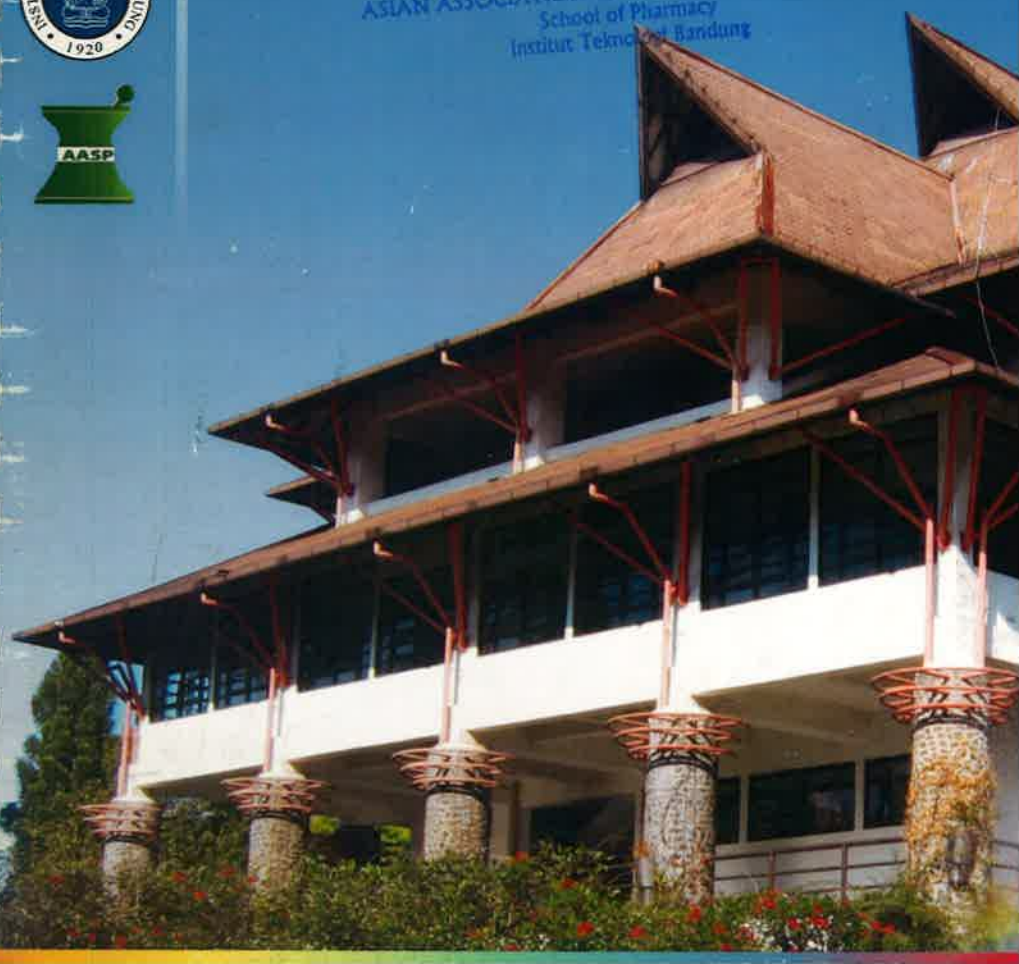
Booklet

5th Conference of AASP

Asian Association of Schools of Pharmacy
School of Pharmacy ITB, 16 - 19 June 2011

Pharmacist as a Key Health Care Player:
The Interplay of Education, Sciences, and Practice



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FOREWORDS FROM THE CHAIRPERSON OF THE ORGANIZING COMMITTEE

Welcome to Bandung, the historical city of the Asian-African Conference in 1955!

I would like to thank AASP President and Board of Directors members who have granted me a good opportunity to conduct an organizing committee of the 5th Conference of the AASP which is held at the campus of ITB in Bandung, Indonesia. We are gathering here to share information and ideas concerning education, scientific research and profession related to pharmacy, and we should also share with one another issues on culture, nature and situation of pharmacy profession and education in each country.

It is a great pleasure for us, Indonesian people and especially the ITB academia to accept a flag for organizing this global meeting under the auspices of AASP. Hopefully, all of efforts we have been devoting in our present scientific and education gathering could contribute essentially to AASP's big steps forward and organizational growth.

I would like to extend my sincere gratitude to the Minister of Health of the Republic of Indonesia, Rector of ITB, President of the Indonesian Pharmacists Association, President of the Association of Indonesian Pharmacy Higher Education for the supporting this event. Finally, I thank all the conference participants for enthusiastically attending this international meeting.
I wish you enjoy the authenticity of Bandung life through a taste of its culture, shopping and culinary!

Dr. Tutus Gusdinar
Chairman of Organising Committee
5th AASP Bienneal Conference 2011.

MESSAGE FROM THE RECTOR OF INSTITUT TEKNOLOGI BANDUNG (ITB)

Assalamu'alaikum Wr. Wb.

Praise be to Allah SWT, that today, Friday, June 17th 2011, we are able to attend the openingceremony of the 5th Asian Association of Schools of Pharmacy (AASP) Conference, organized by the School of Pharmacy at Institut Teknologi Bandung.

Welcome to Indonesiaand ITB, to all international delegates, as well as our local participants. I really hope that the conference, to be held during the next three days, would be beneficial to all of us.

In this invaluable opportunity we would like to extend our sincere gratitude and appreciation to the Dean of School of Pharmacy and all his staffs for the good governance that has made the School of Pharmacy an excellent icon of ITB in the field of Pharmacy in Indonesia. The School of Pharmacy has been making priceless contributions including a number of researches which have produced patents, creative works, publications in national as well as international journals, industrial collaborations, international research collaborations, and various achievements at both national and international levels.

