**Narasumber:**



**dr. Ronald Irwanto N., Sp.PD-KPTI, FINASIM**
Spesialis Penyakit Dalam (Internist)
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**Internist – Infectious Disease (ID) Specialist**
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*dr. Ronald Irwanto – Internist Consultant*
*IG: @rasproindonesia*

## 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),  2016 - 2022
- **Tim Ahli** Pokja Pencegahan dan Pengendalian Infeksi (PPI), Kemenkes RI, sejak 2017
- **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

**Faculty of Medicine**
**Universitas Trisakti**

# BACKGROUND

UNIVERSITAS TRISAKTI

RASPRO indonesia

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

### Shifting WATCH to ≥ 60% ACCESS

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*INDONESIA*

**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

Komisi Akreditasi Rumah Sakit

**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

Email korespondensi: ronald.irwanto@yahoo.com
Dikirimkan 28 April 2019, Diterima 11 Juli 2019

**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.

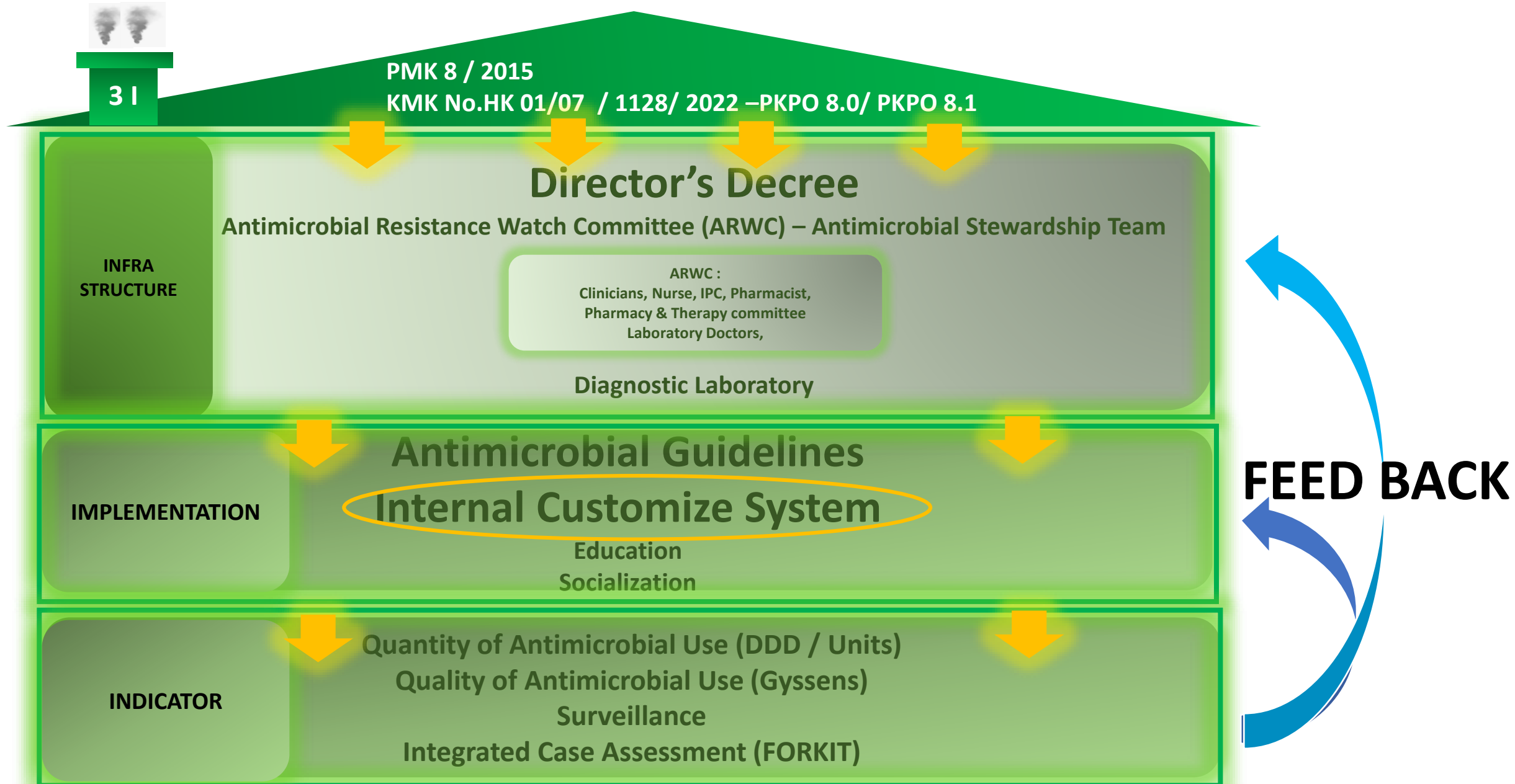|  | Jumlah (n) | Persentase (%) |
|---|---|---|
| **Persepsi Responden Terhadap Kemampuan Dokter sebagai Anggota PPRA di Rumah Sakit** | | |
| **Mampu** | 36 | 23.0% |
| Sebagian Mampu | 102 | 65.38% |
| Tidak Mampu | 12 | 7.69% |
| Tidak Tahu | 6 | 3.85% |
| **TOTAL** | **156** | **100.00%** |
| **Persepsi 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%** |

