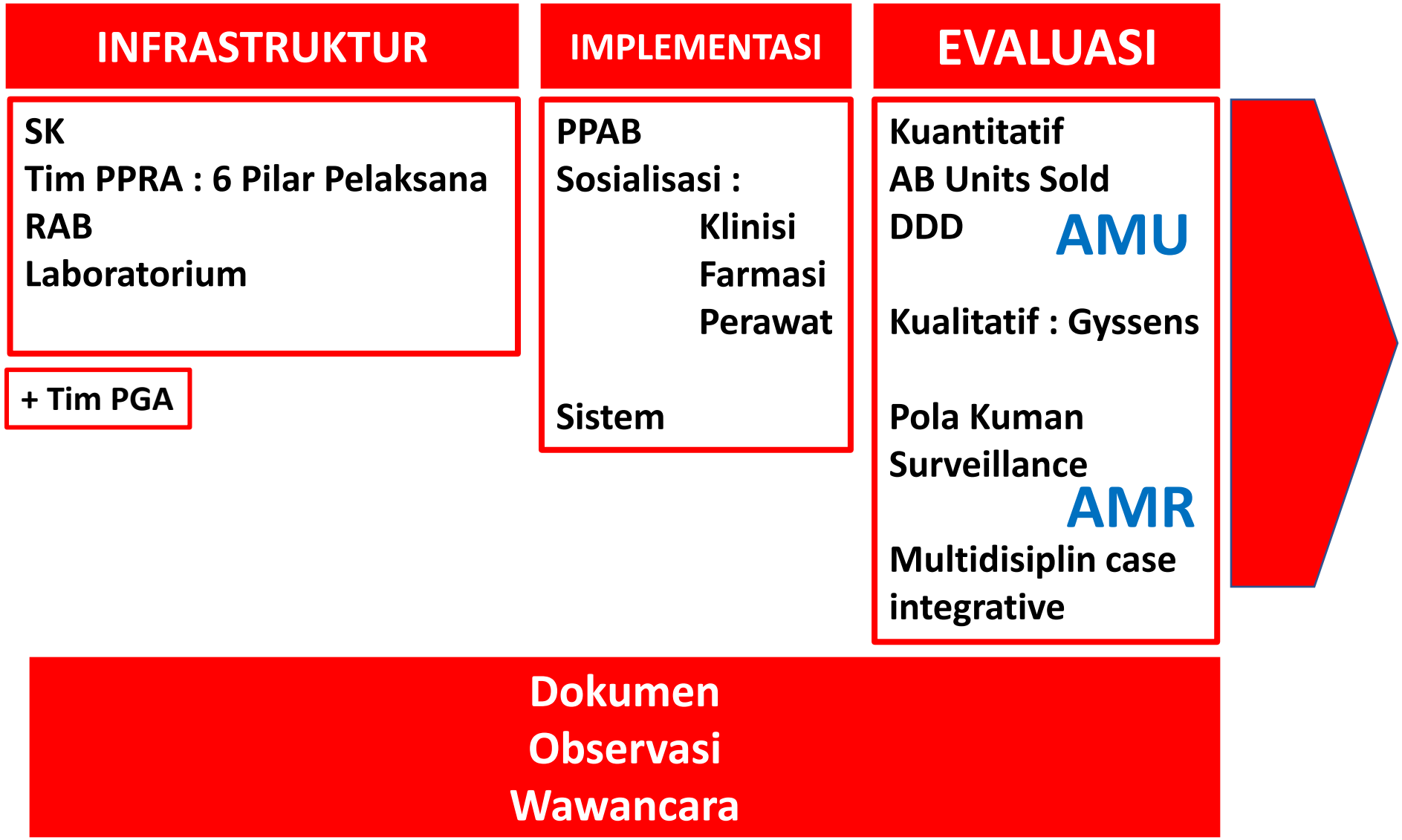
Kondisi timbal balik yang telah terjadi antara kebiasaan penggunaan antimikroba bijak dengan turunnya risiko kemunculan MDR

Desain Mikro adalah suatu desain kerja dimana telah terjadi kesinambungan Sistem dan Ekosistem dan rumah sakit / fasilitas kesehatan telah dapat secara mantap memberikan pelayanan dengan antimikroba bijak

Desain Mikro secara timbal balik dibangun dari Sistem dan Ekosistem, sebaliknya juga membangun sistem dan ekosistem pengendalian resistensi antimikroba di rumah sakit

