2nd ICHMS & 2nd LSC

PROCEEDING

ISBN: 978-602-757-793-0

PROCEEDING

The 2nd International Conference of Medical and Health Sciences (ICMHS) and The 2nd Life Sciences Conference (LSC) 2016

"Towards a Better Quality of Life through Interdisciplinary Research"

Yogyakarta, 9th-10th December 2016
The Alana Hotel and Convention Center

UMY ICMHS Life Sciences SOCIETY

PROCEEDING

The 2nd International Conference of Medical and Health Sciences (ICMHS) and The 2nd Life Sciences Conference (LSC) 2016

"Towards a Better Quality of Life through Interdisciplinary Research"

Yogyakarta, 9th-10th December 2016
The Alana Hotel and Convention Center

TABLE OF CONTENT

Committee of ICMHS & LSC 2016

Supervisor	dr. Ardi Pramono, Sp.An, M.Kes
Chair	dr Iman Permana, M.Kes, Ph.D
Partner	Dr Zahid Iqbal, Ph.D
Secretary	Winnie Setyonugroho, S.Ked, MT, Ph.D
Secretariat	dr Bramantyas Kusuma H, M.Sc
	Futuh Hidayat, SEI
	Elida Tri Grahani, SE
Treasury	dr Hidayatul Kurniawati, M.Sc
Scientific section	Dr dr Ikhlas M Jenie, M.Med, Sc
	Dr Sri Nabawiyati Nurul Makiyah, S.Si, M.Kes
	Lia Fitriana, SP
Programme section	dr Ika Setyawati, M.Sc
	dr Imaniar Ranti, M.Sc
	dr Ahmad Ikliludin, SpM
Publication and Documentation section	dr April Imam Prabowo
	Arif Hadianto, ST
Logistic and Transportation	dr Muhammad Kurniawan, M.Sc
	Aris Nuryanta, SH
	Muhammad Ma'rifatullah Katiga Putra
	Dwi Hatmo Budi, S.IP
Fund Raiser	dr Maria Ulfa, MMR
	dr Akhmad Syaiful Fatah Husein, SpAn

Chair person of The 2nd International Conference of Medical and Health Sciences and The 2nd Life Sciences Conference 2016

Welcome to Jogja, sugeng rawuh!

For the second time, the Faculty of Medicine and Health Sciences Universitas Muhammadiyah Yogyakarta is going to conduct the 2nd International Conference of Medical and Health Sciences (ICMHS) this December in vibrant Yogyakarta, Indonesia. This year we are going to collaborate with the Life Sciences Society of Pakistan for their 2nd Life Sciences Conference (LSC) with Dr. Zahid Iqbal as the general secretary.

This year's conference theme "Towards a better quality of life through interdisciplinary research" will be celebrating an era of seamless interdisciplinary integration and collaboration in scientific innovations with the involvement of more extensive topics and disciplines in the conference. We aim to exhibit the products of that kind of approach in solving challenges, improving the quality of life, and creating sustainable developments. We are happy to announce that our conference is filled with Invited speakers from Pakistan, United States of America, Uni Emirates Arab, Malaysia and Indonesia. Presentations will be conducted in oral as well as poster that covers topics from medicine, public health, dentistry, pharmacy, biomedical to agriculture. To put more credibility to the conference we are collaborating with Isra Medical Journal and the Asian Journal of Agriculture and Biology to publish selected papers from the event. Other paper will be published in the ISBN Proceeding book.

The last but not least, enjoy the conference, start networking and sharing ideas, and let immerse yourself to the heritage cultural ambient of Jogja, sumonggo!

Yogyakarta, 1st December 2016

dr. Iman Permana, M.Kes, Ph.D.

Dean of Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta

Assalamu'alaikum Wr. Wb.

Science, especially in the areas of health and life growing more rapidly. We need to work together in the research of various disciplines to the advancement of science and to provide benefits to human life.

After successfully organized international scientific meeting last year, the Faculty of Medical and Health Sciences Universitas Muhammadiyah Yogyakarta, held the second scientific meeting ICMHS along with "2nd Life Sciences Conference". In this second scientific meeting, FKIK UMY collaborates with various researchers, among others from Pakistan, Malaysia, and the United States. Taking the theme "Towards a better quality of life through interdisciplinary research" we hope to establish cooperation with various parties to be able to contribute ideas to the civilization of human life.

Finally, we congratulate the scientific meeting in the city of Yogyakarta Indonesia. Enjoy the beautiful city of Yogyakarta with priceless historical relics. We hope that this meeting can run smoothly and provide benefits to the advancement of knowledge.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, 1st December 2016

dr. Ardi Pramono, M.Kes, Sp.An.

Rector of Universitas Muhammadiyah Yogyakarta

Assalaamu'alaikum Wr. Wb.