# Digital System

**e-RASPRO Model**

**Developing antimicrobial stewardship system & ecosystem**

*Dr. Ronald Irwanto Natadidjaja, SpPD, Subsp.PTI(K), FINASIM*
*Internist – Infectious Disease (ID) Specialist*
*INDONESIA*

**RASPRO Indonesia Study group to Create the RASPRO Concept**

**3 I**

PMK 8 / 2015
KMK No.HK 01/07 / 1128/ 2022 –PKPO 8.0/ PKPO 8.1

**INFRA STRUCTURE**

# Director's Decree

**Antimicrobial Resistance Watch Committee (ARWC) – Antimicrobial Stewardship Team**

ARWC :
Clinicians, Nurse, IPC, Pharmacist,
Pharmacy & Therapy committee
Laboratory Doctors,

**Diagnostic Laboratory**

**IMPLEMENTATION**

# Antimicrobial Guidelines
# Internal Customize System

Education
Socialization

**INDICATOR**

**Quantity of Antimicrobial Use (DDD / Units)**
**Quality of Antimicrobial Use (Gyssens)**
**Surveillance**
**Integrated Case Assessment (FORKIT)**

# FEED BACK

# 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**

**PASIEN BARU**

EMPIRIK/DEFINITIF    PROFILAKSIS

**DASHBOARD DOKTER**

Date       : 01/10/2023    13/10/2023
Nama / RM :

SHOW    EXCEL

| NO | PASIEN | HISTORY |
|----|--------|---------|

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

**DATA PASIEN RAWAT INAP**

RM
Nama Pasien
Nama Ruangan
Nomor Kamar

e-RASAL    e-DEFINITIF

**e-RASAL**
Antibiotic prudent use system by RASPRO

Fokus infeksi dengan gejala

TIDAK    YA

**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)

**PILIH JENIS INFEKSI**                    ×

Search...

(Stratifikasi 1) Pneumonia / Infeksi Paru Lainnya

(Stratifikasi 1) Bakterial Tonsilitis / Abses Peritonsil

(Stratifikasi 1) Intra Bilier, Pankreatitis dan Intra Hepatik (termasuk Abses Hati)

(Stratifikasi 1) Extra Bilier

(Stratifikasi 1) Typhoid Fever

(Stratifikasi 1) Disentri Basiler

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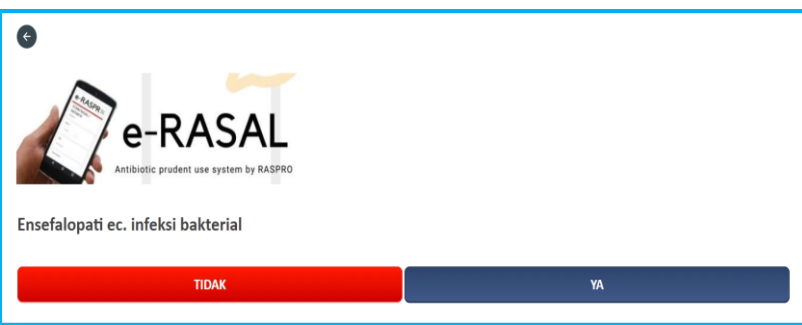1,2,3 and more focus of infection can be
covered by the system

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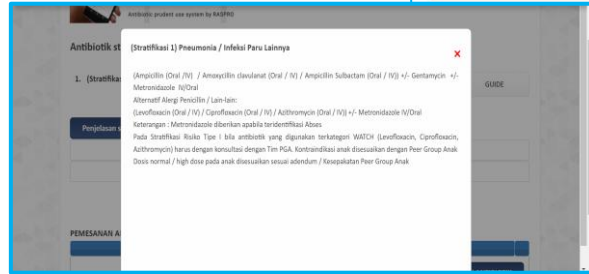
**If Yes**