I. Infrastruktur – Implementasi - Evaluasi Pelaksanaan PPRA / PGA

PPRA


INFRASTRUKTUR
SK
Tim PPRA : 6 Pilar Pelaksana
RAB
Laboratorium
+ Tim PGA
IMPLEMENTASI
PPAB
Sosialisasi :
Klinisi
Farmasi
Perawat
Sistem
EVALUASI
Kuantitatif
AB Units Sold
DDD
AMU
Kualitatif : Gyssens
Pola Kuman
Surveillance
AMR
Multidisiplin case
integrative
Dokumen
Observasi
Wawancara

BAB IV.
EVALUASI PGA

Untuk mengetahui keberhasilan kegiatan PGA di suatu rumah sakit dilakukan monitoring dan evaluasi terhadap kegiatan PGA, secara berkala setiap 3-6 bulan dengan mengukur struktur, proses, dan hasil. Hasil evaluasi dilaporkan kepada pimpinan rumah sakit dan Kementerian Kesehatan.

IV.1. Pengukuran struktur

a. adanya komitmen pimpinan rumah sakit
b. adanya pedoman PRA dan pedoman PPI
c. adanya KPRA dan tim PGA
d. adanya PPK dan CP untuk penyakit infeksi yang selalu diperbarui
e. adanya FRS dan PPAB yang selalu diperbarui
f. adanya laporan antibiogram setiap 6-12 bulan

IV.2. Pengukuran proses

a. Adanya data kuantitas penggunaan antimikroba
   - dinyatakan dalam unit DDD/100 hari rawat

b. Adanya data kualitas penggunaan antimikroba
   - persentase berbagai kategori metoda Gyssens dalam penggunaan antimikroba
   - persentase penerimaan DPJP terhadap umpan balik dari tim PGA
   - persentase perubahan terapi berdasarkan hasil pemeriksaan laboratorium mikrobiologi
   - persentase perubahan rute pemberian dari IV ke oral
   - saat mengubah rute pemberian dari IV ke oral

IV.3. Pengukuran hasil

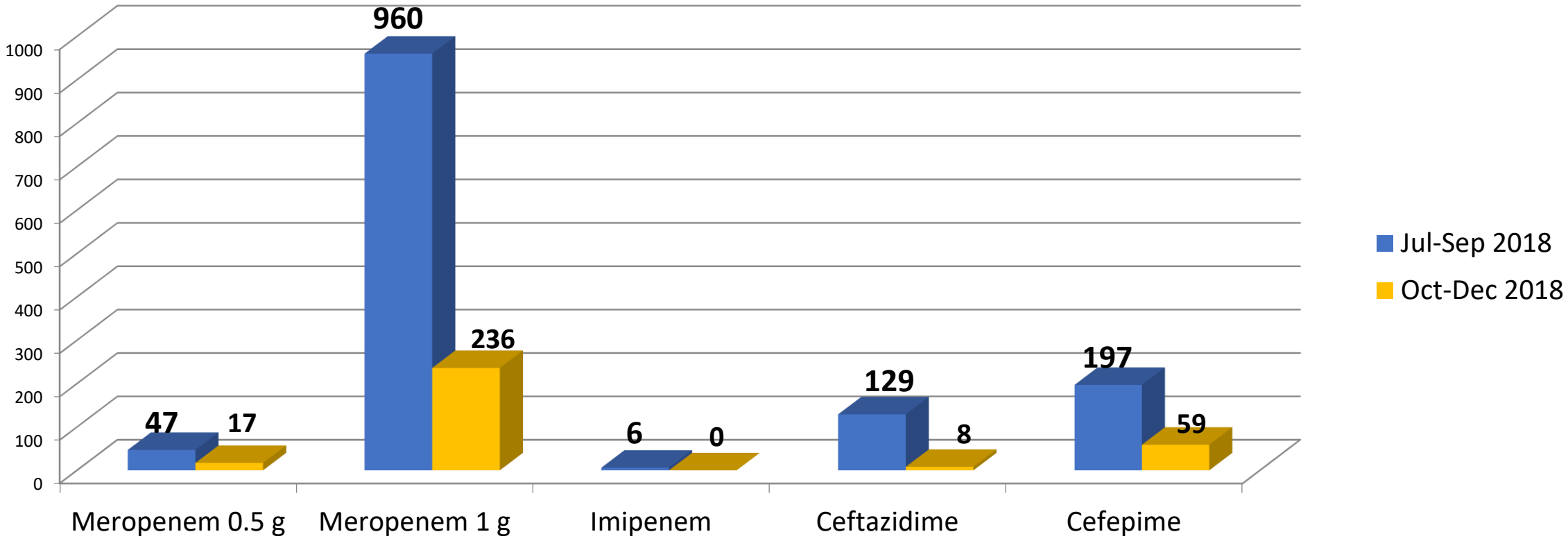
a. Dari aspek mikrobiologi
   - persentase indikator MDRO
   - persentase infeksi *Clostridium difficile*

b. Dari aspek klinis
   - lama hari rawat (*length of stay*, LOS)
   - angka kematian akibat penyakit infeksi
   - persentase *readmision* dan *reinfection*

c. Dari aspek keuangan
   - biaya antimikroba per pasien selama perawatan
   - biaya pembelian antimikroba oleh rumah sakit

d. Dari aspek diseminasi informasi
   - hasil kegiatan PGA dipublikasikan dalam majalah yang terakreditasi dan terpercaya setiap 12-24 bulan

