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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
- **SMP-SMA Kolese Kanisius**, Jakarta, Lulus 1994

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



@rasproindonesia

Instagram

www.new.rasproindonesia.com



Pengendalian Resistensi Antimikroba di Rumah Sakit :

Konsep RASPRO sebagai Sebuah Telaah Akademik di FK Universitas Trisakti dalam Upaya Pengendalian Resistensi Antimikroba di Indonesia

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**Desain
Mikro**

Regulasi MAKRO

Disposisi

Regulasi MIKRO

Integrasi

SISTEM

Support

Socialization

Terkondisi

Service

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

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



Regulasi MIKRO

EKSKLUSIF - OPERASIONAL



SOP – Job Desk Infrastruktur2 Birokratif
Alur Kerja PGA

Alur Pengambilan Sampel

Alur Peresepan Antimikroba

Alur Pre-otorisasi & Audit Prospektif
dll

PPK

PPAB

SISTEM

KOMITMEN - KONTINUITAS



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



Artikel Penelitian

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

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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.

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%

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

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%

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

- Shifting WATCH to $\geq 60\%$ 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

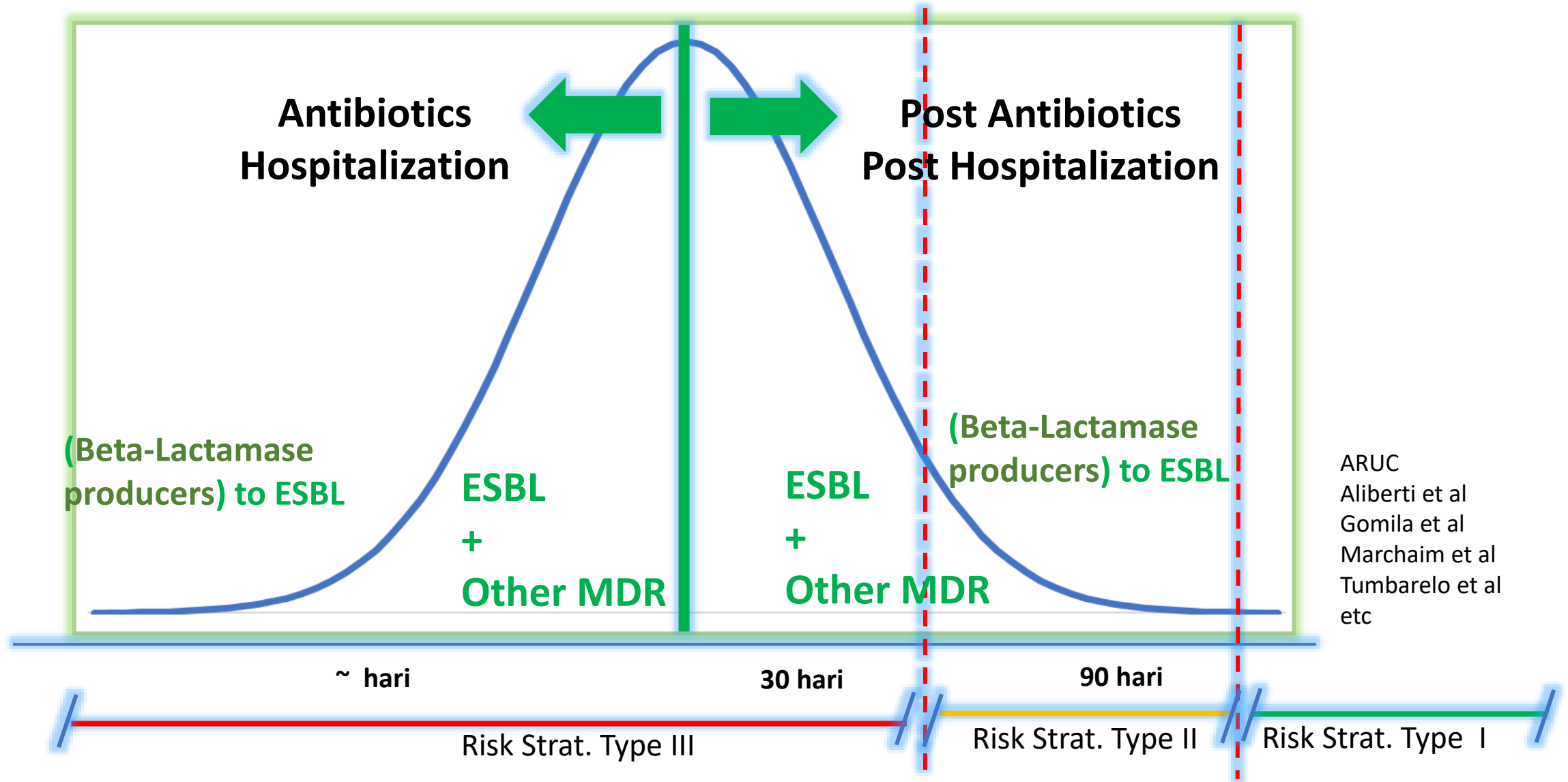
Amikacin
Gentamycin

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  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 ACCESS

Risk Stratification Type 3

Risk Stratification Type 2

Risk Stratification Type 1

Gomila A, Shaw E, Carratalà J, Leibovici L, Tabé 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

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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