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)**

| Obat | Detail | |
|---|---|---|
| Ampicillin Sulbactam | Frek : 3<br>Dosis : 1.5<br>Satuan : gr<br>Track : Drip<br>**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**

# e-DEFINITIF

Antibiotic prudent use system by RASPRO

## 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 Tonsilitis / Abses Peritonsil

Intra Bilier dan Intra Hepatik (termasuk Abses Hati)

Extra Bilier

Typhoid Fever

Disentri Basiler

Spesimen *

TENTUKAN

**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

**Making the System**

# Process View :
## How to Develop the Digital Antimicrobial Stewardship

*Dr. Ronald Irwanto Natadidjaja, SpPD, Subsp.PTI(K), FINASIM*
*Internist – Infectious Disease (ID) Specialist*
*INDONESIA*
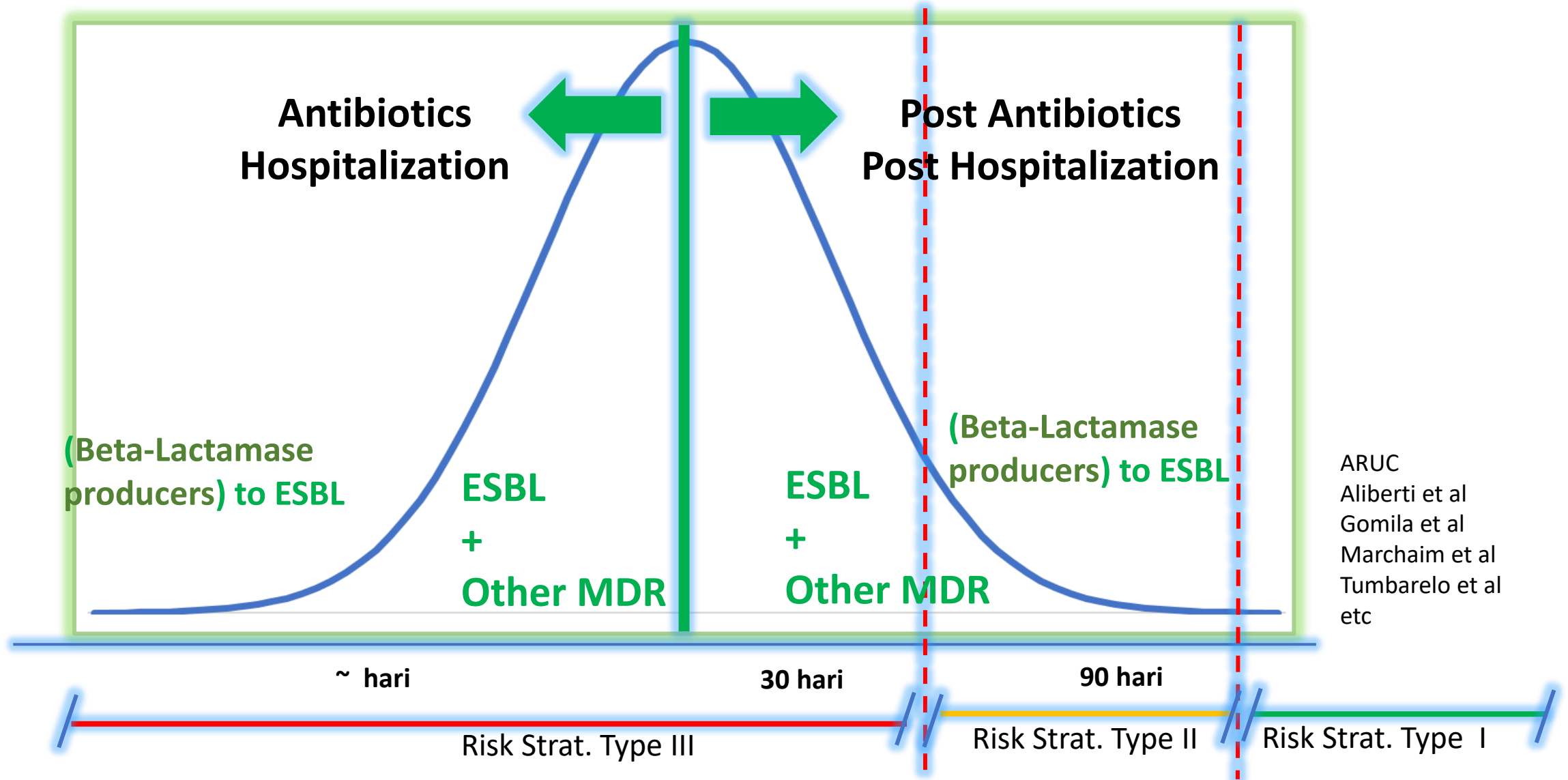
| Risk Stratification Type 3 | Risk Stratification Type 2 | Risk Stratification Type 1 |
|---|---|---|
| **Severe /HAIs / Febrile Neutropenia / Threatening Organ Perforation AND / OR Immunocompromized AND / OR Uncontrolled DM :** + **History of antibiotic use in the last 30 days** **AND / OR** **History of ≥ 48 hours hospitalization in the last 30 days** **AND / OR** **History medical devices use in the last 30 days** | **Non Severe / Non Life Threatening – Non HAIs Immunocompromized AND / OR Uncontrolled DM :** **History of antibiotic use in the last 90 days** **AND / OR** **History of ≥ 48 hours hospitalization in the last 90 days** **AND / OR** **History medical devices use in the last 90 days** | **Non Risk Stratification Type 3 and / or 2**  |
| **Empiric Antibiotic for Severe Case or Suspected ESBLs or Other MDRO** | **Empiric Antibiotic for Suspected (Beta Lactamase Producers) to ESBLs** | **Empiric Antibiotic for Multi-Sensitive Organism** |

