


Optimizing Antibiotic Usage  
By Implementing  
Antimicrobial Resistance Control  
Program (ARCP)

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In The Pediatrics Wards of  
Dr. Soetomo Teaching Hospital  
*(Pilot Study In Hemato-Oncology Div.)*

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Background

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- Antibiotic usage in hemato-oncology division is very high
- The negative impact of over using antibiotics causes the increase of antimicrobial resistance
- The role of integrated team such as in the ARCP is highly needed

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## Objectives

- ✓ To implement The ARCP in pediatrics wards
- ✓ To optimize antibiotic usage by auditing the quantity and quality of antibiotic usage
- ✓ To evaluate an economical impact of drug and laboratory cost

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## Methodology

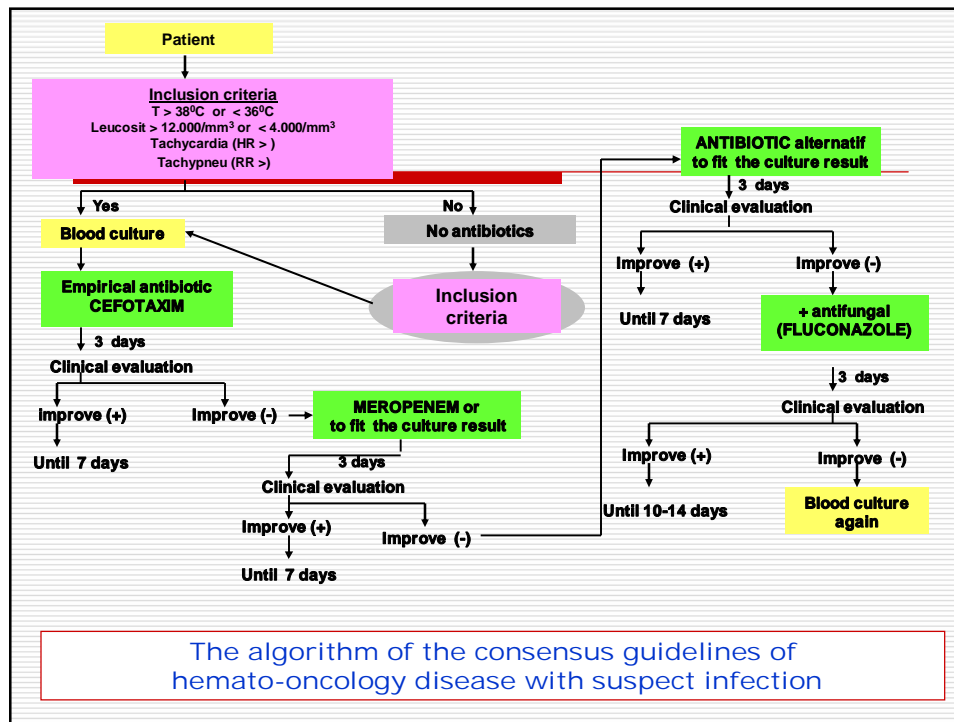
### Study Design :


- Retrospective study (Jun-Aug 2006)
- Prospective study (Nov 2006-Jan 2007)
- ❖ The consensus antibiotic guidelines was developed and declared by the ARCP team (Sept-Nov 2006)

### Inclusion Criteria:

- Patients in the third class of hemato-oncology pediatrics wards with suspect infection (see.algorithm)

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## Results

- ❖ Total patients
  - Retrospective = 27 Px
  - Prospective = 28 Px
- ❖ The rate LOS = 29.7 and 29.5 days


Diagnosis	Retro (n)	Prosp (n)
ALL	12	12
AML	2	1
Neuroblastoma	0	2
Retinoblastoma	0	2
Anemia aplastik	2	1
CML	2	0
Wilms' tumor	0	2
Hepatoblastoma	0	2
Others	9	6

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**Table 1. Quantity of Antibiotic Usage (DDD/100 patient-days)**