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

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.

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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 Ariyani¹, Hadiani Adlani^{1,4,5}, Raymond Adianto¹, Ronaningtyas Maharani¹, Hadi Sumarsono¹, 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 Yuliana², Sri Mulyani⁵, Desi Anggiat⁵, Triyoko Septio Marja⁵, Iin Indra Pertiwi⁶, Dianawati Dianawati⁶, Grace Nerry Legoh⁷, Alvin Lekonardo Rantung⁷

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%

RASPRO Manual Model



RASPRO Digital Model

Parallel & Integrated with Hospital IT

Formulir RASPTUR 1.0

Ketentuan

Nama Pasien

Nomor RM

Fokus Infeksi

Spesimen

Antibiotik diberikan

1.

2.

RASPRO Alur Antibiotik Awal (RASAL 1.0) Copyright: Ronald Irawan

NO.	SPEKIFIKASI	FLOW	KET.	TINDAKAN	AE
1.	Fokus infeksi dengan gejala infeksi	Tidak	henti	Tidak perlu antibiotik	
2.	Klinis progresif Sepsis / Septic Shock / Febril Netropenia / Tertkategori HAI	Ya	henti	Antibiotik Stratifikasi Risiko Tipe III	

RASPRO Alur Antibiotik Lanjutan (RASLAN 1.0) Copyright: Ronald Irawan

NO.	SPEKIFIKASI	FLOW	KETERANGAN	TINDAKAN
1.	Gejala infeksi masih ada	Tidak	Henti (Jus AB awal - AB)	De-escalasi antibiotik sesuai kultur / step-down antibiotik ke stratifikasi risiko yang lebih rendah / pindah IV
2.	Klinis progresif Sepsis / Syok Sepsis / Febril Netropenia / HAI	Ya		
3.	Komplikasi perfusi organ	Ya		
4.	Komplikasi encefalopati et causa infeksi bakterial	Ya		
5.	Gejala infeksi peritonium pada 3-7 hari pemberian	Ya		

RASPRO Formulir Antibiotik Berkepanjangan

Keterangan:

1. Digunakan pada pasien yang diberikan antibiotik di luar prosedur antibiotik dalam jangka waktu yang lebih dari yang ditetapkan se sesuai dengan dokter / klinis progresif atau
2. Untuk kategori risiko
3. Untuk kategori risiko
4. Untuk kategori risiko: resisten antibiotik, tindakan untuk identifikasi prosedur antibiotik