| RESERVE | RESERVE | WATCH | WATCH | WATCH | WATCH | WATCH | ACCESS | ACCESS | ACCESS | ACCESS | ACCESS |
|---|---|---|---|---|---|---|---|---|---|---|---|

# Risk Stratification Type 3 | Risk Stratification Type 2 | Risk Stratification Type 1

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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

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

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

## Journal citations

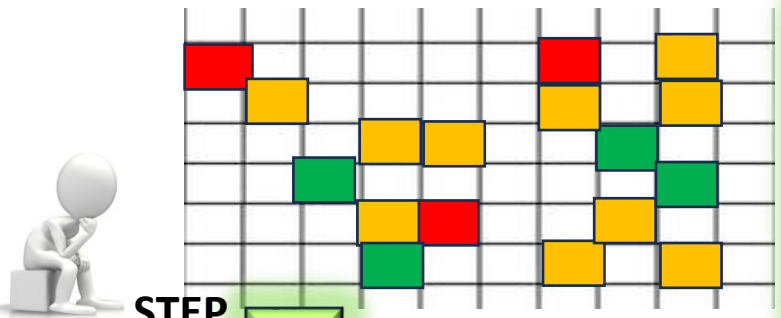| Empiric Antibiotic for Severe Case or Suspected ESBLs or Other MDRO | Empiric Antibiotic for Suspected (Beta Lactamase Producers) to ESBLs | Empiric Antibiotic for Multi-Sensitive Organism |

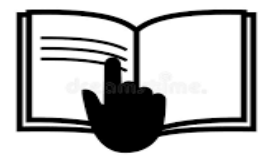RESERVE  RESERVE  WATCH  WATCH  WATCH  WATCH  WATCH  ACCESS  ACCESS  ACCESS  ACCESS  ACCESS
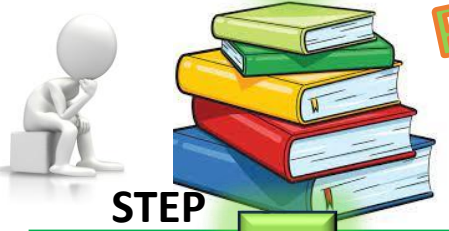
**Antibiograms**

RASPRO 3 TCP

| | | |
|---|---|---|
| Timing | CLSI / | Proper setting |
| Technic | Complete MIC/ | Proper size |
| Transport | Complete Disc | Proper Percentage |

**STEP 1**

Pro & Cons

**Journal synthesis**

In vitro sensitivity
Pharmacokinetic-
Pharmacodynamic
National Regulation

**STEP 2**

Antibiogram as a consideration for making antibiotic guidelines is different from surveillance
Sample should be homogenous in COLLECTING TIME, HOST STATUS, MEDICAL HISTORY.
In RASPRO model we should think about microbiologic pattern form each risk stratification for translating into the empiric antibiotic guidelines
PLUS