Three Months Comparison of Broad Antibiotics Unit Sold: Before and After RASPRO-RASAL Criteria Implemented



Ronald Irwanto Natadidjaja*#, Yuhana Fitra, Yudianto Budi Saroyo**, Augustine Matatula**, Rinna Wamila Sundariningrum**

(MANUAL Model)

J Antimicrobiol Resist & Inf Control. 2019. 8(suppl 1): P357

International Journal of INFECTION CONTROL

ORIGINAL ARTICLE

Antibiotic usage at a private hospital in Central Java: results of implementing the Indonesian Regulation on the Prospective Antimicrobial System (Regulasi Antimikroba Sistem Prospektif Indonesia [RASPRO])

Ronald Irwanto Natadidjaja[1,2]*, Tarcisius Henry[1], Hadianti Adlani[1], Aziza Ariyani[1] and Rika Bur[1]

[1]RASPRO Indonesia Study Group, Jakarta, Indonesia; [2]Infectious Disease Division, Trisakti School of Medicine, Trisakti University, Jakarta, Indonesia

Abstract

Methods: A pre–post-descriptive study was conducted in 2019 for 3 months at a private hospital in Central Java, Indonesia, to evaluate the implementation of the Regulation on Indonesian Antimicrobial Stewardship Program (ASP), namely, the Prospective Antimicrobial System/Regulasi Antimikroba Sistem Prospektif Indonesia (RASPRO). Outcomes were measured before and after the implementation of the RASPRO in the ward including: 1) intravenous antibiotic defined daily dose (DDD) per 100 patient-days, 2) antibiotic expenditure, and 3) antibiotic expenditure per inpatient.

Result: The total antibiotic consumption was expressed in DDD/100 patient-days. For the levofloxacin category, the number increased intensely from 2.38 to 15.29; carbapenem escalated from 0.51 to 2.31, ceftriaxone from 32.10 to 38.03, and ampicillin sulbactam from 1.14 to 1.18. In contrast, cefuroxime significantly reduced from 17.25 to 1.38, cefotaxime decreased from 10.33 to 6.83, gentamicin decreased from 3.18 to 1.91, and amikacin decreased from 2.27 to 2.13. The overall cephalosporin usage decreased from 19.89 to 15.41. The total antibiotic expenditure had a decline of 20.28%, followed by 14.44% reduction on the percentage of antibiotic expenditure per inpatient.

Conclusion: Our study describes the 3-month analysis of antimicrobial usage before and after the implementation of the RASPRO by evaluating several parameters. The antibiotic consumption expressed in DDD/100 patient-days for each antibiotic category has demonstrated that there are different impacts that may be debatable and calls for further evaluation. A decrease in the total antibiotic expenditure has also been reported. However, since our study is a preliminary study, it should be continued by further studies that involve longer study duration to observe further impacts of the program.

(MANUAL Model)

Antimicrobial Resistance & Infection Control 2023, **12**(Suppl 1):81
https://doi.org/10.1186/s13756-023-01276-2

Antimicrobial Resistance and Infection Control

MEETING ABSTRACTS Open Access

International Conference on Prevention and Infection Control 2023

A quantitative survey of antibiotic use at a hospital in Jambi Province Indonesia in three-month before and after implementation of antimicrobial resistance control program by Raspro concept

R. I. Natadidjaja[1,2,*], R. Asmajaya[2], H. Basrie[2], H. Sumarsono[2]
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Correspondence: R. I. Natadidjaja
Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P309

