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

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

Instagram @rasproindonesia

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Pelaporan PPRA

Ronald Irwanto Natadidjaja

RASPRO Indonesia Study Group for Antimicrobial Stewardship & Resistance

Trisakti – RASPRO Indonesia Antimicrobial Stewardship (TRIASE) Learning Centre

Department of Internal Medicine

Universitas TRISAKTI

PENILAIAN
KPRA dan PGA

Desain Mikro

Regulasi MAKRO

Disposisi

Regulasi MIKRO

Integrasi

Support

SISTEM

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 Antimkroba
Alur Pre-otorisasi & Audit Prospektif
dll

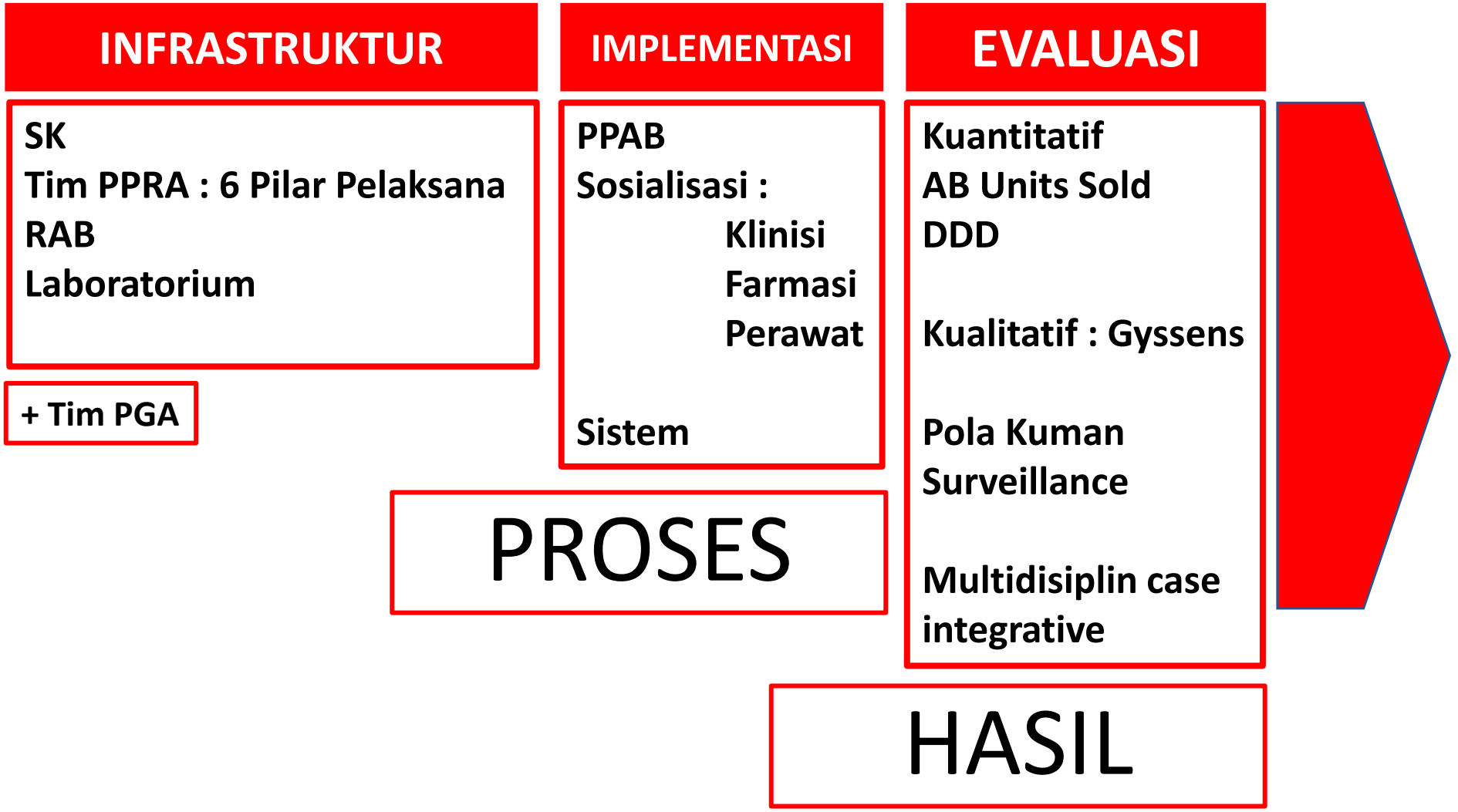
EKSKLUSIF - OPERASIONAL

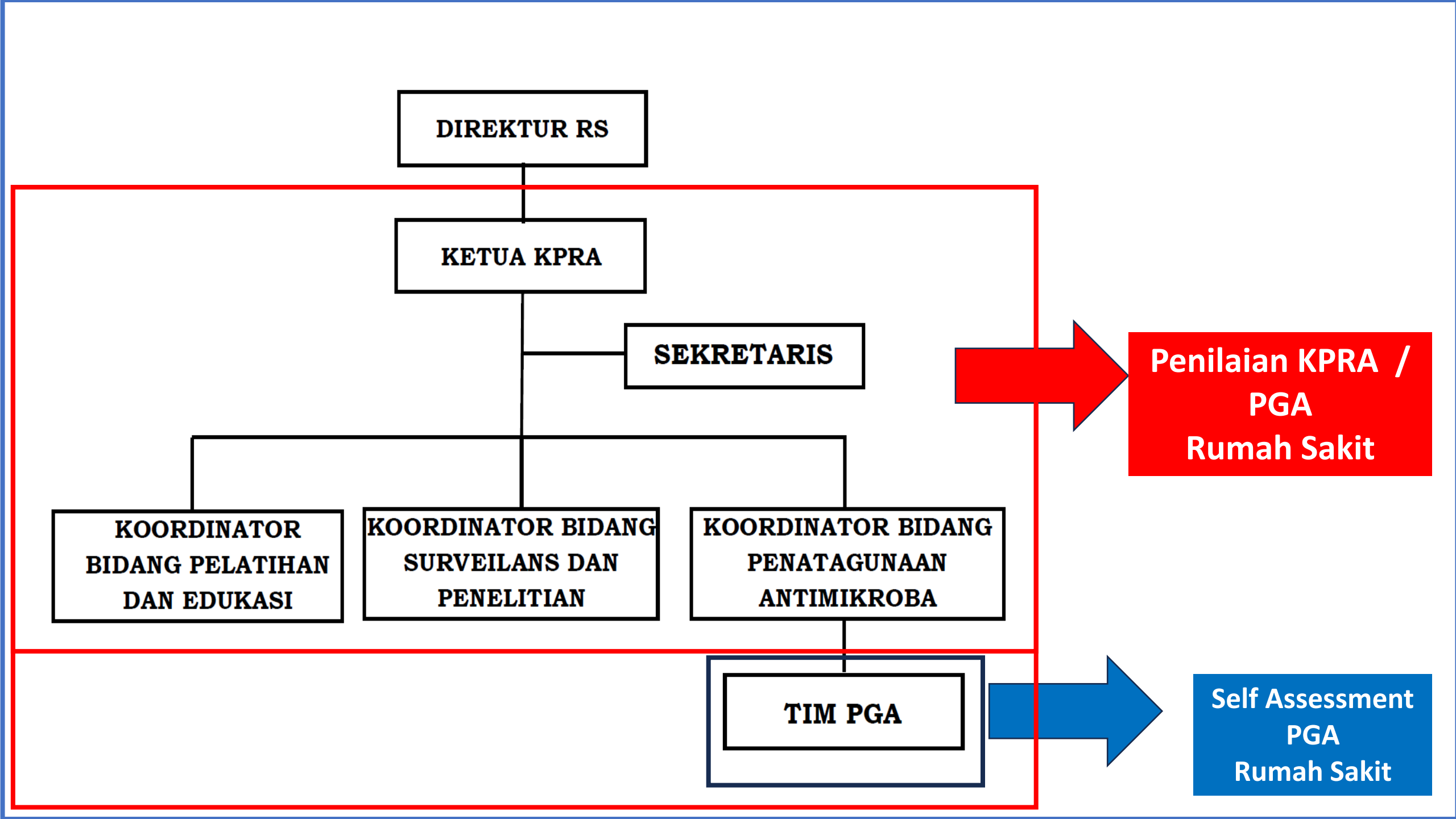
Integrated Guiding - Monitoring – Evaluating – Reporting – Action Plan