I. Identifikasi Pasien

Nama Pasien: _____
 Nama: _____
 Jenis Kelamin: _____
 No. RM: _____

II. Indikasi Penggunaan Antibiotik

A. Ada, sebutkan: _____
 B. Tidak ada

III. Dite Terdaftar Indikasi Penggunaan Antibiotik

Fokus Infeksi: _____
 Gejala Infeksi: _____

IV. Komorbiditas

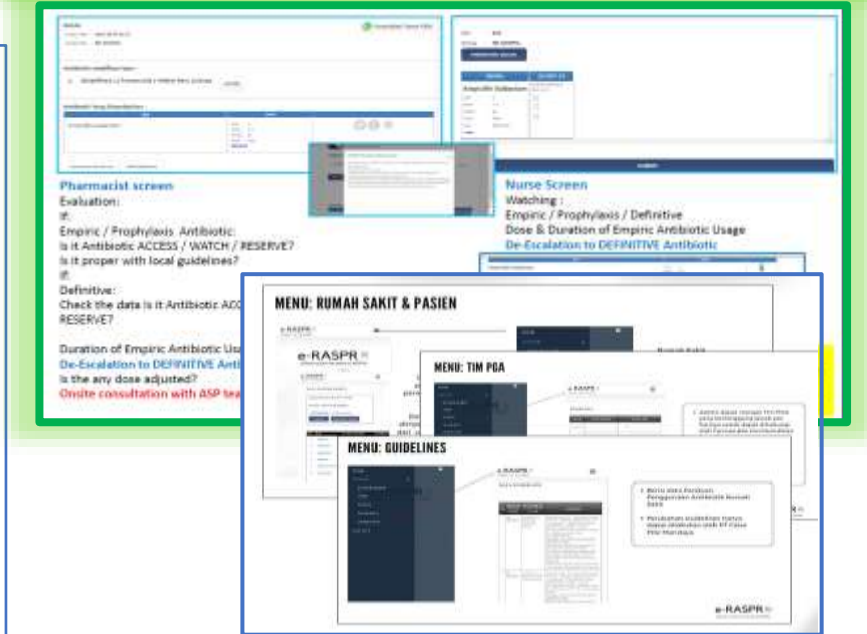
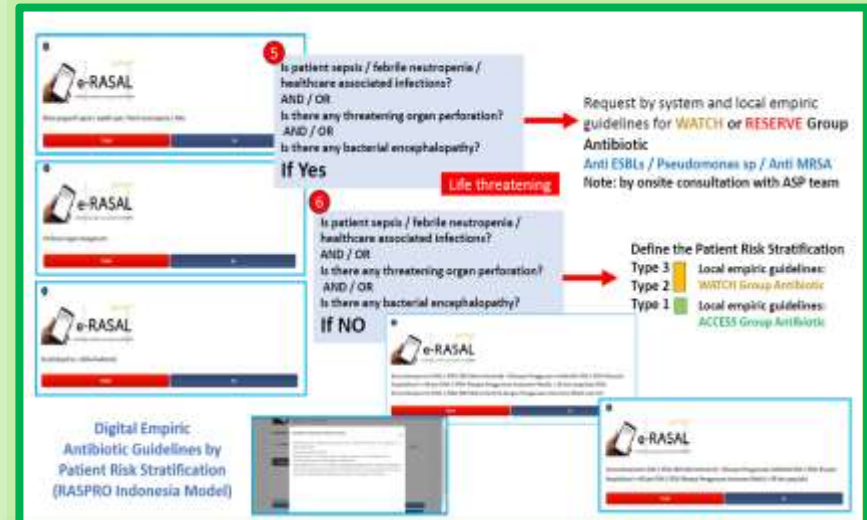
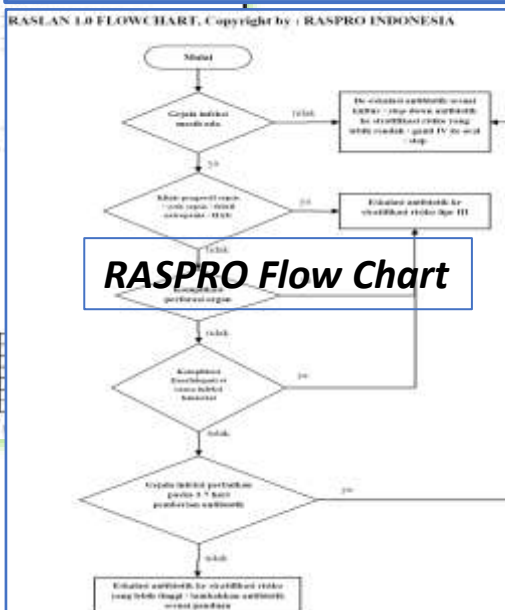
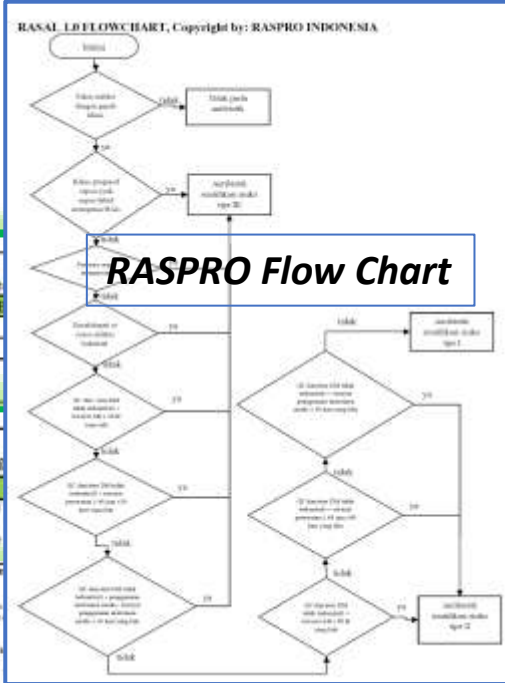
A. Ada
 B. Tidak ada
 Jika ada, pilihlah lebih dari satu:

- a. Diabetes mellitus
- b. Imobilisasi
- c. Batas napas
- d. Kegagalan
- e. Febril Netropenia
- f. Penggunaan instrumentasi
- g. HIV / AIDS
- h. Asidosis
- i. Lainnya, sebutkan: _____

V. Antibiotik yang Digunakan

Antibiotik	Dosis	Frekuensi
1.		
2.		
3.		
4.		

Akhir penggunaan antibiotik di luar prosedur: _____



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**

PASIENT BARU

EMPIRIK/DEFINITIF **PROFILAKSIS**

DASHBOARD DOKTER

Date: 03/10/2023 13/10/2023

Nama / RM:

SHOW **EXCEL**

NO	PASIENT	HISTORY
----	---------	---------

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

DATA PASIEN RAWAT INAP

RM

Nama Pasien

Nama Ruangan

Nomor Kamar



• RASAL



• DEFINITIF

The image shows the e-RASAL logo, which includes a hand holding a smartphone displaying a form, and the text "e-RASAL" with the tagline "an online contact web system by RASAL" below it.

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

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

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

e-RASAL
Antibiotic prudent use system by RASPRO

Klinis progresif sepsis / septik syok / febril neutropenia / HAls

TIDAK **YA**

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

e-RASAL
Antibiotic prudent use system by RASPRO

Perforasi organ mengancam

TIDAK **YA**

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 Local empiric guidelines:
Type 2 **WATCH** Group Antibiotic
Type 1 Local empiric guidelines:
ACCESS Group Antibiotic

e-RASAL
Antibiotic prudent use system by RASPRO

Ensefalopati ec. infeksi bakterial

TIDAK **YA**

e-RASAL
Antibiotic prudent use system by RASPRO

(Imunokompromis DAN / ATAU DM tidak terkontrol) + (Riwayat Penggunaan Antibiotik DAN / ATAU Riwayat Hospitalisasi >=48 jam DAN / ATAU Riwayat Penggunaan Instrumen Medis) < 30 hari yang lalu) ATAU
(Imunokompromis DAN / ATAU DM tidak terkontrol dengan Penggunaan Instrumen Medis saat ini)