It is worth pointing out that in the past 10 years ITB has been transforming itself from an Old-Fashion State University to a State-Owned Educational Institution with some modifications to reach a high-standard target in international level.

ITB has great potency to strengthen itself to become a world class university. In addition to the active participation in educating the nation, ITB is actively involved in the promotion of the nation's welfare and dignity. On the other hand, ITB has an obligation to be a 'university of nationality' with a commitment and propensity towards the improvement of community welfare and the strengthening of national character. These should be reflected in the curriculum which is established and developed in accordance with the above principles.

I highly support the "Deans Forum" (program) held in the framework of the present AASP conference. The program is expected to support ITB in harmonizing the vision and mission of the School of Pharmacy at both national and international levels. Results of the conference as well as Deans Forum are expected to be in line with the targeted achievements of ITB as an educational institution, which include: the strengthening and enrichment of healthy, conducive and challenging academic culture and environment; increase in quality and quantity of research and innovation products; and the increase in ITB's solutive contribution to the nation's as well as global problems.

In this very occasion I would like to thank the local organizer for devoting time, efforts as well as ideas in the preparation of this conference. And to the speakers, we would like to extend our gratitude for sparing the opportunity to share your knowledge and expertise to all the conference participants. I hope we all can take as much benefit as possible from your presentations.

Finally, I congratulate you all on this conference and please enjoy the pleasurable and refreshing atmosphere of Bandung and ITB.

Wabillahi taufik wal hidayah
Wassalamu'alaikum wr. Wb.

Prof. Akhmaloka, PhD
Rektor ITB

MESSAGE FROM THE INDONESIAN PHARMACIST ASSOCIATION (IAI)

We, the organizer of professional association of pharmacists in Indonesia, are honored to welcome the 5th AASP conference held at ITB, Bandung.

Indonesian Pharmacists Association has great concern on the development of the quality of pharmacy education, considering that pharmacy higher education is the 'production house' of as many as 5000 yearly pharmacists and pharmacy graduates. As a health professional needed in each and every country throughout the world, a pharmacist is working to serve the community, to protect the nation from the threat of drugs abuse and misuse, to ensure the supply of medicines, and to provide information on the development of pharmaceutical science and technology.

On behalf of all members of IAI, I congratulate the 5th AASP conference at ITB campus, Bandung. I really hope that the conference hosted for the first time by an Indonesia pharmaceutical university can promote the quality of pharmacy education and profession in the future.

The profession of pharmacy which requires strong clinical scientific proficiency and the best practices of pharmacist to the society are the main issues to be raised throughout the seminar, discussed in scientific symposium, seminars on education and state of the art of learning methods, and understanding amongst education implementers.

We congratulate the organizer of the conference and officials of AASP for all efforts in organizing this invaluable international meeting, which is expected to bring about positive outcomes to all.

Drs Mohamad Dani Pratomo, MM, Apt
President of Indonesian Pharmacists Association

MESSAGE FROM AASP PRESIDENT

Greetings from the Asian Association of Colleges of Pharmacy!

It is a pleasure to welcome you to the 5th AASP Conference generously hosted by our Indonesian educators from the School of Pharmacy - Bandung Institute of Technology, in collaboration with Faculty of Pharmacy, Gajahmada University.The theme "The Pharmacist as a Key Health Care Player: The Interplay of Education, Science and Practice" highlights the nature of our organization – a venue for the discussion of important aspects of pharmacy education, practice and research in the Asia-Pacific Region. We envision a healthy exchange of information and experiences among pharmacy educators and we hope that through this interaction, pharmacy education will continue to progress and be responsive to the health needs of our diverse people and the competency needs of the profession.

In this conference, the 1st Deans Forum will be initiated to gather faculty administrators, who, we believe have a very important role in ensuring the quality of pharmacy education. The setting up of common competencies, curriculum, evaluation and accreditation are some pressing issues that need careful attention by our pharmacy education leaders. It is an honor to have distinguished guests from the North American continent to share their experience and expertise in their continuous quest for quality pharmacy education.

With this, I wish you all a productive time in Bandung and I am hoping to see all of you in our future conferences!

Dr. Ji-Wang Chern
President

SCHEDULE

16 June 2011

No.	Time	Event
1	14:30-18:00	**Registration for AASP Conference**
2	14:30-18:00	**BOD Meeting**
3	18:00-21:00	**Registration Continue**

17 June 2011

No.	Time	Event
1	7:30-8:30	**Registration for Symposium and Scientific Seminar**
2	8:30-10:30	**Opening Ceremony** *a. Report by Organizing committee/AASP* Dr. Tutus Gusdinar *b. Welcoming Address by Rector of ITB* Prof. Ahmaloka, PhD *c. Welcoming Address by AASP President* Dr. Ji-Wang Chern *d. Key Note Speech and Opening by Minister of Health RI*** Dr Endang Rahayu Sedianingsih, MPH *e. Key Note Speech* *Representative from Leading Indonesian Pharmaceutical Company* Ir. Ferry Soetikno, MBA *Managing Director of PT. Dexa Medica*
3	10:30 -11:00	Coffee Break and Exhibit Viewing
4	11:00-13:00	**Friday Praying**
5	12:00-13:30	Lunch and Poster Session
6	13:30-14:30	**Plenary Session 1** ***Topic: Defining and Assessing Pharmacy Education Outcome*** Lucinda L. Maine, PhD, RPh *American Association of Colleges of Pharmacy, USA*
7	14:30-15:00	Coffee Break and Poster Session
8	15:00-17:00	**Oral Presentation** Pharmaceutical Care 1 Natural Products and Medicinal Chemistry 1 Pharmaceutics 1
9	17:00-21:00	**Free Time**