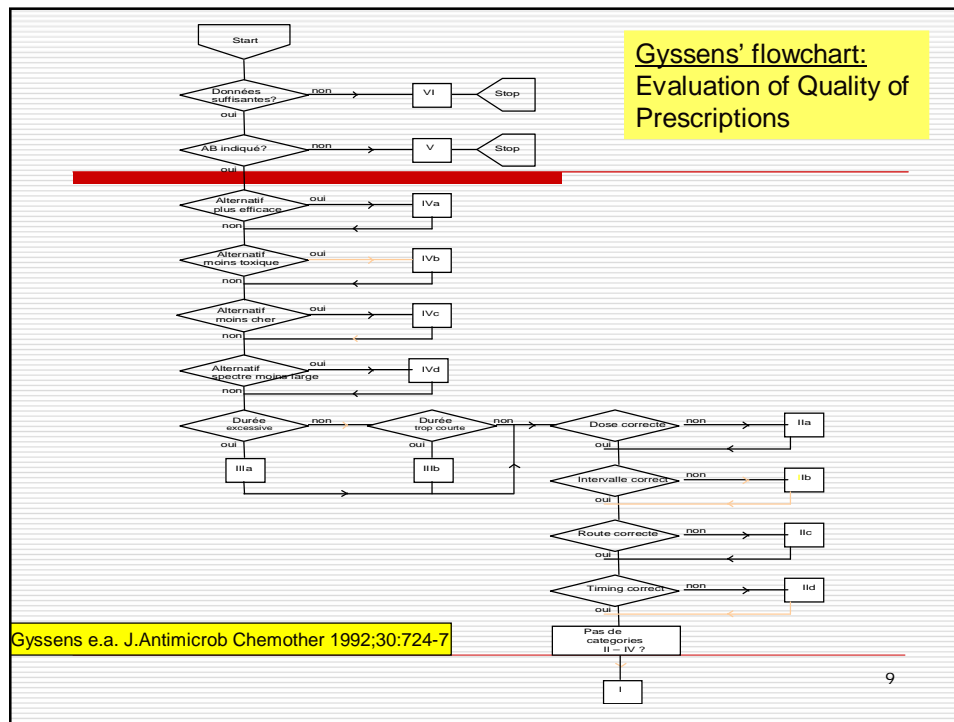
Antibiotics	DDD/100 patient-days	
	Retrospective	Prospective
1. Cefotaxime	10.6	7.84
2. Meropenem	3.6	3.4
3. Amikacin	2.7	0.5
4. Ceftazidime	3	0.4
5. Cloxacillin	<b>45.04</b>	<b>14.52</b>
6. Cefepime	0.35	-
7. Ciprofloxacin	6.3	-
8. Ceftriaxone	1.34	-
9. Clindamycin	0.37	-
10. Trimethoprim	7.15	1.5
11. Gentamycin	0.25	-
12. Cefoperazone – Sulbactam.	1.72	0.88



**Table 2. Quality of Antibiotic Usage (Gyssens' flowchart)**

Category	Retrospective		Prospective
Appropriate (I)	22 %	↑	38 %
Duration too long (III A)	46 % ( <b>15.2 days</b> )	↓	30.2% ( <b>7.4 days</b> )
Alternative narrow spectrum (IV D)	11.1 %	↓	3.2 %
No indication (V)	5 %	↓	4.8 %

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**Table 3. Cost Analysis**

	Retrospective (IDR)	Prospective (IDR)
<b>Culture :</b>		
-Blood ( IDR 105.000)	2.835.000	4.095.000
-Urine ( IDR 55.000)	-	1.045.000
-Feces (IDR 55.000)	-	935.000
<b>Antibiotics :</b>	<b>61.635.000</b>	<b>45.260.000</b>
<b>TOTAL</b>	<b>64.470.000</b>	<b>51.335.000</b>
<b>Can be saved ....</b>	<b>IDR 13.135.000</b>	

## Discussions...

- ❖ The negative impact of irrational antibiotics usage will be huge and dangerous, e.g.: the increase of antimicrobial resistance
- ❖ The ARCP is highly needed to provide the prudent usage of antibiotics, and to control antimicrobial resistance

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## Discussions...



- ❖ The ARCP Team consist of the Clinicians, Clinical Microbiologists, **Clinical Pharmacists**, and Nurses to discuss together.



- ❖ The role of Clinical Pharmacists as the ARCP team is to provide and to prepare antibiotic needed and to monitor antibiotic usage.

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## Conclusions

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- ✓ Improvements were achieved in quantity and quality of antibiotic usage
- ✓ Total cost of therapy can be saved , which will be beneficial to the patients as well.
- ✓ The role of CP as the ARCP team will be enhanced in improving patients' quality of life.

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