TIDAK **YA**

e-RASAL
Antibiotic prudent use system by RASPRO

(Imunokompromis DAN / ATAU DM tidak terkontrol) + (Riwayat Penggunaan Antibiotik DAN / ATAU Riwayat Hospitalisasi >=48 jam DAN / ATAU Riwayat Penggunaan Instrumen Medis) < 90 hari yang lalu)

TIDAK **YA**



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



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

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

Spesimen *

TENTUKAN FOKUS INFEKSI

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

PILIH JENIS INFEKSI

Search...

Pneumonia / Infeksi Paru Lainnya

Bakterial Tonsillitis / Abses Peritonsil

Intra Bilier dan Intra Hepatik (termasuk Abses Hati)

Extra Bilier

Typhoid Fever

Disentri Bakterial

RASAL
 Create Date : 2023-10-13 21:37
 Created By : DR. RONALD

Konsultasi Team PGA

Antibiotik stratifikasi tipe I

1. (Stratifikasi 1) Pneumonia / Infeksi Paru Lainnya GUIDE

Antibiotik Yang Ditambahkan :

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

Obat Dalam Konfirmasi Obat Dibatalkan

RM : 237
 Nama : TN.MIKPO

PERAWATAN SELESAI

DETAIL	13 OKT 23
Ampicillin Sulbactam	Ampicillin sulbactam 2023-10-13
Frek : 3	☐
Dosis : 1.5	☐
Setuan : gr	☐
Track : Drip	
Tipe : REGULAR	
1 Hari	