18 June 2011

No.	Time	Event
1	8:30-9:30	**Plenary Session 2** *Topic: Quality Standard for Pharmacy Education* Debra Rowett *Chair, Accreditation Committee Australian Pharmacy Council*
2	9:30-10:00	Coffee Break and Poster Session
3	10:00-12:00	**Symposium on Education**
4	12:00-13:00	Lunch
5	13:00-15:00	**Oral Presentation** Pharmaceutical Care 2 Natural Products and Medicinal Chemistry 2 Natural Products and Medicinal Chemistry 3
6	15:00-15:30	Coffee Break and Poster Session
7	15:30-17:00	**Oral Presentation** Pharmaceutical Care 3 Natural Products and Medicinal Chemistry 4 Pharmaceutics 2
8	17:00-18:00	**AASP General Assembly**
9	18:00-19:00	Free Time
10	19:00-21:00	Conference Dinner

19 June 2011

No.	Time	Event
1	8:30-12:00	**Deans Forum** Learning from US and Asian Experiences on Accreditation
2	12:00-12:30	**Closing and Award Presentation Ceremony**
3	12:30-13:00	Lunch

SYMPOSIUM ON EDUCATION
Saturday, 18 June 2011
West Hall-Aula Barat
10:00-12:00

Social Pharmacy Education and Research: The Needs and Challenges

Assoc Prof Dr. Mohamed Azmi Ahmad Hassali
Programme Chairman Discipline of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia

Curriculum Development for the new Integrated 3rd year

Dr. Rebekah Moles
Faculty of Pharmacy, The University of Sydney

Teaching and Learning in Pharmacovigilance

Dr G Parthasarathi
Professor and Head of Department of Pharmacy Practice JSS College of Pharmacy, and Head of Clinical Pharmacy Services JSS Medical College Hospital

Saturday (18th June 2011) 9:30-10:00 and 15:00-15:30

Pharmaceutical Care

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P061	Evaluation of Student Satisfaction in Clerkship Activity for Final Year Students at School of Pharmaceutical Sciences Universiti Sains Malaysia. Yelly Oktavia Sari, M B Bahari, Muhannad RM. Salih
P062	Communication Profile on Pharmaceutical Services In Pharmacies in the East Area of Surabaya (study on prescription services model) Wahyu Utami, Umi Athijah
P063	Therapeutic Outcome of Fluconazole and Itraconazole in AIDS Patients with Oropharyngeal Candidiasis Yuni Priyandani, M. Vitanata Arfijanto, Agung Dwi Wahyu, Yulistian, Nasronudin
P064	The Profile of Patient Assessment in Community Pharmacy in Surabaya Umi Athijah, Erika Rismawati, Yunita Nita, Gesnita Nugraheni
P065	Study Of Adverse Drug Reactions as Drug Related Problems (DRPs) in Hospitalized Geriatric and Non-geriatric Type 2 Diabetic Patients at One Private Hospital in Bandung Prathita R, Mandalas E, Sigit J I
P066	Effectivity Comparison of some Hand Washing Antiseptic as a Working Standard at aHospital Department in Surabaya Martha Ervina, Ali Sjamlan, Denny Wiliyanto
P067	Comparison of Biguanide and Sulphonylureain Term of Benefits and Costs and a Private Hospital in Bandung - INDONESIA Rachmawati D, Mandalas E, and Sigit J I
P068	Study of Adverse Drug Reaction in Hemodialysis Patients Related to Renal Failure Causes at a Public Hospital in Bandung - INDONESIA Saptarina R, Hartini S, Sigit J I
P069	VCO Prevents and Relieves Hyperuricemia on Mice Armenia, Mestika Yuda Valentina and Fauzia Rozani
P070	Comparison of Free and Fixed Dose Combination Antihypertensive Drug in the Perspective of Cost and Efficacy at One Private Hospital in Bandung - INDONESIA Gamiarsih G, Mandalas E, Sigit J I
P071	Current Status of Emergency Care and Disaster Medical Care Pharmacist in Japan Akihiro Watanabe, Keiko Fukuda, Kenji Nishizawa, Yoko Kubota

P072	Evaluation Cephalosporine of Antiobiotics in the Intensive Care Unit (ICU) General Hospital Center South Jakarta Lili Musnelina, Irma Early Pratiwi
P073	Education of a Pharmacists Contributing to a Community Health Care: Role of Pharmacists in Super-Aged Society in Japan Yoko Kubota, Mitsuyo Yoshimatsu, Naoko Ideguchi,Kaizurou Anzai
P074	Dispensing Profiles of Captopril Prescription in Community Pharmacies Ana Yuda, Elida Zairina, I Nyoman Wijaya, Alfi Rizkiyah
P075	Product Information vs Visual Appeal in Consumer Goods Products; Green Tea Package Design and Label Case Study Sophie Damayanti , Alvanov Zpalanzani
P076	Comparative Study of Cholesterol Lowering Drugs in the Perspective of Efficacy and Cost, a Case Study in Two Hospitals in Indonesia Livana Rakinaturia, Joseph Iskendiarso Sigit.
P077	Assessment the Practice of QAT Use Amongs Health Care Related Undergraduate Student in Aden University, YEMEN Alkaff M S, MB Bahari, Yelly Oktavia Sari
P078	Simulated Patient in the Community Pharmacy Setting in Surabaya: Drug Information of Simvastatin Prescription Gendhis Putri Medica, Elida Zairina, I Nyoman Wijaya, Ana Yuda
P079	Penang Primary School Teachers' Knowledge About Asthma and Its Management Khairunnisa, Mohd. Baidi B
P080	Pharmaceutical management case reports and analysis in a surgery ward Shinichi Masuda, Sumiko Hiura, Toru Asayama
P081	Pharmacy Students Learning Style and Their Preferences toward Activities in Pharmaceutical Care Model Learning Process Irawati, Sylvi; Hadisaputro, Dewi P.
P082	The Impact of Medication Adherence on Quality of Life Among Type 2 Diabetes Patients Fadzilah Shafie, Asrul Akmal Shafie, Mohammed Azmi Ahmad Hassali
P083	The Treatment Pattern of Systemic Lupus Erythematosus at One of Public Hospitals in Bandung Intan Wibawanti Masfufa, Maria Immaculata Iwo, Rachmat Gunadi Wachjudi
P084	Pro re nata Prescribing in Psychiatric Inpatients Arie Sulistyarini, Delia Hendrie, Stephen Lim, Michael Garlepp, Alexander John