KOMITMEN - KONTINUITAS

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

Penilaian


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


DIREKTUR RS
KETUA KPRA
SEKRETARIS
KOORDINATOR BIDANG PELATIHAN DAN EDUKASI
KOORDINATOR BIDANG SURVEILANS DAN PENELITIAN
KOORDINATOR BIDANG PENATAGUNAAN ANTIMIKROBA
TIM PGA
Penilaian KPRA / PGA Rumah Sakit
Self Assessment PGA Rumah Sakit

Penilaian KPRA
Rumah Sakit

PERATURAN MENTERI KESEHATAN REPUBLIK INDONESIA
NOMOR 8 TAHUN 2015

TENTANG

PROGRAM PENGENDALIAN RESISTENSI ANTIMIKROBA
DI RUMAH SAKIT

Pasal 11

Indikator mutu Program Pengendalian Resistensi Antimikroba di Rumah Sakit meliputi:

a. perbaikan kuantitas penggunaan antibiotik;
b. perbaikan kualitas penggunaan antibiotik;

AMU

c. perbaikan pola kepekaan antibiotik dan penurunan pola resistensi antimikroba;

AMR

d. penurunan angka kejadian infeksi di rumah sakit yang disebabkan oleh mikroba multiresisten; dan
e. peningkatan mutu penanganan kasus infeksi secara multidisiplin, melalui forum kajian kasus infeksi terintegrasi.

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

Rumah sakit menyusun program kerja PPRA meliputi:

a) Peningkatan pemahaman dan kesadaran penggunaan antimikroba bijak bagi seluruh tenaga kesehatan dan staf di rumah sakit, serta pasien dan keluarga, melalui pelatihan dan edukasi.
b) Optimalisasi penggunaan antimikroba secara bijak melalui penerapan penatagunaan antimikroba (PGA).
c) Surveilans penggunaan antimikroba secara kuantitatif dan kualitatif.

AMU

d) Surveilans resistansi antimikroba dengan indikator mikroba *multi drugs resistance organism* (MDRO).

AMR

e) Peningkatan mutu penanganan tata laksana infeksi, melalui pelaksanaan forum kajian kasus infeksi terintegrasi (FORKKIT).

ELEMEN PENILAIAN
&
INSTRUMEN STARKES 2022
TENTANG PPRA PADA PKPO 8 & 8.1

Elemen Penilaian PKPO 8	Instrumen Penilaian KARS		Skor	
a) Rumah sakit menetapkan kebijakan pengendalian resistansi antimikroba sesuai dengan ketentuan peraturan perundangundangan.	R	Regulasi tentang pengendalian resistansi antimikroba	10 - 0	TL - TT
b) Rumah sakit menetapkan komite/tim PPRA dengan melibatkan unsur terkait sesuai regulasi yang akan mengelola dan menyusun program kerja program pengendalian resistansi antimikroba dan bertanggungjawab langsung kepada Direktur rumah sakit	R	1) Penetapan komite/tim PPRA 2) Program kerja pengendalian resistansi antimikroba	10 - 0	TL - TT

Slide Dr. Djoni Darmadjaja, KARS

ELEMEN PENILAIAN & INSTRUMEN STARKES 2022 TENTANG PPRA PADA PKPO 8 & 8.1

Elemen Penilaian PKPO 8		Instrumen Penilaian KARS	Skor	
c) Rumah sakit melaksanakan program kerja sesuai maksud dan tujuan.	D W	Bukti laporan pelaksanaan program kerja pengendalian resistansi antimikroba • Direktur • Kepala unit pelayanan • Komite/Tim PRA	10 5 0	TL TS TT
d) Rumah sakit melaksanakan pemantauan dan evaluasi kegiatan PPRA sesuai maksud dan tujuan.	D W	Bukti pelaksanaan pemantauan dan evaluasi kegiatan PPRA • Direktur RS • Komite/Tim PRA • Komite/Tim Mutu	10 5 0	TL TS TT
e) Memiliki pelaporan kepada pimpinan rumah sakit secara berkala dan kepada Kementerian Kesehatan sesuai peraturan perundangundangan.	D W	Bukti laporan kegiatan komite/tim PRA secara berkala kepada Direktur RS dan kepada Kementerian Kesehatan • Direktur RS • Komite/Tim PRA	10 5 0	TL TS TT

Slide Dr. Djoni Darmadjaja, KARS

ELEMEN PENILAIAN
&
INSTRUMEN STARKES 2022
TENTANG PPRA PADA PKPO 8 & 8.1

Elemen Penilaian PKPO 8.1		Instrumen Penilaian KARS	Skor	
a) Rumah sakit melaksanakan dan mengembangkan penatagunaan antimikroba di unit pelayanan yang melibatkan dokter, apoteker, perawat, dan peserta didik.	D W	Bukti pelaksanaan dan pengembangan penatagunaan antimikroba • Komite/Tim PRA • PPA	10 5 0	TL TS TT
b) Rumah sakit menyusun dan mengembangkan panduan praktik klinis (PPK), panduan penggunaan antimikroba untuk terapi dan profilaksis (PPAB), berdasarkan kajian ilmiah dan kebijakan rumah sakit serta mengacu regulasi yang berlaku secara nasional. Ada mekanisme untuk mengawasi pelaksanaan penatagunaan antimikroba.	R	Regulasi tentang penetapan 1) panduan praktik klinis (PPK) 2) panduan penggunaan antimikroba untuk terapi dan profilaksis (PPAB)	10 - 0	TL - TT
c) Rumah sakit melaksanakan pemantauan dan evaluasi ditujukan untuk mengetahui efektivitas indikator keberhasilan program.	D W	Bukti pelaksanaan pemantauan dan evaluasi untuk mengetahui efektivitas indikator keberhasilan program • Direktur RS • Komite/Tim PRA • Komite/Tim Mutu	10 5 0	TL TS TT