SUBMIT



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

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

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

Patient with
bacterial
Infection /
preoperative

Empiric

De-escalation

Definitive

Prophylaxis

Empiric
Step Up
Step Down

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



ACCESS

WATCH

RESERVE

ACCESS

WATCH

RESERVE

ACCESS

If there is a
special case,
outside regulation

FREE by Indication

Supervision – Restricted
by Indication
PGA team agreement

FREE by Indication

Supervision – Restricted
by Indication
PGA team agreement

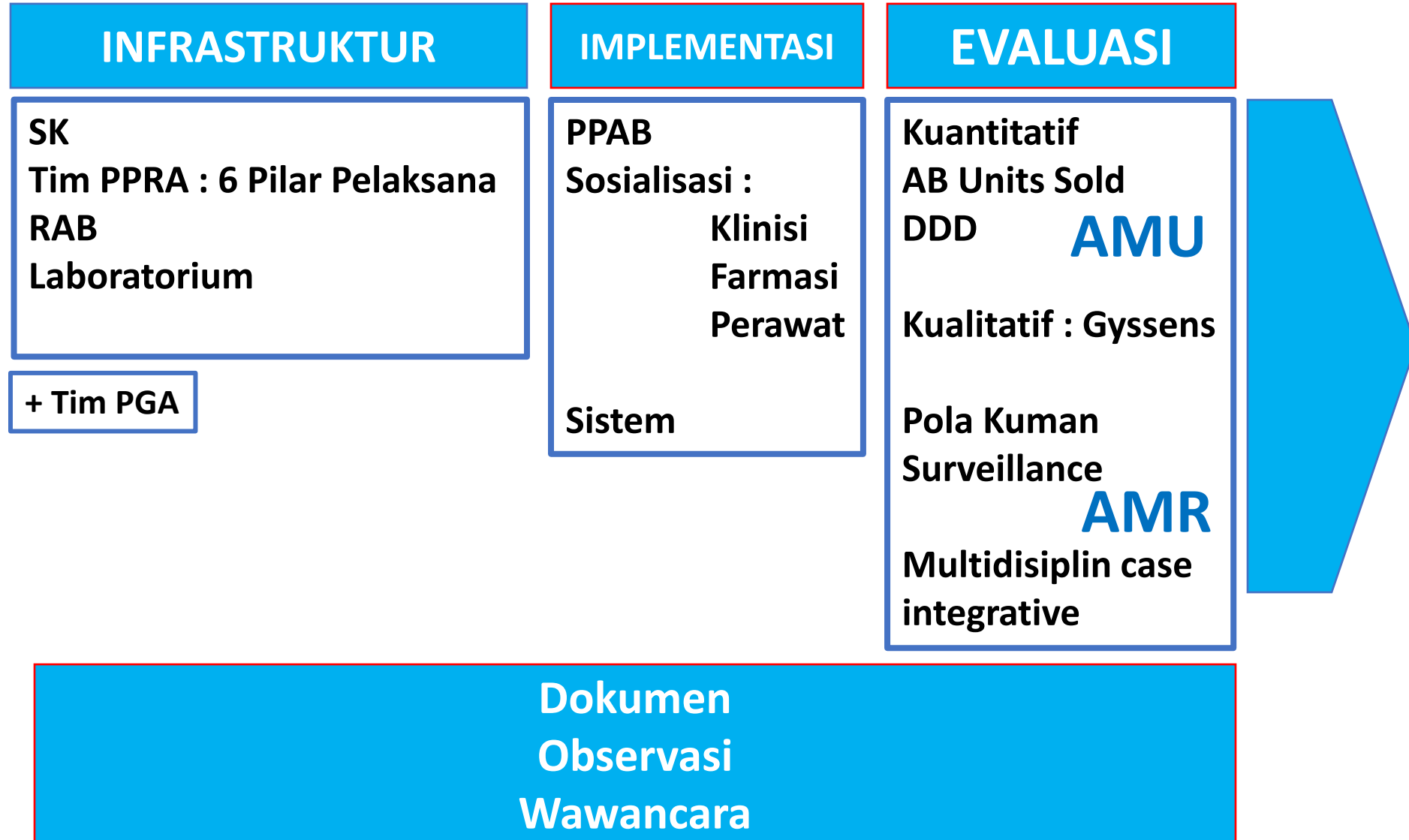
Supervision
PGA team agreement

Automatic STOP
Order if not
reasonable

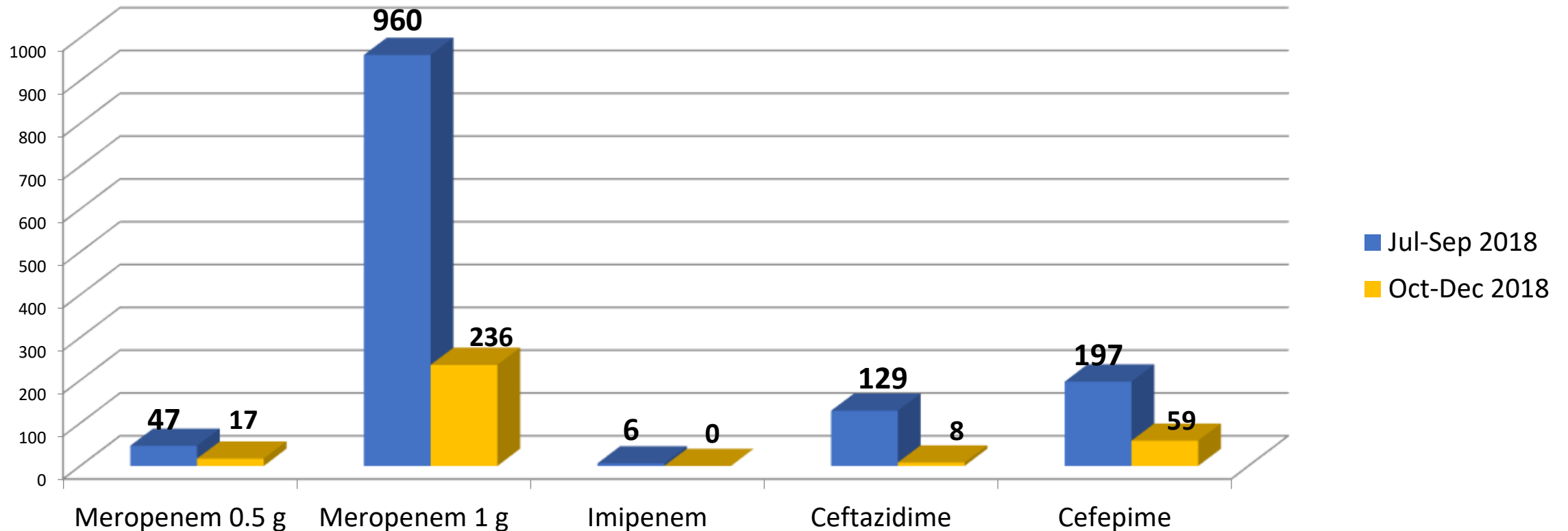


Integrated
Assessment
(FORKIT)

PPRA



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)

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 Henry¹, Hadiani Adlani¹, Aziza Ariyani¹ and Rika Bur¹

¹RASPRO Indonesia Study Group, Jakarta, Indonesia; ²Infectious 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.

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

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¹Internal Medicine, Faculty of Medicine, Universitas Trisakti, ²Pelita RASPRO Indonesia Foundation, Jakarta Barat, Indonesia