EVALUATION CEPHALOSPORINE OF ANTIBIOTICS IN THE INTENSIVE CARE UNIT (ICU) GENERAL HOSPITAL CENTER SOUTH JAKARTA

Lili Musnelina, Irma Early Pratiwi
Department of Pharmacy, Institute of Science and Technology of National

Antibiotics are the most commonly prescribed drug for a patient In hospitalization. According to estimates by up to one third ofhospitalized patients received antibiotics, and antibiotic costs can reach 50% of the budget for medicines In hospitals. Additionally, a high rate nosocomial Infection in the intensive care unit (ICU) is more common compared with usual care patients in the ward. According to previous research, cephalosporin class of antibiotics Is the most widely used antibiotics in the ICU because this group is still considered the best antibiotic.This study aimed to evaluate the use of the cephalosporin class of antibiotics in terms of dosing and levels of use, and the sensitivity of bacteria to see the results of culture and sensitivity test. This study used cross sectional descriptive analytic with prospective data collection. Criteria for patients In the sample was hospitalized In ICU in the period from August to October 2009 using the cephalosporin class of antibiotics, which had a data culture and sensitivity test results, and data on laboratory levels of urea and creatinine. The data has been collected, and then analyzed using parametric analysis of the chi square test (SPSS 16).Of the 53 ICU patients, 90% use the cephalosporin class of antibiotics, with the third generation of ceftriaxone is the most used is 83.02%; The average age of patients between 21-45 years, with a duration of 1-3 days, total of 9, 43% used in the diagnosis of respiratory infectious diseases, and 13.21% ceftriaxone given in combination with metronidazole. Sensitivity of bacteria to the antibiotic group most resistant cephalosporins on *Klebsiella pneumoniae* isolates that Is 96.43%. The highest sensitivity occurs on cefepime and cefpirome. A total of 86.79% of doses given in accordance with the recommended dosage. There was a significant correlation between the level of usage class of cephalosporin antibiotics with bacterial sensitivity to antibiotics cephalosporin class.
The use of cephalosporin class of antibiotics Is high enough to affect the occurrence of bacterial resistance. This was due to the high use of antibiotics in a place within a certain period of time can lead to resistance of germs and reduce the sensitivity of these antibiotics.

Keywords: bacterial resistance, antibiotic sensitivity, cephalosporins

Education of a Pharmacists Contributing to a Community Health Care: Role of Pharmacists in Super-Aged Society in Japan.

Yoko Kubota, Mitsuyo Yoshimatsu, Naoko Ideguchi,Kaizurou Anzai
Teikyo Heisei University,City Chiba Pharmaceutical Association

The emergence of super-aged society In which immature medical system has become a big problem in Japan. In an attempt to enhance the medical treatment, we have adopted the six-year education system. As a result, new clinical pharmacists will be produced, and they are expected to take active parts in the field. We have started a new education method at our University. The first grade students had seminars which names Fresh Seminar, subject on physical assessment based on vital signs, and they must learn about medical ethics. In addition, the students also learn about disaster emergency medical treatment. The second year students were taught about Problem-based Learning (PBL), and the fourth graders try out Computer-Based Testing (CBT) and Objective Structured Clinical Examination (OSCE). Students at the fifth grade begin practical training at community pharmacies and hospitals, and they learned again about physical assessment based on vital signs as well as medical ethics. The sixth grade students are assigned to laboratory for graduation thesis, and they also learned about prescription analysis for the prevention of drugs side effects. The students were able to perform physical assessment based on vital signs and grab knowledge about medical ethics. Because of the new medical education system, the students had more possibilities to recognize the initial symptoms of drugs side effects and prevent them from occurring. They also could have more time to cooperate with another team member by increasing the practical training period. With such competencies they were expected to have pivotal roles In community pharmacy, including home care for patients. Physical assessment based on vital signs and medical ethics were becoming important fields for pharmacists in the future to support the safe and effective drug therapy. Having exposure to these subjects, our students were able contribute to drug therapy at home care, which could respond to change in population structure.

EVALUATION CEPHALOSPORIN OF ANTIBIOTICS IN *INTENSIVE CARE UNIT* (ICU) GENERAL HOSPITAL CENTRE SOUTH JAKARTA

Lili Musnelina, Irma Dini Pratiwi

Departement of Pharmacy, Institute of Science and Technology of National

Abstract

The cephalosporin group is the most used antibiotic in treating infections and is widely administered in the ICU. The purpose of this study was to obtain an overview of the use of these drugs in terms of dosage and level of use, as well as the sensitivity of germs by looking at the results of culture and sensitivity tests. Data were collected by using a purposive sampling survey, which was taken from medical record data at a hospital in South Jakarta. The results showed 90% of ICU patients were given cephalosporin antibiotics, namely ceftriaxone (83.02%) in patients aged between 21-45 years, with a duration of administration between 1-3 days. Most patients diagnosed with respiratory tract infection (9.43%). Ceftriaxone and metronidazole cephalosporins were associated with resistance to Klebsiella pneumonia ($\alpha > 0.05$). The conclusion of this study is that the high use of cephalosporin antibiotics is associated with the occurrence of bacterial resistance.