Slide Dr. Djoni Darmadjaja, KARS

Penilaian PGA
Rumah Sakit

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

AMU

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 penggunaar antimikroba
   - persentase penerimaan DPJP terhadap umpan balik dari tim PGA
   - persentase perubahan terapi berdasarkan hasil pemeriksaar laboratorium mikrobiologi
   - persentase perubahan rute pemberian dari IV ke oral
   - saat mengubah rute pemberian dari IV ke oral

IV.3. Pengukuran hasil

AMR

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

LAMPIRAN 7-1

DAFTAR PERTANYAAN UNTUK ANALISIS SITUASI DAN EVALUASI KEGIATAN PGA

Dukungan Pimpinan Rumah Sakit			
C1	Apakah rumah sakit Anda memiliki **pernyataan formal mengenai dukungan** pimpinan rumah sakit terhadap kegiatan PGA untuk meningkatkan penggunaan antimikroba secara bijak? (contoh: surat keputusan pimpinan rumah sakit tentang pengendalian penggunaan antimikroba, tentang diberlakukannya kegiatan penatagunaan antimikroba/PGA, dll)	**Ya** ☐	**Tidak** ☐
C2	Apakah rumah sakit Anda mengalokasikan **dukungan finansial yang dianggarkan** untuk kegiatan PGA (contoh: dukungan untuk dana operasional, pendidikan dan pelatihan PGA, peningkatan pelayanan mikrobiologi klinik, dan penyediaan teknologi informasi)?	**Ya** ☐	**Tidak** ☐
	Tim PGA dan pelatihan penyakit infeksi		
C3	Apakah rumah sakit Anda memiliki **dokter atau pemimpin lain** yang bertanggung jawab terhadap kegiatan PGA?	**Ya** ☐	**Tidak** ☐
S1	Apabila Anda menjawab 'Ya' pada C3, apakah pemimpin tersebut pernah mendapatkan **pelatihan khusus mengenai penyakit infeksi**?	**Ya** ☐	**Tidak** ☐
C4	Apakah rumah sakit Anda memiliki **farmasis** yang terlibat dalam kegiatan PGA?	**Ya** ☐	**Tidak** ☐
S2	Apabila jawaban pertanyaan C4 adalah 'Ya', apakah farmasis tersebut merupakan farmasis klinis atau farmasis **yang telah dilatih secara khusus mengenai penyakit infeksi**?	**Ya** ☐	**Tidak** ☐
	Apakah staf di bawah ini bekerja sama dengan dokter atau farmasis untuk meningkatkan penggunaan antimikroba secara bijak?		
C5	Pencegahan dan pengendalian infeksi	**Ya** ☐	**Tidak** ☐
C6	Dokter penyedia layanan Mikrobiologi Klinik	**Ya** ☐	**Tidak** ☐
S3	Dokter penyedia layanan Farmakologi Klinik	**Ya** ☐	**Tidak** ☐
S4	Perawatan	**Ya** ☐	**Tidak** ☐
S5	Teknologi informasi	**Ya** ☐	**Tidak** ☐

LAMPIRAN 7-2

DAFTAR PERTANYAAN UNTUK ANALISIS SITUASI DAN EVALUASI KEGIATAN PGA

Intervensi Program PGA			
C7	Apakah antimikroba kelompok *watch* dan *reserve* di rumah sakit Anda **memerlukan pra-otorisasi** sebelum diberikan kepada pasien, atau dalam waktu 24 jam setelah pemberian antimikroba kepada pasien?	**Ya** ☐	**Tidak** ☐
C8	Apakah tim PGA melaksanakan **reviu prospektif dan umpan balik** sebelum antimikroba diberikan kepada pasien, atau dalam waktu 24 jam setelah antimikroba diberikan kepada pasien?	**Ya** ☐	**Tidak** ☐
S6	Apakah rumah sakit Anda menggunakan **sistem pendukung keputusan yang terkomputerisasi** yang berkaitan dengan peresepan antimikroba?	**Ya** ☐	**Tidak** ☐
C9	Apakah rumah sakit Anda memiliki **pedoman penggunaan antibiotik** (PPAB)?	**Ya** ☐	**Tidak** ☐
	Apabila Anda menjawab 'Ya' pada C9, apakah rumah sakit Anda memiliki PPAB untuk infeksi berikut:		
S7	Peumonia komunitas (CAP)?	**Ya** ☐	**Tidak** ☐
S8	Pneumonia nosokomial (HAP), atau pneumonia karena penggunaan ventilator (VAP)?	**Ya** ☐	**Tidak** ☐
S9	Infeksi kulit dan jaringan lunak?	**Ya** ☐	**Tidak** ☐
S10	Sepsis?	**Ya** ☐	**Tidak** ☐
S11	Infeksi saluran kemih?	**Ya** ☐	**Tidak** ☐
S12	Infeksi intra abdomen?	**Ya** ☐	**Tidak** ☐
S13	Apakah rumah sakit Anda memiliki panduan **de-eskalasi** penggunaan antimikroba berspektrum luas, termasuk karbapenem?	**Ya** ☐	**Tidak** ☐
S14	Apakah rumah sakit Anda memiliki panduan untuk **penggantian rute pemberian** antimikroba dari IV ke oral?	**Ya** ☐	**Tidak** ☐
S15	Apabila Anda menjawab 'Ya' untuk pertanyaan S7-S14, apakah semua **panduan tersebut selalu tersedia** di tempat perawatan pasien?	**Ya** ☐	**Tidak** ☐

LAMPIRAN 7-3

DAFTAR PERTANYAAN UNTUK ANALISIS SITUASI DAN EVALUASI KEGIATAN PGA

Pemantauan dan Pelaporan PGA			
C10	Apakah rumah sakit Anda melakukan **audit penggunaan antimikroba** yang ditetapkan sebagai target berdasarkan kuantitas dan kualitas?	Ya ☐	Tidak ☐
S16	Apakah rumah sakit Anda **memantau pengadaan dan pembiayaan antimikroba?**	Ya ☐	Tidak ☐
S17	Apakah rumah sakit Anda **memantau kepatuhan terhadap** panduan praktik klinik (PPK)?	Ya ☐	Tidak ☐
S18	Apakah **hasil reviu prospektif** diumpan balikkan secara langsung kepada DPJP?	Ya ☐	Tidak ☐
C11	Apakah rumah sakit Anda **secara teratur mempublikasikan** pola mikroba, dan hasil terkait dengan kegiatan PGA?	Ya ☐	Tidak ☐
C12	Apakah ada laporan **antibiogram** rumah sakit?	Ya ☐	Tidak ☐
S19	Apabila jawaban untuk C12 adalah 'Ya', apakah antibiogram **diperbarui setiap minimal sekali dalam satu tahun**?	Ya ☐	Tidak ☐
S20	Apabila jawaban untuk C12 adalah 'Ya', apakah antibiogram tersebut **mudah diakses?**	Ya ☐	Tidak ☐
S21	Apabila jawaban untuk C12 adalah 'Ya', apakah terdapat **antibiogram yang spesifik menurut unit?**	Ya ☐	Tidak ☐