Introduction: Based on Decree of Minister of Health Number 8/2015 in article 11 concerning quality indicators of Antimicrobial Resistance Control Program (ARCP)/*Program Pengendalian Resistensi Antimikroba (PPRA)* implementation in hospitals, it has been known that reduced quantity of antimicrobial use has become one of those indicators.
Objectives: This survey is a descriptive study using secondary data retrieved between July and September 2019 (3 months before implementation of *RASPRO* concept) as well as between October and December 2019 (3 months after the implementation), which was aimed to evaluate impacts on implementing *Regulasi Antimikroba Sistem Prospektif (RASPRO)* concept at a hospital in Jambi province, Indonesia.
Methods: The survey was carried out by calculating the expenditure of 3 antibiotic classes, which were the most commonly used and usually given by injection in hospitals and Intensive Care Units (ICU)s, i.e. the beta-lactam, quinolones and carbapenem.
Results: We found reduced use of Ceftriaxone as many as 890 ampules (37.11%), for Cefotaxime the reduction was 580 ampules (67.13%); while the use of Cefoperazone reduced as many as 76 ampules (47.50%) and Ceftazidime reduced as many as 10 ampules (7.14%). The use of Ciprofloxacin reduced as many as 327 ampules (71.40%), but there was a drastic increase in the use of Levofloxacin as many as 59 ampules (>100%). The use of Carbapenems increased, which included 79 ampules (34.20%) for Meropenem; while the use of Imipenem increased as many as 9 ampules (100%). In three months after the implementation of *RASPRO* concept, 92.5% prophylaxis antibiotic had been given for appropriate indication and the antibiotic use of Cefazolin 71.3%. Within three months before and after the implementation of *RASPRO* concept, there was a total reduction of antibiotic use, which reached 1736 ampules (40.57%).
Conclusion: In conclusion, the implementation of *RASPRO* concept can be executed as an effort to reduce the quantity of antimicrobial use in hospitals. However, larger studies and longer monitoring are required in order to identify the impact of implementation of *RASPRO* concepts at a hospital.

Disclosure of Interest
None declared.

(MANUAL Model)

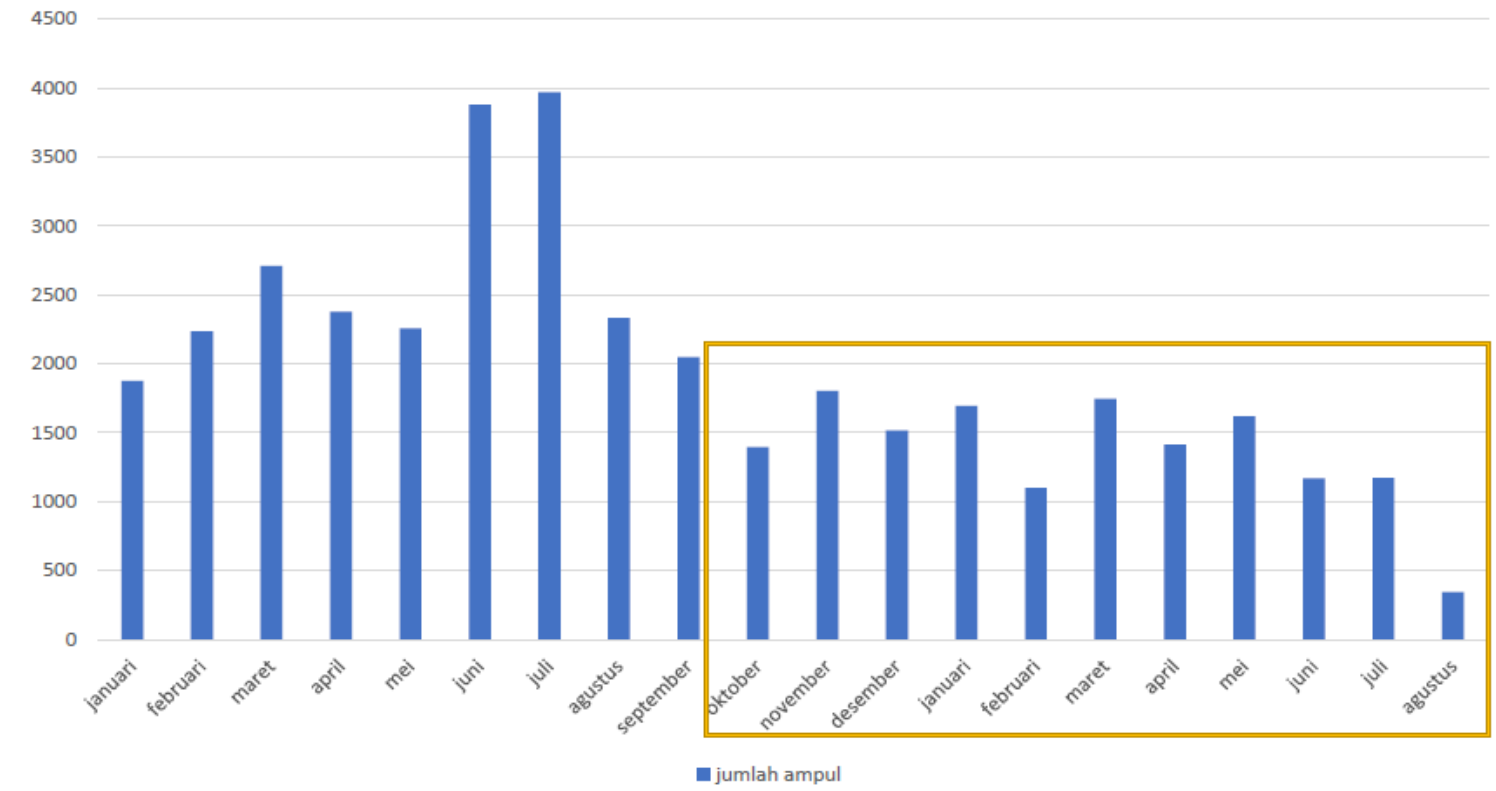
Qualitative Evaluation of Antibiotic with Gyssens Method by RASPRO Concept for Pneumonia at Pediatric Intensive Care Unit