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 Natadidjaja³

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

Antimicrobial Stewardship & Healthcare Epidemiology



Antimicrob Steward Healthc Epidemiol. 2025 Sep 3;5(Suppl 1):s11. doi: [10.1017/ash.2025.107](https://doi.org/10.1017/ash.2025.107)

Trend changing to the access category antibiotic usage after digital antimicrobial stewardship tool E-RASPRO 9 months implementation in an Indonesian hospital

[Hadiani Adlani](#)^{1,2}, [Aziza Ariyani](#)², [Ronald Irwanto Natadidjaja](#)^{1,2,3}, [Anti Dharmayanti](#)^{1,2}

► Author information ► Article notes ► Copyright and License information

PMCID: PMC12442166

Abstract

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



ELSEVIER

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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^{a,b,*}, Aziza Ariyani^a, Hadiani Adlani^{a,c}, Raymond Adianto^a, Iin Indah Pertiwi^a, Grace Nerry Legoh^a, Alvin Lekonardo Rantung^a, Hadi Sumarsono^a

^a RASPRO Indonesia Study Group, Indonesia

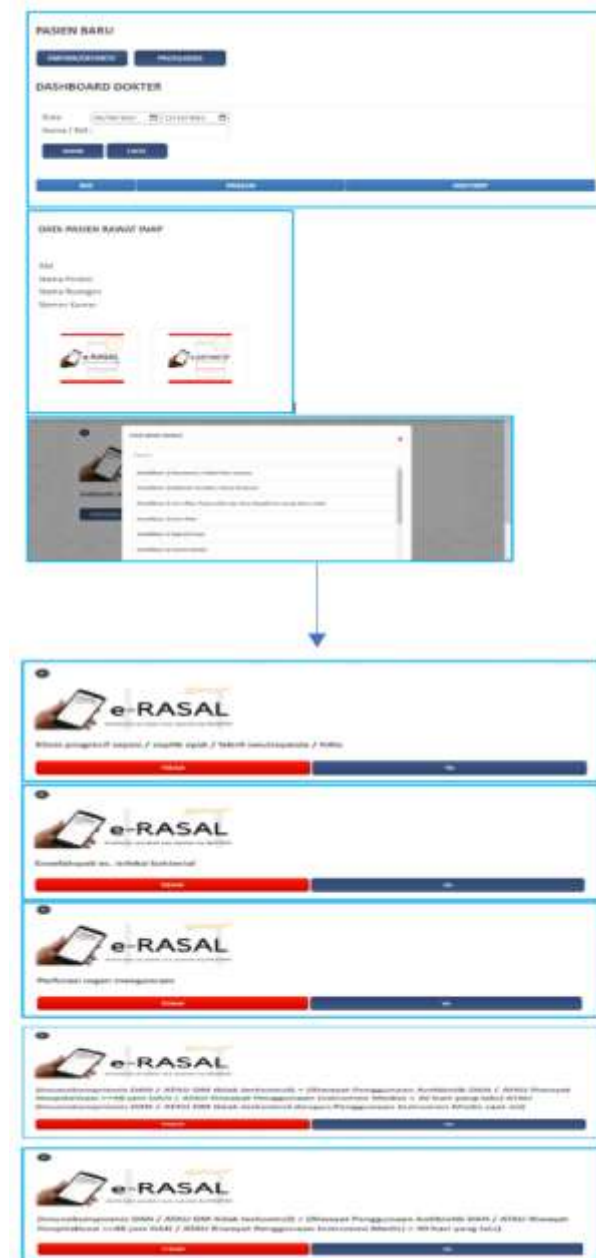
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^c Faculty of Medicine, Syarif Hidayatullah State Islamic University, Banten, Indonesia