LAMPIRAN 7-4

DAFTAR PERTANYAAN UNTUK ANALISIS SITUASI DAN EVALUASI KEGIATAN PGA

Infrastruktur Rumah Sakit			
S22	Apakah rumah sakit Anda memiliki **kemampuan teknologi informasi (TI)** untuk mengumpulkan dan menganalisis data PGA?	Ya ☐	Tidak ☐
S23	Apakah rumah sakit Anda menggunakan **rekam medik elektronik**?	Ya ☐	Tidak ☐
S24	Apakah rumah sakit Anda menggunakan **peresepan dokter secara elektronik**?	Ya ☐	Tidak ☐
C13	Apakah rumah sakit Anda memiliki laboratorium mikrobiologi klinik di dalam rumah sakit, atau akses ke **pelayanan mikrobiologi klinik yang tepat waktu dan andal**?	Ya ☐	Tidak ☐
S25	Jika jawaban untuk C13 adalah 'Ya', apakah pelayanan mikrobiologi klinik di rumah sakit Anda memanfaatkan **pelaporan diagnostik cepat**?	Ya ☐	Tidak ☐
S26	Jika jawaban untuk C13 adalah 'Ya', apakah pelayanan mikrobiologi klinik Anda menggunakan **pelaporan kepekaan antimikroba yang selektif**?	Ya ☐	Tidak ☐
Pendidikan			
S27	Apakah rumah sakit Anda menyediakan **kegiatan pendidikan dan pelatihan** untuk dokter dan staf lain yang terlibat untuk meningkatkan penggunaan antimikroba secara bijak?	Ya ☐	Tidak ☐
S28	Jika jawaban untuk S27 adalah 'Ya', apakah kegiatan tersebut **wajib dan merupakan pelatihan yang bersertifikat?**	Ya ☐	Tidak ☐
Publikasi			
C14	Apakah **hasil kegiatan PGA dipublikasikan** dalam majalah yang teraktreditasi dan terpercaya setiap 12-24 bulan?	Ya ☐	Tidak ☐

LAMPIRAN 7-5

KATEGORI PENILAIAN HASIL ANALISIS SITUASI DAN EVALUASI KEGIATAN PGA

KATEGORI PENILAIAN

- **Beri nilai 2 untuk setiap jawaban "Ya" terhadap pertanyaan C (ada 14 pertanyaan C)** — **/28**
- **Beri nilai 1 untuk setiap jawaban "Ya" terhadap pertanyaan S (ada 28 pertanyaan S)** — **/28**
- **Nilai Total** — **/56**

- **Nilai 1-17: warna merah, kategori kurang**
- **Nilai 18-39: warna kuning, kategori sedang**
- **Nilai 40-56: warna hijau, kategori baik, dengan catatan mendapat jawaban "Ya" untuk semua pertanyaan C**

AMU & AMR

- AMU

AMU

- ***Kuantitatif : Define Daily Dose***
- ***Kualitatif : Gyssens***
- ***Point Prevalence Survey (PPS)***

AMR

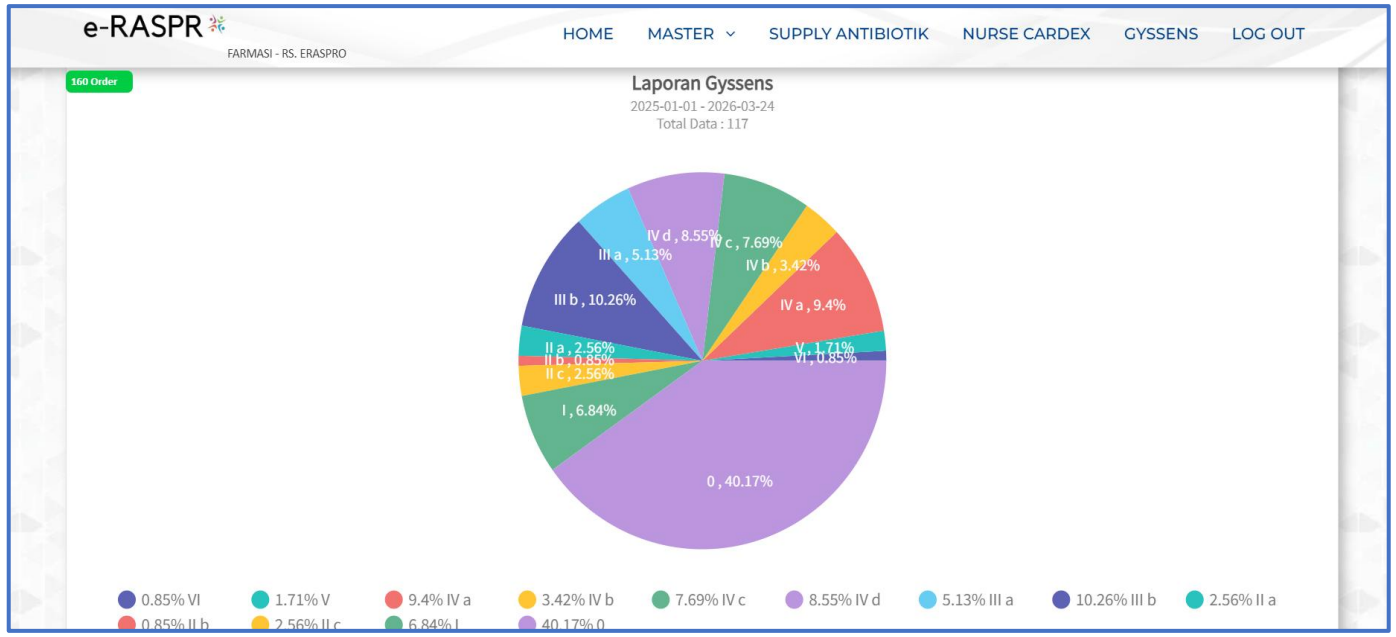
- ***Surveillance***

KEPUTUSAN DIREKTUR JENDERAL KESEHATAN LANJUTAN
NOMOR HK.02.02/D/3423/2025
TENTANG
PEDOMAN PENGAWASAN DAN EVALUASI PENGGUNAAN ANTIMIKROBA
MELALUI SURVEI PREVALENSI WAKTU TERTENTU DI RUMAH SAKIT

BAB III
MANAJEMEN DATA DAN INFORMASI

Dari formulir pengumpulan data tersebut maka rumah sakit dapat menganalisa antara lain sebagai berikut:

1. Prevalensi penggunaan antimikroba
2. Indikasi penggunaan antimikroba
3. Kelas spektrum antimikroba yang banyak digunakan
4. Rasio penggunaan antibiotika kelas AWaRe
5. Jenis antibiotika yang digunakan.
6. Kesesuaian peresepan dengan panduan praktik klinis
7. Dasar peresepan antibiotika
8. Pencatatan durasi dan penghentian pemberian antibiotika
9. Durasi pemberian antibiotika profilaksis
10. Proporsi peresepan antibiotika empirik dan tertarget (*definitive* setelah hasil kultur didapatkan)



Data ditarik untuk pelaporan : (Perangkat e-RASPRO)