Rinna W. Sundariningrum,[1] Darmawan Budi Setyanto,[2] Ronald Irwanto Natadidjaja[3]

Background. Pneumonia remains the commonest infective reason for admission to intensive care as well as being the most common secondary infection acquired whilst in the pediatric intensive care unit. Inappropriate use of antibiotics can increase morbidity, mortality, patient cost, and antibiotic resistance.
Objective. To qualitatively evaluate antibiotic use in pneumonia with The Gyssens method by RASPRO concept.
Methods. We performed a descriptive, retrospective study data based on medical records of patients with pneumonia who admitted to the pediatric intensive care unit in Hermina Bekasi Hospital from May to October 2019. Records were evaluation its qualitative antibiotic using the Gyssens method by RASPRO concept.
Result. This study discovered 51 cases (14,46%) of severe pneumonia. We found 119 antibiotics uses including 90 (75,63%) empirical therapies and 29 (24,37%) devinitive therapies. Ampicilin sulbactam was the most common antibiotic used (15,98%), followed by cefotaxime (15,12%), meropenem (13,44%), azithromycin (11,78%) and ceftriaxone (10,92%). Based on Gyssens method by RASPRO concept, appropriate antibiotic use (category 0) accounted for 63,02%, while inappropriated use accounted for 1,68% category IVa (improper; other antibiotics were more effective), 22,69% category IIIa (improper; duration too long), 9,24% category IIIb (improper; duration too short) and 3,36% category IIa (improper; incorrect dose).
Conclusion. Appropriate use of antibiotics showed quite good results, namely 63,03%. The RASPRO concept can be used to reduce subjectivity bias in qualitative antibiotic assessments by the Gyssens method for pneumonia treated in the pediatric intensive care unit. **Sari Pediatri** 2020;22(2):109-14

(MANUAL Model)