**Do Journal Synthesis**

**HOMOGENIZATION**
Specimen Collecting Timing
Setting
Host Status

**DISCUSSION**
Internal Expert Peer Review
Antimicrobial Resistance Watch
Hospital Management

**Hospital Antibiotics Stock Data**

Alternative treatment
Sparing regiments
Prize
BPJS claim

**STEP 3**

**Check the availability of antibiotics in hospitals and national stock**

**AGREEMENT**
Agreement from hospital management

**RASPRO**
Empirical Antibiotic Guidelines
AWARE

RASPRO Risk Stratification : AWARE
a Model divide patients into 3 groups

Risk Stratification Type 3 :
Severe and/ or immunocompromised with Risk of ESBL + Other MDRO
Risk Stratification Type 2:
Mild - immunocompromised with Risk of (Beta lactamase Producers) to ESBLs
Risk Stratification Type 1 :
Non Risk Stratification Type 3 and / or 2

RASPRO Indonesia

**SOCIALIZATION**
Guidelines and Flowchart
Training of Trainers
Clinicians
Pharmacist
Nurse

# RESULTS

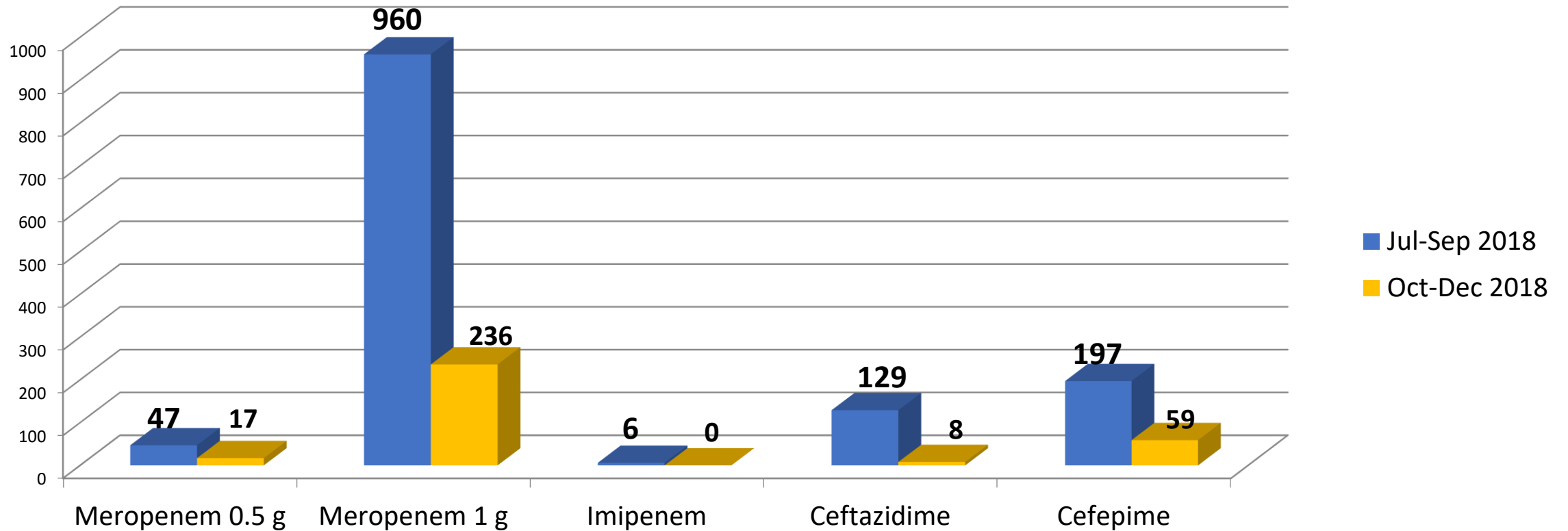## Before – After Implementation :
### Based on Quality indicator by MoH – Republic of Indonesia

*Dr. Ronald Irwanto Natadidjaja, SpPD, Subsp.PTI(K), FINASIM*
*Internist – Infectious Disease (ID) Specialist*
*INDONESIA*

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



Chart legend: Jul-Sep 2018 (blue), Oct-Dec 2018 (yellow)

| | Jul-Sep 2018 | Oct-Dec 2018 |
|---|---|---|
| Meropenem 0.5 g | 47 | 17 |
| Meropenem 1 g | 960 | 236 |
| Imipenem | 6 | 0 |
| Ceftazidime | 129 | 8 |
| Cefepime | 197 | 59 |