- ***Kualitatif : Gyssens***
- ***Point Prevalence Survey (PPS)***

LAPORAN ERASPRO
01 Jan 2026 s/d 24 Mar 2026

No	No RM	Nama	Nama Ruangan	Nomor Kamar	Jenis Alur	Tgl Pembuatan Alur	Pembuat alur	Dokter DPJP	Stratifikasi	Jenis Infeksi	Jenis Operasi
1											
2											
3											
4											
5											

Nama Obat Antibiotik	Kategori Antibiotik	Frekuensi Antibiotik	Satuan	Dosis Antibiotik	Track Antibiotik	Supply	Sesuai Guideline	Tanda Telepon	Tanda Seru	Konfirmasi	Kotak Pemberian Obat Yang Tidak Terisi	Perawatan Selesai	Durasi Perawatan

- AMR

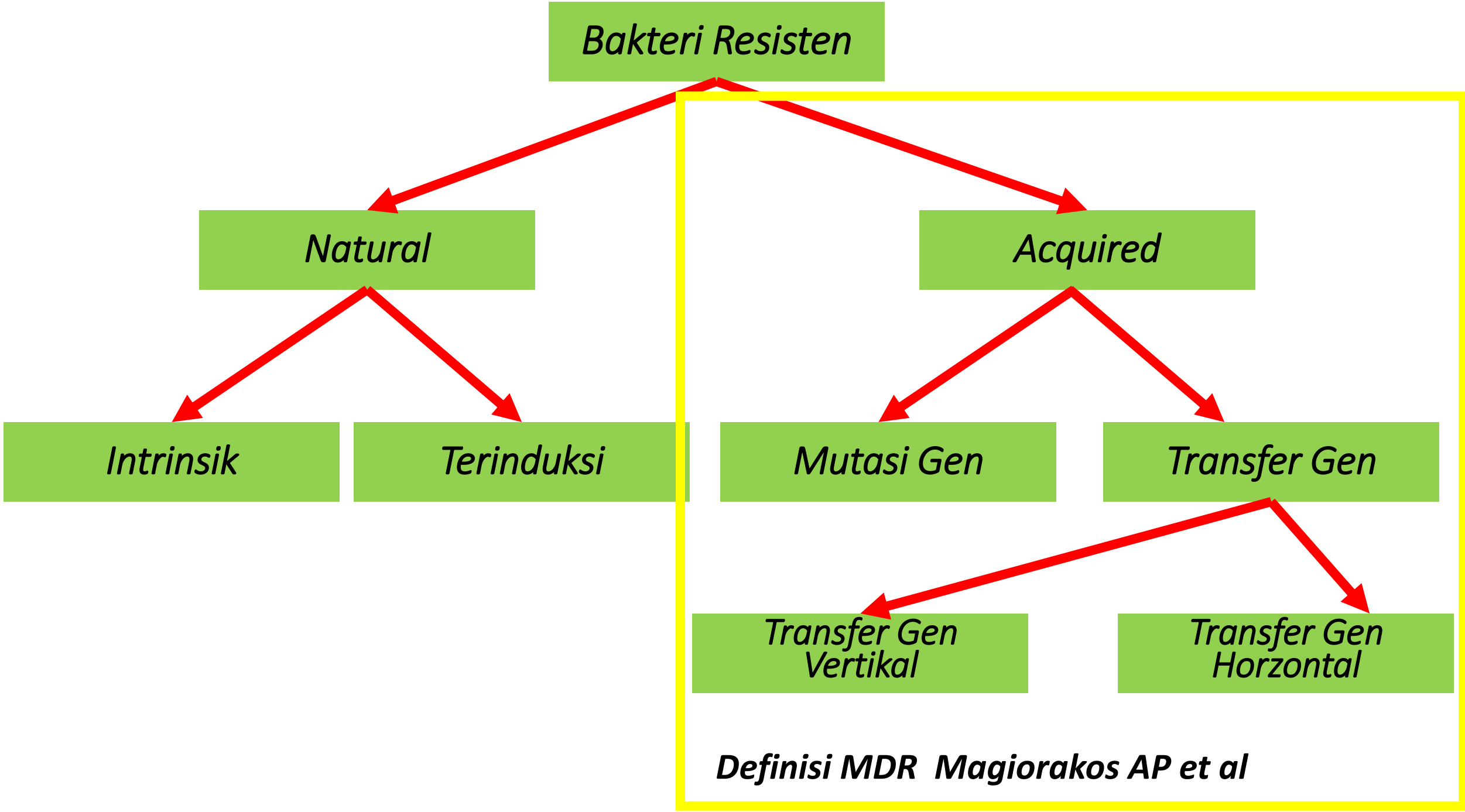
Surveillance

Penilaian AMR

Surveillance temuan MDR Dapat dijadikan sebagai indikator apabila terdapat perbandingan before-after intervensi pelaksanaan PPRA/PGA

Surveillance lokal, pola kuman lokal

- Setelah Compliance ? Berapa lama?


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

ORIGINAL ARTICLE BACTERIOLOGY

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

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

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MDR

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

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

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

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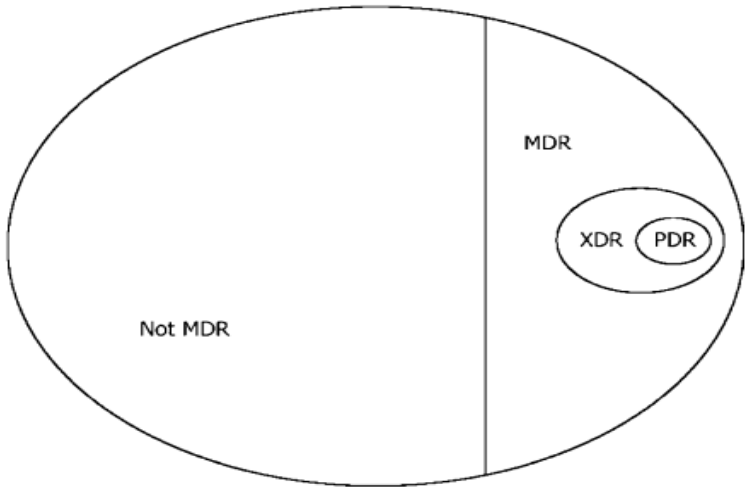

FIG. 1. Diagram showing the relationship of MDR, XDR and PDR to each other.