9 months before & after using digital ASP model



43% decline of Inpatient Antibiotic Usage

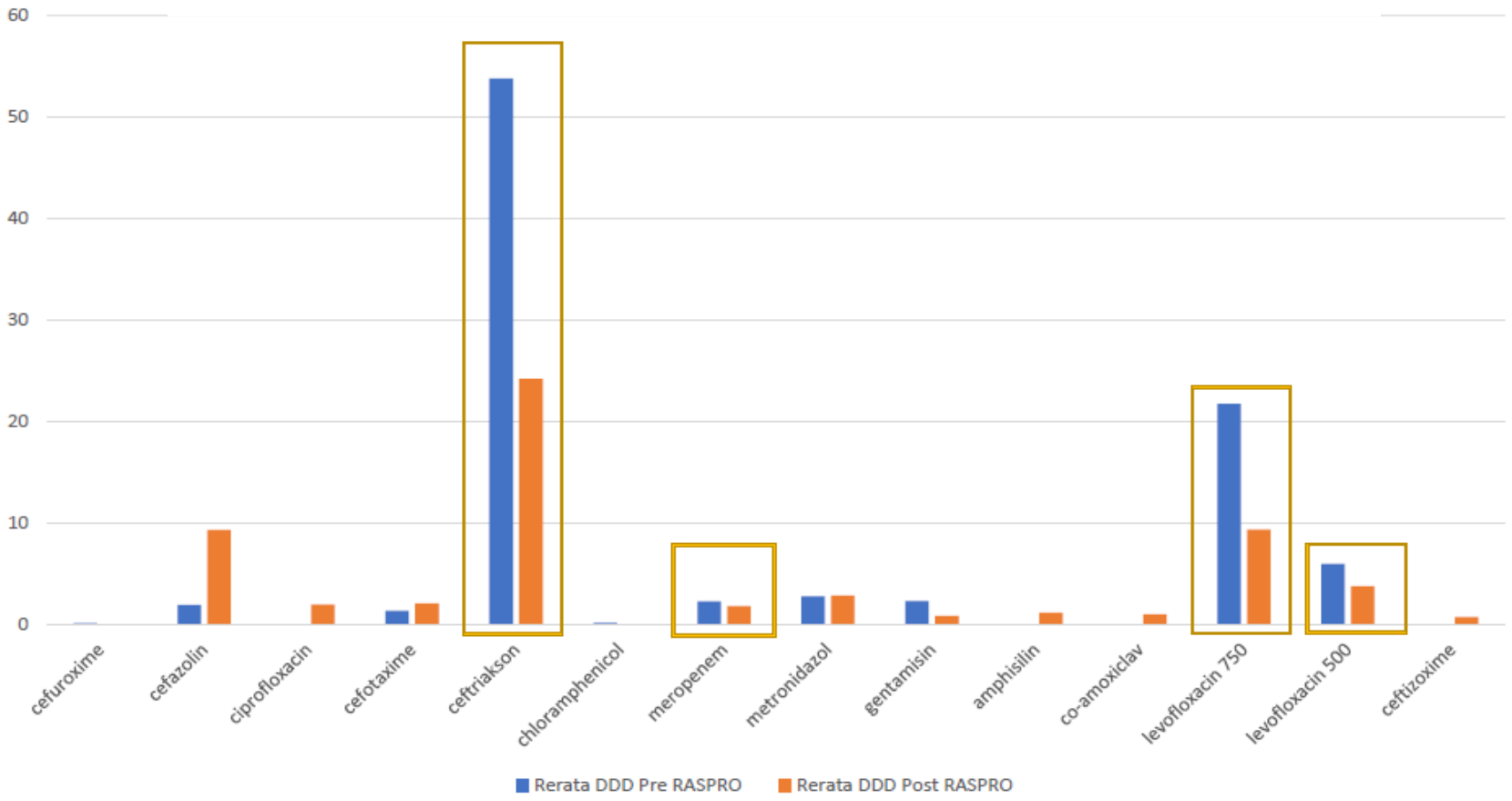
Dr. Iin Indra Pertiwi SpPD

RASPRO Indonesia - Indonesian Grass Root Meeting on Antimicrobial Stewardship (INDOGRAM)
World Antimicrobial Awareness Week, November 2022

To do further research in 3 hospitals , In progress publication

(Digital Model)

9 months before & after using digital ASP model : average of DDD



20% Define Daily Dose (DDD) Decline of Meropenem
57% Define Daily Dose (DDD) Decline of 750mg Levofloxacin
37% Define Daily Dose (DDD) Decline of 500mg Levofloxacin
55% Define Daily Dose (DDD) Decline of Ceftriaxone

Dr. Iin Indra Pertiwi SpPD

RASPRO Indonesia - Indonesian Grass Root Meeting on Antimicrobial Stewardship (INDOGRAM)
World Antimicrobial Awareness Week, November 2022

To do further research in 3 hospitals , In progress publication

(Digital Model)

Trend Changing to the ACCESS Category Antibiotic Usage after Digital Antimicrobial Stewardship Tool e-RASPRO 9 Months Implementation in an Indonesian Hospital

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Background: Antimicrobial Stewardship Program (ASP) is a global issue. World Health Organization (WHO) stated, there are 3 categories of antimicrobial: ACCESS, WATCH, and RESERVE. e-RASPRO as a digital ASP may alter antibiotic prescribing pattern by prioritizing ACCESS category as suggested by WHO.
Methods: This manuscript was a ward retrospective survey data of 9 months Define Daily Dose (DDD) average before-after implementing the electronic-RASPRO (e-RASPRO) on ACCESS & WATCH antibiotic.
Results: Number of inpatients 9 months before-after e-RASPRO implementation were 7,754 and 6,794. Within 9 months after implementing e-RASPRO there was a trend of antibiotic prescription shifting from WATCH category antibiotic to ACCESS category antibiotic. There was a trend of reduced Define Daily Dose (DDD) average of WATCH category antibiotic. 24.82% of 3rd generation Cephalosporin, 33.20% of Quinolones, 14.76% of Carbapenems and 100% of Piperacillin Tazobactam DDD average were reduced. While, in ACCESS Category Antibiotic, there were an elevation of Penicillin and Aminoglycosides DDD average up to 528.66% and 137.66%.
Conclusion: There are trend changing of DDD average from WATCH to ACCESS category antibiotic following the 9 months implementation of e-RASPRO. We need further study to judge the effectiveness of e-RASPRO as a digital ASP tools.