Key word: antibiotic, cephalosporin, bacterial resistance

Introduction

Antibiotics are drugs that are most often used today. It is estimated that up to a third of hospitalized patients receive antibiotics with the cost of using antibiotics up to 50% of the budget for drugs in hospitals. According to the Centers for Disease Control and Prevention, approximately 150 million antibiotic prescriptions are written in the United States a year. Gonzales research results show that 30% of antibiotic prescriptions are widely used for respiratory tract infections. Overuse of antibiotics and in some cases inappropriately, can cause problems with antimicrobial immunity.(1)

Nosocomial infections in the intensive care unit are more common than inpatients. Research from various universities in the United States that ICU patients often experience 5 to 8 times higher Nosocomial Infections with high gram-negative infections. The mortality rate due to Nosocomial pneumonia (37%) in the ICU in the United States (2003). Incidence 37-54% with 50-57% mortality, which is associated with the use of ventilator-associated pneumonia ventilators.(2)

Patients in the ICU require complex health services related to the variety of patient diseases and critical conditions in addition to the decreased a physiological state of the body. In addition, patients in the ICU often receive invasive measures (medical actions that can directly affect the integrity of body tissues) such as the installation of CVC (Central Vent Catheter), mechanical ventilators which are at a risk of causing an infection, so antibiotic treatment is given.([4])

Method

Data were collected by using a purposive sampling a survey method with descriptive analytic data from medical records, results of culture and sensitivity tests. The samples were taken were patients who used cephalosporin antibiotics, had culture and sensitivity test results, urea and creatinine levels. Data were analyzed using a chi square.

Result

Table 1.
Classification of cephalosporin antibiotics in the ICU

cephalosporin antibiotics		sample	
		n	%
Generation III	Cefoperazone	4	7.55
	Ceftriaxone	44	83.02
	Ceftazidime	3	5.66
Generation IV	Cefepime	1	1.89
	Cefpirome	1	1.89
Total		53	100

The most widely administered a cephalosporin antibiotic was ceftriaxone as much as 83.02%. This is because ceftriaxone (a third generation cephalosporin) is effective against a gram-negative bacteria and is not destroyed by cephalosporins (an enzyme that degrade some cephalosporins). coagulase, the longest half-life compared to other cephalosporin antibiotics (i.e. 6-8 hours) and no dose adjustment is required in patients with a renal failure or hepatic function disorders [(6,7)].

Table 2.
Use of cephalosporin antibiotics in the ICU based on age

cephalosporin antibiotics		Age				Total Usage
		Children	Adult	Mature	Old	
Generation III	Cefoperazone	-	-	1	3	4
	Ceftriaxone	4	2	16	22	44
	Ceftazidime	-	-	-	3	3
Generation IV	Cefepime	-	-	-	1	1
	Cefpirome	-	-	-	1	1
Total						53

The most use of antibiotics is the third generation cephalosporin class of antibiotics, namely ceftriaxone and mostly given to adults as many as 16 patients. This is because the activity of ceftriaxone is quite good against a gram-negative bacteria which usually cause an infection in adult and elderly patients.[7]

Table 3.
Use of cephalosporin antibiotics in the ICU based on antibiotic generation and duration of administration

cephalosporin antibiotics		Length delivery (days)				Total usage
		1-3	4-5	6-8	9-12	
Generation III	Cefoperazone	**1**	2	1	-	4
	Ceftriaxone	**32**	6	3	3	44
	Ceftazidime	**1**	-	-	2	3
Generation IV	Cefepime	**1**	-	-	-	1
	Cefpirome	**1**	-	-	-	1
Total						53

The third generation cephalosporin class of antibiotics ceftriaxone was given 1-3 days to 32 patients. This is probably because patients who are admitted to the ICU are usually only 1-3 days before being transferred to a regular ward, also for postoperative monitoring of therapy, or the patient then dies. In addition, surgical antimicrobial prophylaxis should be continued for only 1 day after surgery, to prevent super infection.[8] About 9-12 days of administration is generally given for severe infections such as meningitis that require 7-14 days of antibiotic therapy.[9]

Table 4.
The use of Antibiotics based on combination with other antimicrobial

The combination of cephalosporin	Number of combinations	
	n	%
Ceftriaxone – class of aminoglycoside	1	1.89
Ceftriaxone – class of quinolones	1	1.89
Ceftazidime - class of quinolones	1	1.89
Cefoperazone - class of quinolones	2	3.77
Ceftriaxone - class of Macrolide	2	3.77
Ceftriaxone - Metronidazole	7	13.21
Ceftazidime - Metronidazole	1	1.89
Ceftriaxone – class of aminoglycoside - Metronidazole	1	1.89
Ceftriaxone – class of quinolone - Metronidazole	4	7.55
Not combined	33	62.26
Total sample	53	100

The most widely used a combination is the combination of the antibiotic ceftriaxone with the antimicrobial metronidazole as much as 13.21%. This is because the cephalosporin class of antibiotics is effective for aerobic bacterial infections, whereas metronidazole includes most Gram-negative anaerobic bacteria and a protozoa.[11]