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

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

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

ORIGINAL ARTICLE BACTERIOLOGY

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

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- Gram Positif :

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

  Beta-Lactamases :

  ESBLs

  Carbapenemase Producers

  Non Beta-Lactamases :

  Permeabilitas Membran

  Efflux Pump

- Gram Positif : Stapylococcus aureus
- Gram Negatif :

  E.coli

  Klebsiela sp

  Pseudomonas sp

  Acinetobacter sp

Contoh Pelaporan dengan Publikasi

Antibiotic Treatment based on Guidelines for Reducing Length of Stay (LOS) in Patients with Community Acquired Pneumonia (CAP)

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ABSTRTACT

Introduction. *Community acquired pneumonia (CAP) now is known as the most common infection presented. Empiric antibiotic administered followed by observing parameters. This study aimed to know how far the American Thoracic Society/ Infectious Disease Society of America (ATS/IDSA) antibiotic guidelines 2007 based treatment influenced the length of stay (LOS) of CAP subject in a private hospital ward between January 2014-August 2015*

Methods. *A retrospective cohort was conducted with bivariate analysis and multivariate analysis for reducing the confounding factor. Sample taken with proportional sampling formula at ward in a hospital in Jakarta.*

Results. *The result showed that subjects with unproper empiric antibiotic based on ATS/IDSA 2007 guidelines tent to have hospital prolong stay 10.25 times (p <0.001) than others with proper on ATS/IDSA empiric antibiotic guidelines.*

Conclusion. *By this result, we observed a very significant statistic result difference in LOS between a group with proper empiric antibiotic based on ATS/IDSA 2007 guidelines and other who unproper.*

Keywords: *Antibiotics, Community acquired pneumonia, Length of stay*

Variabel	Lama Rawat		Bivariat		Multivariat	
	<5 hari, n (%)	>5 hari, n (%)	Nilai p	OR (IK 95%)	Nilai p	OR (IK 95%)
Kesesuaian						
Sesuai	38 (38,8)	11 (11,2)	<0,001	10,65 (4,18–27,13)	<0,001	10,25 (3,93–26,71)
Tidak	12 (12,2)	37 (37,8)				

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Efektivitas Meropenem-Levofloxacin dengan Meropenem-Amikasin terhadap LOS & Leukosit Pasien Pneumonia Komuniti Stratifikasi III RASPRO

(Effectiveness of Meropenem-Levofloxacin with Meropenem-Amikasin Towards LOS & Leukocytes to RASPRO III Stratification Community Pneumonia Patients)

HADI SUMARSONO[1]*, DIAN RATIH LAKSMITAWATI[2], RONALD IRWANTO[1]

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Abstrak: Pemberian antibiotika di rumah sakit swasta "X" menerapkan konsep bernama *Ronald Irwanto Antimicrobial Steweardship Program* (RASPRO). Saran kombinasi antibiotika empiris pada pasien pneumonia komuniti dengan stratifikasi tipe III antara lain menggunakan kombinasi meropenem - levofloxacin atau meropenem - amikasin. Tujuan penelitian adalah untuk mengetahui pengaruh kombinasi antibiotika empiris meropenem - levofloxacin dengan meropenem - amikasin pada pasien pneumonia komuniti stratifikasi tipe III RASPRO terhadap LOS dan penurunan leukosit. Sampel uji dihitung menggunakan rumus perbedaan dua proporsi dan dianalisa menggunakan metode Chi square. Variabel perancu diabetes mellitus, imobilisasi dan geriatri dikontrol berdasarkan uji analisa multivariat regresi logistik. Hasil penelitian menunjukkan kombinasi meropenem - levofloxacin memiliki kecenderungan 1,81 kali untuk mengalami LOS < 5 hari dan 0,92 kali untuk mengalami penurunan leukosit ≥10% dibandingkan meropenem - amikasin, namun keduanya tidak signifikan (p 0,161 dan p 0,835). Hasil kontrol variabel perancu ditemukan bahwa geriatri sebagai variabel perancu yang bermakna dalam mempengaruhi LOS dan tidak ada variabel perancu yang dianggap dapat mempengaruhi penurunan leukosit. Sebagai kesimpulan, tidak terdapat pengaruh kombinasi antibiotika empiris meropenem - levofloxacin dengan meropenem - amikasin terhadap LOS & penurunan leukosit pada pasien pneumonia komuniti stratifikasi tipe III RASPRO dengan menggunakan statistik setelah mengontrol variabel perancu.

Decreasing the Broad Spectrum Antibiotics Unit Sold: The Prospective Antimicrobial Stewardship of RASPRO Model in A Private Hospital, Indonesia

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

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

Results.

Three months observation and comparison before-after RASPRO-RASAL flowchart implemented :

0.5g Meropenem unit sold decreased 63.83%, 1g Meropenem decreased 75.42% while Imipenem showed 100% reduction.

A 93.80% decreasing of Ceftazidime and 70.05% Cefepime unit sold also reported.

Overall, we noted 76.10% broad spectrum reduced before-after RASPRO-RASAL implemented.

Conclusion.

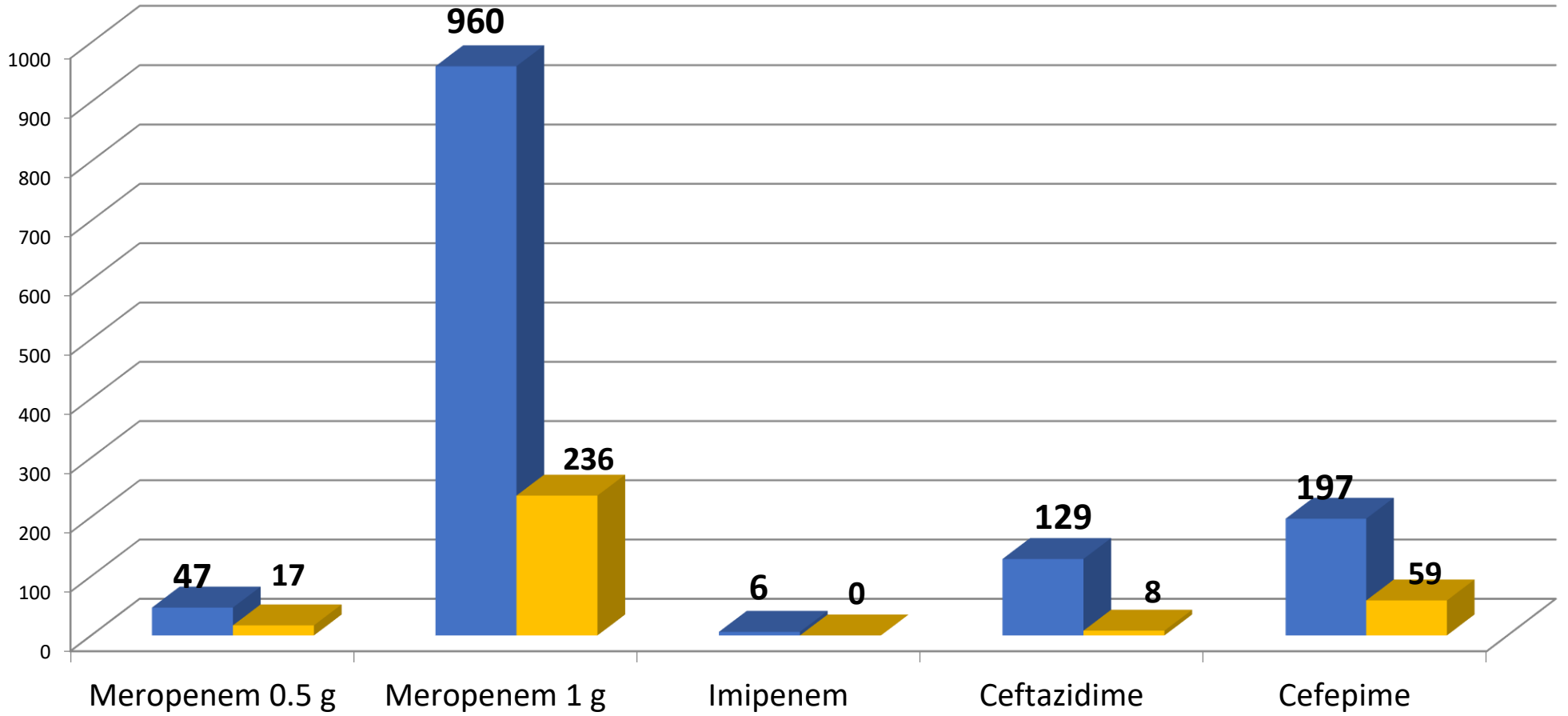
Decreasing of broad spectrum antibiotics unit sold was reported in 3 months after RASPRO-RASAL used.