Keywords: digital antimicrobial stewardship, Define Daily Dose, ACCESS, WATCH

Dr. Hadianti Adlani, SpPD, Subsp.PTI(K)
APSIC Congress 2024

(Digital Model)

Clinical eHealth 7 (2024) 176–189

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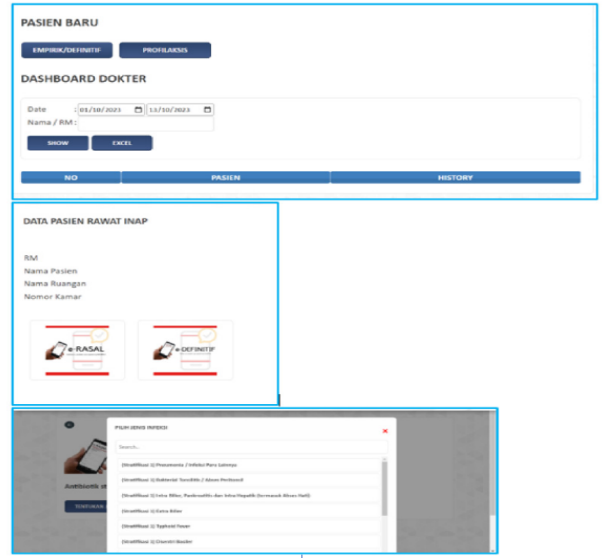
[c] Faculty of Medicine, Syarif Hidayatullah State Islamic University, Banten, Indonesia



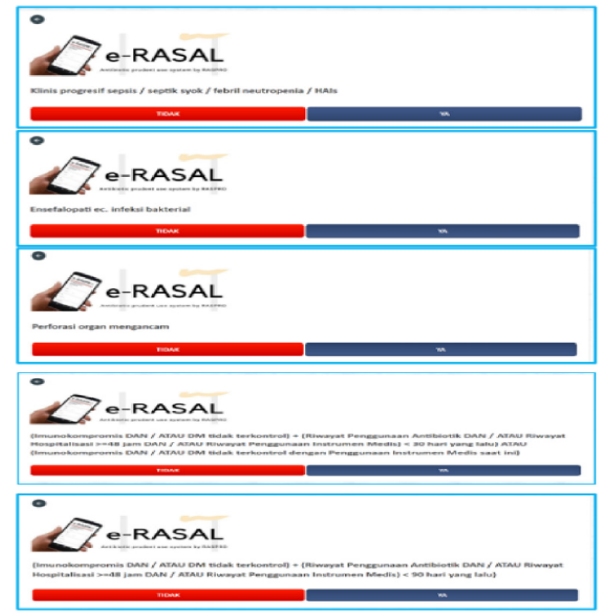


Table 1
DDD of Prophylactic Antibiotics in Hospital 1 and Hospital 2 at 3 Months Following the Implementation of e-RASPRO Tool.

	Hospital 1			Hospital 2		
	3 Months			3 Months		
	Before Implementing e-RASPRO	After Implementing e-RASPRO	Increase / Decrease	Before Implementing e-RASPRO	After Implementing e-RASPRO	Increase / Decrease
Cefazolin	7.16	19.13	167.18 %	2.84	2.31	−18.66 %
Ceftriaxone	4.21	4.63	9.98 %	–	–	–
Cefotaxime	2.04	2.20	7.84 %	–	–	–

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Table 2
DDD of Watch Category Antibiotics in Hospital 1 and 2 at 9 Months and 3 Months Following the Implementation of e-RASPRO Tool.