**(MANUAL Model)**

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

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
and Infection Control

**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]
[1]Internal Medicine, Faculty of Medicine, Universitas Trisakti, [2]Pelita 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 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
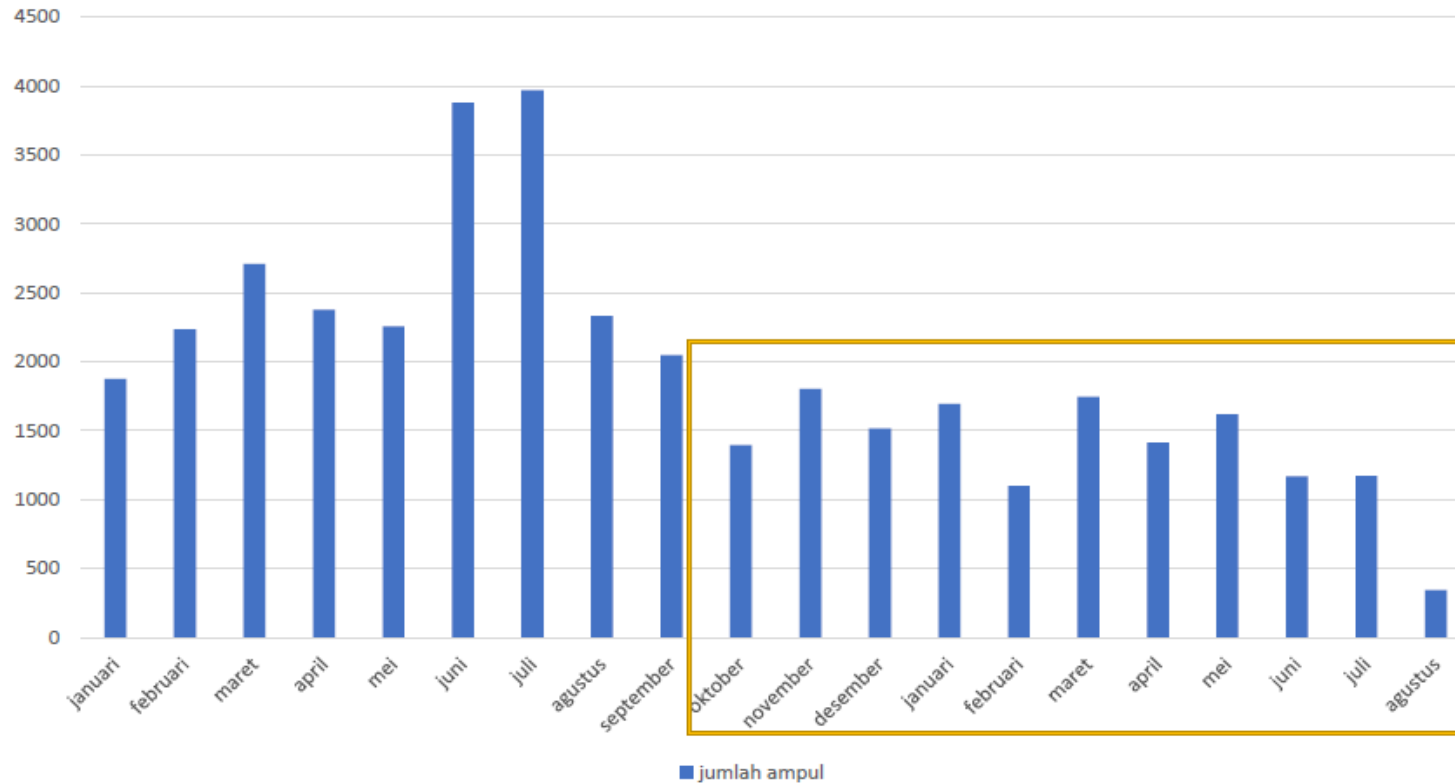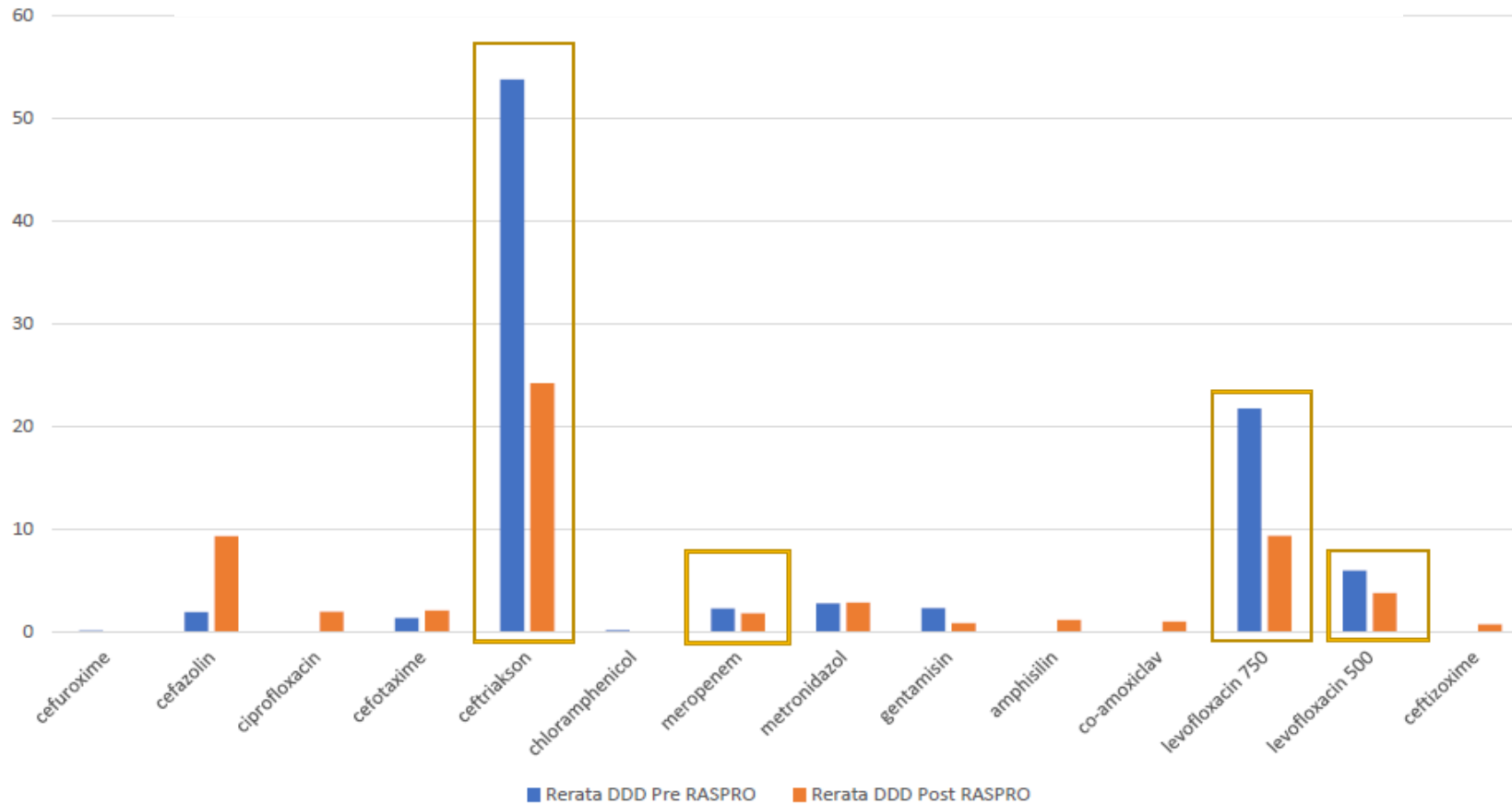
43% decline of Inpatient Antibiotic Usage