This result might not be a fully improvement of RASPRO-RASAL tools, but in our experience and opinion, this significant result should be considered as part of RASPRO-RASAL implementation.

Manual Model

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

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



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Laporan Peningkatan Mutu

Konsep RASPRO: Upaya Melaksanakan Amanah Permenkes 8/2015 untuk Menurunkan Kuantitas Penggunaan Antibiotik

RONALD IRWANTO NATADIDJAJA[1,2], YUHANA FITRA[1], AZIZA ARIYANI[1], RIKA BUR[1], NUGROHO BUDI SANTOSO[1]

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Dikirimkan 26 Mei 2019, Diterima 15 Desember 2019

Tabel 3. Perbandingan total DDD antibiotik di RS A pada tahun 2016-2017 dengan sosialisasi PPAB tanpa model stratifikasi dan pada tahun 2017-2018 paska sosialisasi PPAB dengan model stratifikasi

Nama Antibiotik	Total DDD (Tahun 2016-2017)	Nama Antibiotik	Total DDD (Tahun 2017-2018)
Ceftriaxone	37,85	Levofloxacin	24,26
Meropenem	16,93	Cefixime	20,65
Levofloxacin	12,93	Azithromycin	16,17
Metronidazole	5,76	Ceftriaxone	14,41
Ampicillin, Sulbactam	5,28	Ciprofloxacin	13,12
Cefoperazone, Sulbactam	5,14	Meropenem	7,39
Ciprofloxacin	4,45	Moxifloxacin	5,06

Tabel 4. Penggunaan unit carbapenem dan anti-pseudomonas cephalosporin generasi 3 (ceftazidime) bulan Oktober-Desember 2018: pada RS yang belum dan telah menerapkan RASPRO.

	RS X	RS Y
	447 tempat tidur	250 tempat tidur
Meropenem	1.196	236
Imipenem	80	-
Ceftazidime	265	8
Total	1.541	244

Tabel 5. Perbandingan penggunaan unit antibiotik cephalosporin generasi 3 dan meropenem sebelum dan sesudah penerapan projek ujicoba RASPRO di RS X di Jakarta.

	2018	2019	Penurunan	
	Okt - Des	Jan - Mar	Unit	%
Ceftriaxone	7.887	5.588	2.299	29,15
Cefoperazone	5.699	3.627	2.072	36,36
Cefotaxime	860	649	211	24,53
Cefuroxime	1.068	969	99	9,27
Meropenem	1.196	1.048	148	12,37
Total	16.710	11.881	4.829	28,90

Manual Model

Manual Model

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

Table 1. The average antibiotic consumption (DDD/100 patient-days) in the 3-month period before and after the implementation of the RASPRO

Year 2019	Defined Daily Dose (DDD) /100 patient days							
	Levofloxacin	Carbapenem	Ceftriaxone	Cefuroxime	Cefotaxime	Ampicillin Sulbactam	Gentamicin	Amikacin
3 Months Before								
April	1.83	0.44	36.45	16.65	10.33	1.68	2.68	3.87
May	2.30	0.60	27.06	13.67	9.92	1.10	3.89	1.18
June	3.00	0.50	32.78	21.42	10.73	0.65	2.98	1.75
Average	**2.38**	**0.51**	**32.10**	**17.25**	**10.33**	**1.14**	**3.18**	**2.27**
3 Months After								
July	15.34	1.97	38.81	1.50	8.37	1.36	2.50	2.05
August	16.44	2.46	38.50	2.60	5.42	1.40	1.11	2.68
September	14.10	2.49	36.77	0.04	6.71	0.77	2.13	1.65
Average	**15.29**	**2.31**	**38.03**	**1.38**	**6.83**	**1.18**	**1.91**	**2.13**

Manual Model

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

Table 2. Reduced average monthly cephalosporin consumption (DDD/100 patient-days) in the 3-month period before and after the implementation of the RASPRO

Year	Defined Daily Dose(DDD)/100 patient days			
	Ceftriaxone	Cefuroxime	Cefotaxime	Average
3 Months Before				
April	36.45	16.65	10.33	**21.14**
May	27.06	13.67	9.92	**16.88**
June	32.78	21.42	10.73	**21.64**
Average	**32.10**	**17.25**	**10.33**	**19.89**
3 Months After				
July	38.81	1.50	8.37	**16.23**
August	38.50	2.60	5.42	**15.51**
September	36.77	0.04	6.71	**14.51**
Average	**38.03**	**1.38**	**6.83**	**15.41**

Manual Model

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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])

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

Table 3. A comparison of antibiotic expenditure in the 3-month period before and after the implementation of the RASPRO for inpatient settings

Year 2019	Inpatients	Antibiotic Expenditure	Antibiotic Expenditure/Inpatients
3 Months Before			
April	2,409	21,730	**9.02**
May	2,209	21,156	**9.58**
June	2,230	21,913	**9.83**
Total	**6,848**	**64,799**	
Average	**2,283**	**21,600**	**9.47**
3 Months After			
July	1,996	17,049	**8.54**
August	2,118	16,658	**7.86**
September	2,269	17,954	**7.91**
Total	**6,383**	**51,661**	
Average	**2,128**	**17,220**	**8.11**
Average % of Decreasing	**6.79**	**20.28**	**14.44**