	Hospital 1			Hospital 2		
	9 Months			3 Months		
	Before Implementing e-RASPRO	After Implementing e-RASPRO	Increase / Decrease	Before Implementing e-RASPRO	After Implementing e-RASPRO	Increase / Decrease
	Patients = 4215	Patients = 4618		Patients = 2805	Patients = 2675	
Ceftriaxone	484.00	217.95	−54.97 %	34.44	31.84	−7.55 %
Cefotaxime 1 g	12.19	18.84	54.55 %	5.28	4.84	−8.33 %
Cefotaxime 0.5 g	–	–	–	–	–	–
Ceftazidime	–	–	–	2.65	3.06	15.47 %
Cefoperazone	–	–	–	–	–	–
Cefoperazone sulbactam	–	–	–	–	0.64	100.00 %
Ceftixozime	–	5.11	>100 %	0.42	–	−100.00 %
Cefepime	–	–	–	5.58	4.30	−22.94 %
Cephalosporine Group	**496.19**	**241.90**	**−51.25 %**	**48.37**	**44.68**	**−7.63 %**
Levofloxacin 750 mg	**195.51**	**84.11**	**−56.98 %**	**8.55**	**21.41**	**150.41 %**
Levofloxacin 500 mg	**56.52**	**33.89**	**−40.04 %**	**23.83**	**24.10**	**1.13 %**
Ciprofloxacin	–	16.31	100.00 %	–	9.26	**100.00 %**
Moxifloxacin	–	–	–	–	–	–
Quinolone Group	**252.03**	**134.31**	**−46.71 %**	**32.38**	**54.77**	**69.15 %**
Meropenem 1 g	20.30	15.67	−22.81 %	8.27	9.43	**14.03 %**
Meropenem 0.5 g	–	–	–	9.64	10.68	**10.79 %**
Carbapenem Group	**20.30**	**15.67**	**−22.81 %**	**17.91**	**20.11**	**12.28 %**
Vancomycin 0.5 g	–	–	–	1.42	0.72	**−49.30 %**
Glycopeptide Group	–	–	0.00 %	1.42	0.72	**−49.30 %**
TOTAL Watch=	**768.52**	**391.88**	**−49.01 %**	**100.08**	**120.28**	**20.18 %**

Table 3
DDD of Access-category Antibiotics in Hospital 1 and 2 at 9 Months and 3 Months Following the Implementation of e-RASPRO Tool.

	Hospital 1			Hospital 2		
	9 Months			3 Months		
	Before Implementing e-RASPRO	After Implementing e-RASPRO	Increase / Decrease	Before Implementing e-RASPRO	After Implementing e-RASPRO	Increase / Decrease
	Patients = 4215	Patients = 4618		Patients = 2805	Patients = 2675	
Ampicillin	–	9.13	100 %	–	–	–
Ampicillin Sulbactam 1.5 g	–	–	–	0.80	1.81	126.25 %
Ampicillin Sulbactam 0.75 g	–	–	–	1.38	2.13	54.35 %
Amoxycillin clavulanate	–	8.21	100 %	–	–	–
Gentamycin	20.89	3.99	−80.90 %	–	–	–
Amikacin	–	–	–	–	–	–
Metronidazole	24.78	22.68	−8.47 %	8.02	7.09	−11.60 %
Cefuroxime*	–	–	–	–	–	–
TOTAL Access=	**45.67**	**44.01**	**−3.64 %**	**10.20**	**11.03**	**8.14 %**

SSRN: https://ssrn.com/abstract=4822359 or http://dx.doi.org/10.2139/ssrn.4822359

A Survey on Define Daily Dose of Watch- and Access-Category Antibiotics in Two Indonesian Hospitals Following the Implementation of Digital Antimicrobial Stewardship Tool

Ronald Irwanto Natadidjaja, Aziza Ariyani, Hadianti Adlani, Raymond Adianto, Iin Indah Pertiwi, Grace Nerry Legoh, Alvin Lekonardo Rantung, Hadi Sumarsono

Background: In 2023, the World Health Organization (WHO) began targeting a shift in antibiotic prescribing trends from WATCH to ACCESS category.

Method: This survey was a preliminary study, in which our study group designed a digital model of antimicrobial stewardship and the model was known as e-RASPRO. The survey on the use of antibiotic Define Daily Dose (DDD) was carried out in two hospitals in Indonesia at 3 months and 9 months of use, respectively. Data was retrieved retrospectively at the inpatient wards of both hospitals.

Result: Three months before and after the implementation of e-RASPRO in Hospital 1, the DDD of prophylactic antibiotic Cephazolin showed an increased of 167.18%. In hospital 2, Cephazolin had been used since the hospital applied the manual RASPRO concept. DDD of WATCH category antibiotics within 9 months following the implementation of e-RASPRO tool in hospital 1 showed a decrease of 49.01%. Meanwhile, the implementation of e-RASPRO for 3 months in Hospital 2 still showed an increase in WATCH category antibiotics by 20.18%; however, there was a decrease in DDD of Cephalosporin and Glycopeptide antibiotics by 7.63% and 49.30%, respectively. In the meantime, as a way of saving antibiotic use and shifting antibiotic prescribing to the ACCESS category, we found a decrease in DDD of ACCESS category antibiotics in Hospital 1 by 3.64% and an increase in Hospital 2 by 8.14%.

Conclusion: The survey may indicate that there are savings attempts in antibiotic use as well as an early change in DDD antibiotics from the WATCH category to the ACCESS category following the implementation of e-RASPRO tool in both hospitals. The time period of using the digital devices may still affect the results; however, this survey certainly has not illustrated a strong cause-and-effect correlation between the use of e-RASPRO tool and antibiotic DDD.

(Digital Model)

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