Table 5.
The sensitivity of bacteria to cephalosporin antibiotics

Isolates	Cephalosporin antibiotic sensitivity			Frequency of testing	%		
	R	I	S		R	I	S
Escherichia coli	-	1	6	7	0.00	14.29	85.71
Klebsiella pneumoniae	27	1	-	28	96.43	3.57	0.00
Pseudomonas aeruginosa	15	3	3	21	71.43	14.29	14.29
Enterobacter aerogenes	20	1	-	21	95.24	4.76	0.00
Serratia liquefaciens	3	1	3	7	42.86	14.29	42.86
Klebsiella ozaneae	12	1	1	14	85.71	7.14	7.14
Staphylococcus epidermidis	4	1	2	7	57.14	14.29	28.57

The highest germ sensitivity was Klebsiella pneumoniae isolated as much as 96.43%. This is because the Klebsiella strain has an R-plasmid that can inactivate antibiotics and can produce a beta-lactam enzymes.[12]

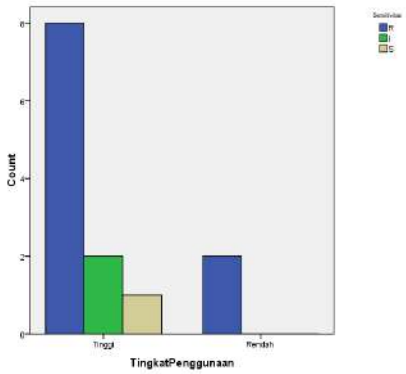
Table 6.
Cross tabulation data of Analysis the relationship between level of the use of cephalosporin antibiotics class antibiotic sensitivity of bacteria to antibiotics with cephalosporin class

Level of Use		sample	
		n	%
Exactly	Right dosage and interval	46	86.79
Not exactly	Right dose but not exactly interval	1	1.89
	Less precise dose and interval exactly	6	11.32
Total		53	100

The accuracy of the dose of a cephalosporin class of antibiotics with the interval of administration is done properly. If the dose was given is less than the recommended the dose, it can cause the maximum therapeutic effect not to be achieved and cause a resistance, whereas if the dose exceeds the recommended a dose it can increase side effects in the form of an impaired renal function of the patient. Administration intervals that are too short can cause the accumulation of antibiotics in the body. [13]

Table 7.
The relationship between the level of use of cephalosporin antibiotics with bacterial susceptibility

Usage Rate	cephalosporin antibiotics	Sensitivity			df	p value
		R	I	S		
Low	Ceftazidime	2	-	-	2	0,701
High	Ceftriaxone	8	2	1		



Picture 1.

Graph of the relationship between the level of use of cephalosporin antibiotics sensitivity of bacteria to antibiotics with cephalosporin class

From the results of the chi-square test, the P value of 0.701 is greater than 0.05, which means that the H1 hypothesis is accepted or that there is really a relationship between the level of use of cephalosporin antibiotics and the sensitivity of bacteria to cephalosporin antibiotics. This is because the high use of antibiotics in one place for a certain period of time can cause resistance to bacteria and reduce the sensitivity of these antibiotics. (14) The high level of use of ceftriaxone can increase the resistance of bacteria to ceftriaxone. It can be predicted that if its use continues to increase in the next few months, the sensitivity of ceftriaxone will decrease.

Conclusion

1. The most widely used cephalosporin antibiotics were ceftriaxone (83.02%), with an average age of 21–45 years, duration of administration 1-3 days (9.43%) used in the diagnosis of respiratory tract infections, and (13.21%) combined with other antimicrobials, namely metronidazole.

2. The sensitivity of germs to cephalosporin group antibiotics was mostly resistant to Klebsiella pneumoniae isolates (96.43%). The highest sensitivity to bacteria was in cefepime and cefpirome.

3. There is a significant relationship between the level of use of cephalosporin antibiotics and the sensitivity of bacteria to cephalosporin antibiotics.

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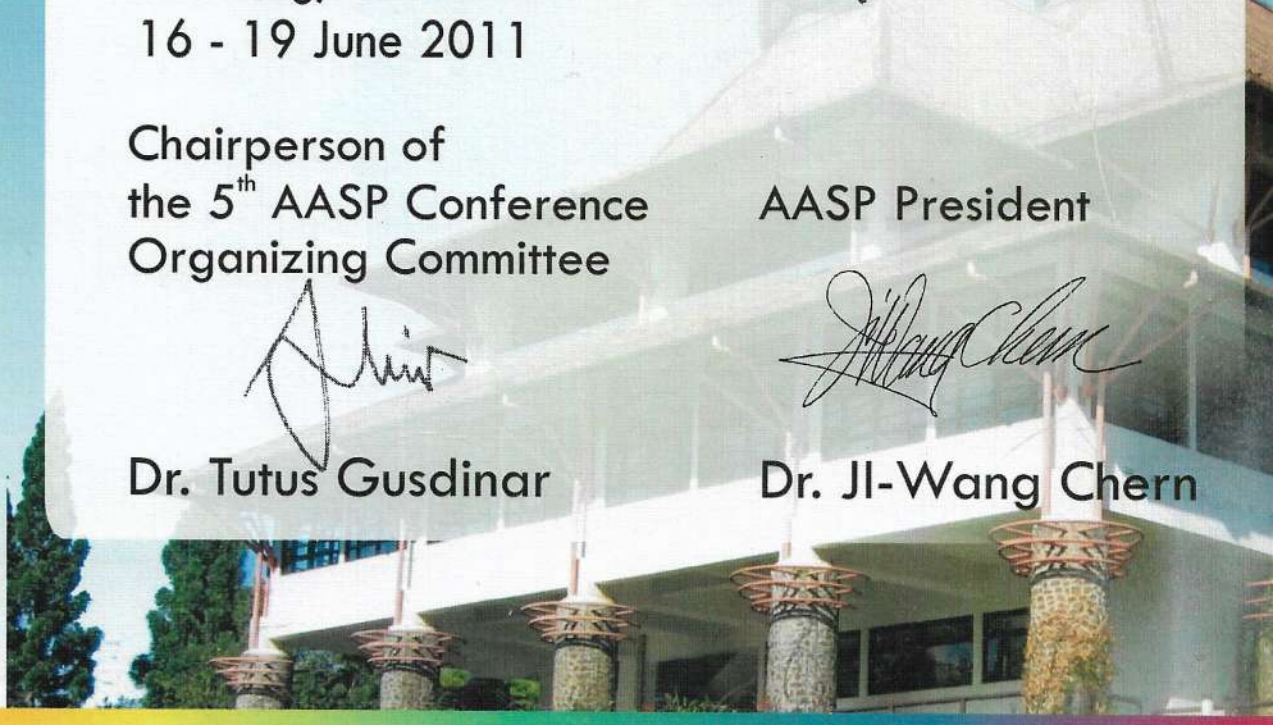