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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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 ^{a,b,*}, Aziza Ariyani ^a, Hadiani Adlani ^{a,c}, Raymond Adianto ^a, Iin Indah Pertiwi ^a, Grace Nerry Legoh ^a, Alvin Lekonardo Rantung ^a, Hadi Sumarsono ^a

^a RASPRO Indonesia Study Group, Indonesia

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Table 2

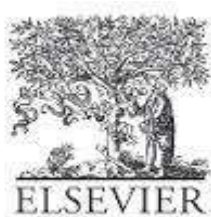
DDD of Watch Category Antibiotics in Hospital 1 and 2 at 9 Months and 3 Months Following the Implementation of e-RASPRO Tool.

	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^a	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 ^a	–	–	–	–	–	–
TOTAL Access^a	45.67	44.01	−3.64 %	10.20	11.03	8.14 %



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, Hadiani 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)

In Progress Publication

One Year Survey on Antibiotic Prescription from 10 Hospitals in Indonesia Using the Digital Antimicrobial Stewardship (e-RASPRO)

Appropriateness with RASAL Risk Stratification Type 1

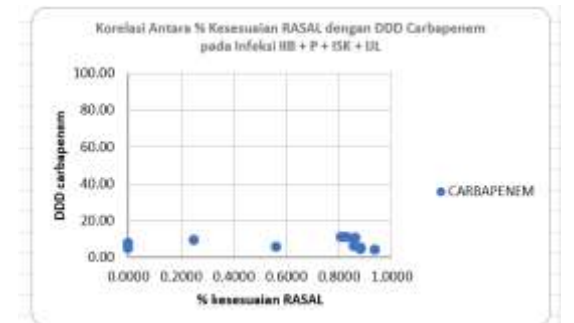
Significantly Increase Access - Penicillin DDD $r = 0.784$; $p = 0.003$



Significantly Decline Watch – Cephalosporin Gen. 3 DDD $r = -0.743$; $p = 0.006$

Appropriateness with RASAL Risk Stratification Type 3

Not Significant with – Increasing Carbapenem DDD $r = -0.212$; $p = 0.557$



TRISAKTI RASPRO Indonesia Antimicrobial Stewardship (TRIASE) Learning Centre



***Rapat Perdana dengan MEU FK. Universitas Trisakti 8 April 2026
Konsep RASPRO sebagai produk akademik dalam Penatagunaan
Antimikroba (PGA) akan masuk ke dalam kurikulum
Fakultas Kedokteran Universitas Trisakti sebagai modul elektif***



@rasproindonesia

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www.new.rasproindonesia.com

Youtube: **RASPRO Medik & Antibiotik**

THANK YOU!