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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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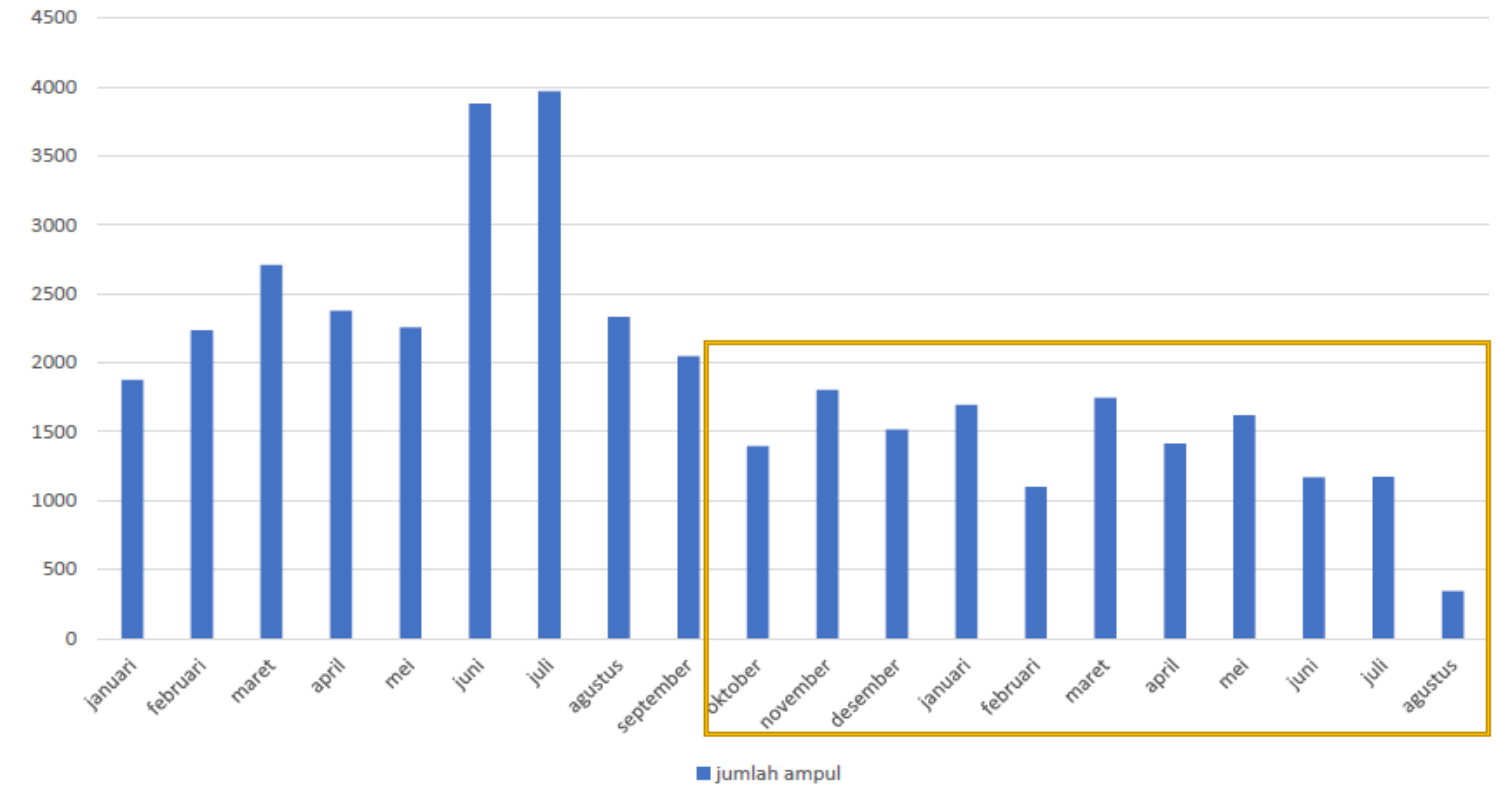
Antimicrobial Resistance & Infection Control 2023, **12(Suppl 1):**P309

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

9 months before & after using digital ASP model



43% decline of Inpatient Antibiotic Usage

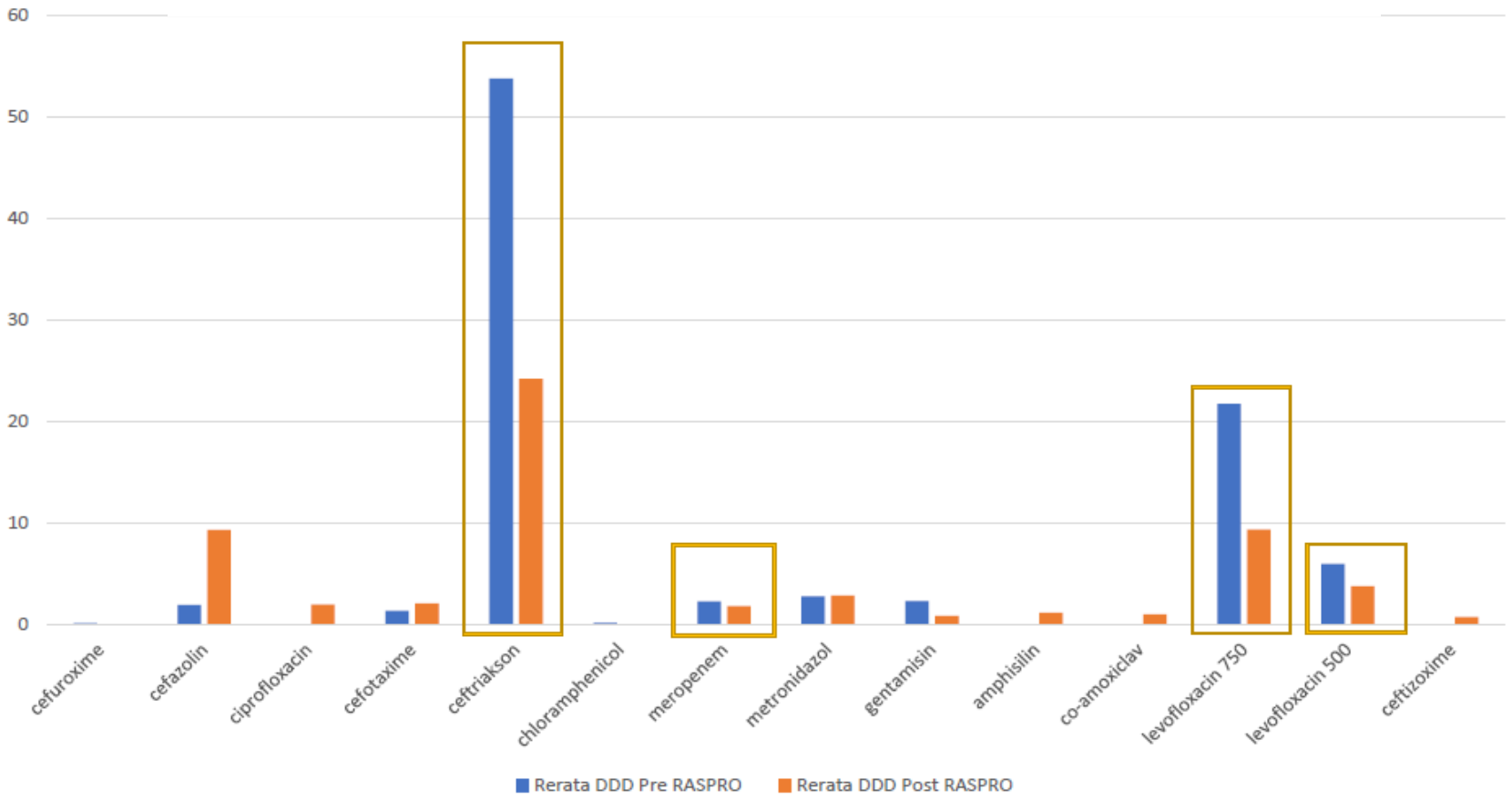
Dr. Iin Indra Pertiwi SpPD

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

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(Digital Model)

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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

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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)

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

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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.

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THANK YOU!