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EVALUATION OF CEPHALOSPORIN ANTIBIOTICS IN *INTENSIVE CARE UNIT* (ICU) GENERAL HOSPITAL CENTRE SOUTH JAKARTA

Lili Musnelina, Irma Dini Pratiwi

Department of Pharmacy, Institute of Science and Technology of National

Abstract

The cephalosporin group is the most used antibiotic in treating infections and is widely administered in the ICU. The purpose of this study was to obtain an overview of the use of these drugs in terms of dosage and level of use, as well as the sensitivity of germs by looking at the results of culture and sensitivity tests. Data were collected by using a purposive sampling survey, which was taken from medical record data at a hospital in South Jakarta. The results showed 90% of ICU patients were given cephalosporin antibiotics, namely ceftriaxone (83.02%) in patients aged between 21-45 years, with a duration of administration between 1-3 days. Most patients were diagnosed with respiratory tract infection (9.43%). Ceftriaxone and metronidazole cephalosporins were associated with resistance to Klebsiella pneumonia ($\alpha > 0.05$). This study concludes that the high use of cephalosporin antibiotics is associated with the occurrence of bacterial resistance.

Keywords: antibiotic, cephalosporin, bacterial resistance

Introduction

Antibiotics are drugs that are most often used today. It is estimated that up to a third of hospitalized patients receive antibiotics with the cost of using antibiotics up to 50% of the budget for drugs in hospitals. According to the Centers for Disease Control and Prevention, approximately 150 million antibiotic prescriptions are written in the United States a year. Gonzale's research results show that 30% of antibiotic prescriptions are widely used for respiratory tract infections. Overuse of antibiotics and in some cases inappropriately can cause problems with antimicrobial immunity.(1)

Nosocomial infections in the intensive care unit are more common than among inpatients. Research from various universities in the United States that ICU patients often experience 5 to 8 times higher Nosocomial Infections with high gram-negative infections. The mortality rate due to Nosocomial pneumonia (37%) in the ICU in the United States (2003). Incidence 37-54% with 50-57% mortality, which is associated with the use of ventilator-associated pneumonia ventilators.(2)

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by Lili Musnelina

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Patients in the ICU require complex health services related to the variety of patient diseases and critical conditions in addition to the decreased physiological state of the body. In addition, patients in the ICU often receive invasive measures (medical actions that can directly affect the integrity of body tissues) such as the installation of CVC (Central Vent Catheter), mechanical ventilators which are at risk of causing an infection, so antibiotic treatment is given.[4]

Method

Data were collected by using a purposive sampling survey method with descriptive analytic data from medical records, results of culture, and sensitivity tests. The samples were taken were patients who used cephalosporin antibiotics, had culture and sensitivity test results, urea and creatinine levels. Data were analyzed using the chi-square method.

Result

Table 1.
Classification of cephalosporin antibiotics in the ICU

Cephalosporin antibiotics		Sample	
		n	%
Generation III	Cefoperazone	4	7.55
	Ceftriaxone	44	83.02
	Ceftazidime	3	5.66
Generation IV	Cefepime	1	1.89
	Cefpirome	1	1.89
Total		53	100.00

The most widely administered cephalosporin antibiotic was ceftriaxone as much as 83.02%. This is because ceftriaxone (a third-generation cephalosporin) is effective against gram-negative bacteria and is not destroyed by cephalosporins (an enzyme that degrades some cephalosporins). coagulase, the longest half-life compared to other cephalosporin antibiotics (i.e. 6-8 hours), and no dose adjustment is required in patients with renal failure or hepatic function disorders [6,7].

Table 2.
Use of cephalosporin antibiotics in the ICU based on age

Cephalosporin antibiotics		Age				Total Usage
		Children	Adult	Mature	Old	
Generation III	Cefoperazone	-	-	1	3	4
	Ceftriaxone	4	2	16	22	44
	Ceftazidime	-	-	-	3	3
Generation IV	Cefepime	-	-	-	1	1
	Cefpirome	-	-	-	1	1
Total						53

The most used antibiotic is the third generation cephalosporin class of antibiotics, namely ceftriaxone, and mostly given to adults as many as 16 patients. This is because the activity of ceftriaxone is quite good against gram-negative bacteria which usually cause an infection in adult and elderly patients.[7]

Table 3.
Use of cephalosporin antibiotics in the ICU based on antibiotic generation and duration of administration

Cephalosporin antibiotics		Length delivery (days)				Total usage
		1-3	4-5	6-8	9-12	
Generation III	Cefoperazone	1	2	1	-	4
	Ceftriaxone	32	6	3	3	44
	Ceftazidime	1	-	-	2	3
Generation IV	Cefepime	1	-	-	-	1
	Cefpirome	1	-	-	-	1
Total						53