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

Hadianti Adlani[1,2], Aziza Ariyani[2], Ronald Irwanto Natadidjaja[1,2,3], Anti Dharmayanti[1,2]

[1] Indonesian Society of Infection Control (INASIC) Branch Banten
[2] RASPRO Indonesia *Study Group*
[3] Faculty of Medicine Universitas Trisakti

**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)**

# 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)**

# RASPRO Manual Concept for Running Antimicrobial Stewardship
## In House Training
## INDONESIA

RSIA Kemang
RSUD Kebayoran Baru
RS Tugu Ibu
RS Marzoeki Mahdi Bogor
RS Bunda Thamrin Medan
RS UNHAS Makassar
RS Hermina Group (40 Hospitals) – 6 Batch
RS Mayapada Group (8 Hospitals) – 1 Batch
RS Primaya Group (6 Hospitals) – 1 Batch
RS Pertamina Group (6 Hospitals) – 1 Batch
RS Otak Bukttinggi
RS Advent Bandung
RS. Bunda Group (8 Hospitals) – 1 Batch
RS Mardi Rahayu

RS. Awal Bros Group ( 8 Hospitals)
RS Ummi Bogor
RSUD Wangaya Bali
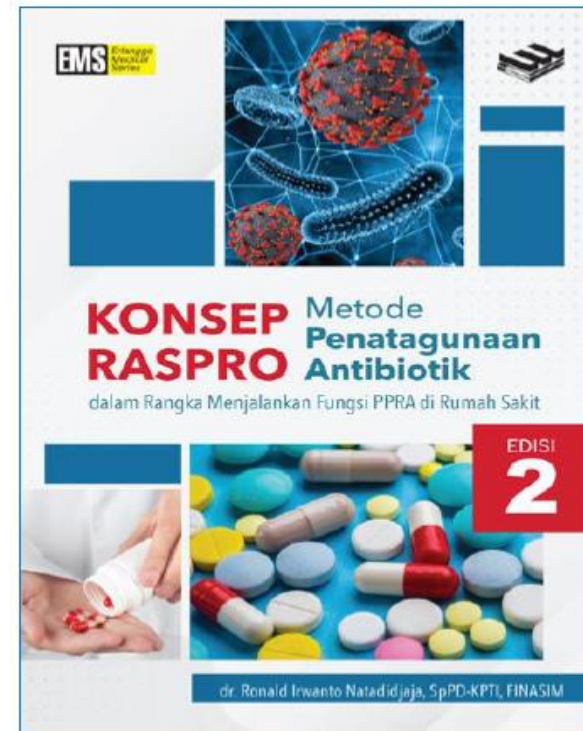
# e-RASPRO Digital Antimicrobial Stewardship Implementation
# INDONESIA

## 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. Marzoeki Mahdi**

**RS Mardi Rahayu**

**RSUD Cempaka Putih**
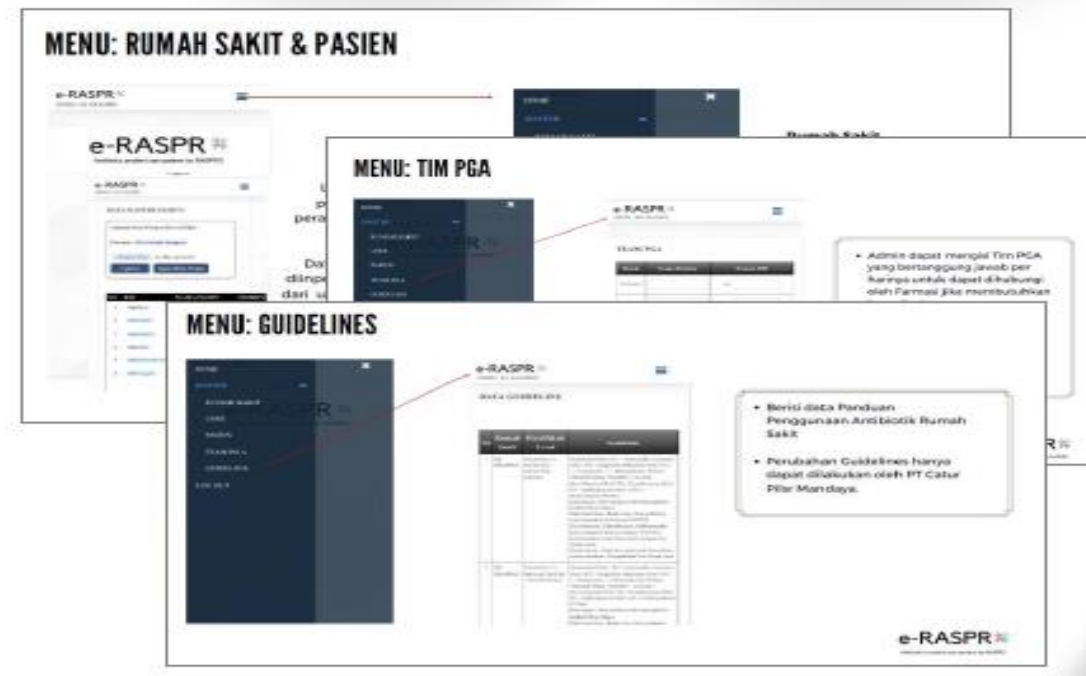
# In progress Publication

## Original Article

## A Quantitative Survey on Antibiotic Prescribing Pattern in Three Indonesian Hospitals using Digital Antimicrobial Stewardship Tool (e-RASPRO)

Ronald Irwanto Natadidjaja[1,2], Aziza Ariyani[1], Hadianti Adlani[1,3,4], Raymond Adianto[1], Iin Indra Pertiwi[5], Grace Nerry Legoh[6], Alvin Rantung[6], Dianawati[5], Sri Mulyani[4], Ronaningtyas Maharani[4], Desi Anggiat[4], Triyoko Septio Marja[4], Hadi Sumarsono[1]

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(Digital Model)

# TERIMA KASIH