The third-generation cephalosporin class of antibiotics ceftriaxone was given 1-to 3 days to 32 patients. This is probably because patients who are admitted to the ICU are usually only 1-to 3 days before being transferred to a regular ward, also for postoperative monitoring of therapy,

or the patient then dies. In addition, surgical antimicrobial prophylaxis should be continued for only 1 day after surgery, to prevent superinfection.[8] About 9- to 12 days of administration is generally given for severe infections such as meningitis that require 7- to 14 days of antibiotic therapy.[9]

Table 4.
The use of Antibiotics based in combination with other antimicrobial

The combination of cephalosporin	Number of combinations	
	n	%
Ceftriaxone – class of aminoglycoside	1	1.89
Ceftriaxone – class of quinolones	1	1.89
Ceftazidime - class of quinolones	1	1.89
Cefoperazone - class of quinolones	2	3.77
Ceftriaxone - class of Macrolide	2	3.77
Ceftriaxone - Metronidazole	7	13.21
Ceftazidime - Metronidazole	1	1.89
Ceftriaxone – class of aminoglycoside - Metronidazole	1	1.89
Ceftriaxone – class of quinolone - Metronidazole	4	7.55
Not combined	33	62.26
Total sample	53	100.00

The most widely used combination is the combination of the antibiotic ceftriaxone with the antimicrobial metronidazole as much as 13.21%. This is because the cephalosporin class of antibiotics is effective for aerobic bacterial infections, whereas metronidazole includes most Gram-negative anaerobic bacteria and protozoa.[11]

Table 5.
The sensitivity of bacteria to cephalosporin antibiotics

Isolates	Cephalosporin antibiotic sensitivity			Frequency of testing	%		
	R	*I*	*S*		*R*	*I*	*S*
Escherichia coli	-	1	6	7	0.00	14.29	85.71
Klebsiella pneumoniae	27	1	-	28	96.43	3.57	0.00
Pseudomonas aeruginosa	15	3	3	21	71.43	14.29	14.29
Enterobacter aerogenes	20	1	-	21	95.24	4.76	0.00
Serratia liquefaciens	3	1	3	7	42.86	14.29	42.86

Klebsiella ozaneae	12	1	1	14	85.71	7.14	7.14
Staphylococcus epidermidis	4	1	2	7	57.14	14.29	28.57

The highest germ sensitivity was Klebsiella pneumonia isolated at as much as 96.43%. This is because the Klebsiella strain has an R-plasmid that can inactivate antibiotics and can produce beta-lactam enzymes.(12)

Table 6.
Cross tabulation data of analysis of the relationship between the level of the use of cephalosporin antibiotics class antibiotic sensitivity of bacteria to antibiotics with cephalosporin class

Level of Use		sample	
		n	%
Exactly	Right dosage and interval	46	86.79
Not exactly	Right dose but not exactly interval	1	1.89
	Less precise dose and interval exactly	6	11.32
Total		53	100.00

The accuracy of the dose of a cephalosporin class of antibiotics with the interval of administration is done properly. If the dose was given is less than the recommended dose, it can cause the maximum therapeutic effect not to be achieved and cause resistance, whereas if the dose exceeds the recommended dose it can increase side effects in the form of an impaired renal function of the patient. Administration intervals that are too short can cause the accumulation of antibiotics in the body. (13)

Table 7.
The relationship between the level of use of cephalosporin antibiotics with bacterial susceptibility

Usage Rate	Cephalosporin antibiotics	Sensitivity			*df*	*p-value*
		R	*I*	*S*		

Low	Ceftazidime	2	-	-	2	0.701
High	Ceftriaxone	8	2	1		

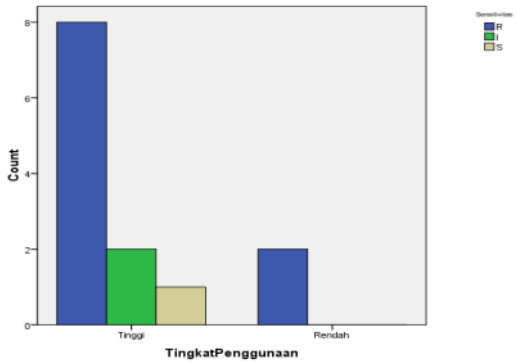

Figure 1.

The relationship between the level of use of cephalosporin antibiotics sensitivity of bacteria to antibiotics with cephalosporin class

From the results of the chi-square test, the P-value of 0.701 is greater than 0.05, which means that the H_1 hypothesis is accepted or that there is a relationship between the level of use of cephalosporin antibiotics and the sensitivity of bacteria to cephalosporin antibiotics. This is because the high use of antibiotics in one place for a certain period can cause resistance to bacteria and reduce the sensitivity of these antibiotics. [14] The high level of use of ceftriaxone can increase the resistance of bacteria to ceftriaxone. It can be predicted that if its use continues to increase in the next few months, the sensitivity of ceftriaxone will decrease.

Conclusion

1. The most widely used cephalosporin antibiotics were ceftriaxone (83.02%), with an average age of 21–45 years, duration of administration 1-3 days (9.43%) used in the diagnosis of respiratory tract infections, and (13.21%) combined with other antimicrobials, namely metronidazole.

2. The sensitivity of germs to cephalosporin group antibiotics was mostly resistant to Klebsiella pneumonia isolates (96.43%). The highest sensitivity to bacteria was in cefepime and cefpirome.

3. There is a significant relationship between the level of use of cephalosporin antibiotics and the sensitivity of bacteria to cephalosporin antibiotics.

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Waktu Penelitian	: Januari – Maret 2010
Responden	: Pasien ICU Pengguna Sephalosporin
Peneliti Utama	: Lili Musnelina, Irma Dini Pratiwi

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