Ladies and Gentlemen,
Welcome to the 2nd International Conference on Medical and Health Science in conjunction with the 2nd Life Sciences Conference 2016
Welcome to Yogyakarta City of Tolerance
Our Faculty of Medicine and Health Sciences has been doing such international conference almost every year for the last ten years. This and other previous conferences are the things that supporting our vision as an excellence and Islamic university, a young and global university. We will always try to keep monitoring the development of science through sending more lecturers to do the sabbatical leave overseas, doing international research collaborations and also the international conference. Each department should do this strategy of internationalization so that each department has its own network. Faculty of medicine and health science is one of the most progressive units in implementing this strategy by inviting international experts on a regular basis. This program will certainly strengthen our vision.
International conference on medicine and health sciences is a smart choice to offer our lecturers access to the most recent development of the subjects. The participants will also gain the same knowledge and latest information on medicine and health sciences. As everyone knows that the development of science and technology are faster today compared to the previous period. Information technology, computer, and other development havefastened the transformation of medicine and health science into the different and more complex stage.

Cellular technology, for instance, can be used for several functions including those that directly impacts our daily life. There is no long distance call anymore today because cellular phone can do everything we need to contact other people far from where we stand anytime anywhere. People will finally innovate cellular phone for the sake of personal health services. We will in the future using our simple cellular phone to detect our body temperature, blood pressure, even how much fat we have in our body and how much it is supposed to be. We may also be able to check the health of our body without leaving our house and order medicine without going into the drug store. Everything is almost possible as long as we think hard for the better of people in the future. Enjoy the conference and don't forget to visit our rich tourist destinations, mountains, beaches or caves (underground waterways).

Thank you

Wassalaamu'alaikum Wr. Wb.

Prof. Dr. Bambang Cipto, MA

Keynote Speech

by Head of Provincial Health Office Special Region of Yogyakarta in International Conference of Medical and Health Sciences and Life Sciences Conference

The Alana Hotel and Convention Center, Yogyakarta, December 9-10, 2016

The honorable:

- Rector of Muhammadiyah University of Yogyakarta,
- The Dean of Medical and Health Sciences Muhammadiyah University of Yogyakarta,
- The chairman of organizing committee of the international conference of medical and health,
- Distinguished guests and colleagues.

Assalamu'alaikum Warahmatullahi Wabarakatuh,
First of all, we thank God for His blessings that today we may attend the International Conference of Medical Health Towards a Better Quality of Life Through Interdisciplinary Research in Yogyakarta.

My distinguished colleagues,
In Indonesia National Long Term Development Plan (2005-2024), the Indonesian Ministry of Health have determined a paradigm shift that have governed health services in health development plan. There has been a shift from Curative Health Services to Preventive and Promotive Health Services.
Recently, Indonesia suffers from a triple burden of diseases as health development challenges. The triple burden of diseases are: 1) the backlog of common infections, undernutrition, and maternal mortality; 2) the emerging challenges of non-communicable diseases (NCDs), such as cancer, diabetes, heart disease; and 3) mental illness, and the problems directly related to globalization, like pandemics and the health consequences of climate change.

Dear colleagues,
Here are some data that show several health problems in Indonesia:

1. Maternal mortility rate in 2015 is 4,809 cases, infant mortality rate in 2015 is 22,267 cases;
2. Regarding to children under the age of five, the national stunting rate is 37.2% which consists of 18% for very short dan 19.2% for short (Riskesdas 2013);

3. HIV testing coverage is 14% dan antiretroviral (ARV) therapy coverage is 65.58% (Directorate General of Disease Control and Prevention Ministry of Health, 2015);
4. Tuberculosis (TB) notification rate in 2015 is 73.5% and tuberculosis treatment success rate is 72% (Directorate General of Disease Control and Prevention Ministry of Health, 2015).

Distinguished guests,
Indonesia Health Development Program in 2015-2019 strengths in improving human quality life through Health Indonesia Program with family approach. The Indonesian Ministry of Health issued The Minister of Health Regulation (Permenkes) No. 39 Year 2016 as a Guideline of Implementation of Health Indonesia Program with Family Approach. This program has 12 main indicators as markers of a family health status.
Currently, many health programs have been implemented by Indonesian Ministry of Health, Provincial Health Offices, and District Health Offices. However, many health problems, some as mentioned above, still become health burdens. We may ask a question whether the programs that we conducted have answered the health problems we have in Indonesia.
It would be better if all health programs that we implement based on scientific health research, especially interdisciplinary research. The research should be related to detection, prevention, and treatment of diseases or problem solving for better health.
My dear colleagues,
Being a province with speciality, Special Region of Yogyakarta placed Traditional Medicine as one of the priority programs in Provincial Medium Term Development Plan (2017-2022). We still encounter many challenges in developing Traditional Medicine, especially in providing services which are based on scientific evidence.
Distinguished colleagues,
We look forward to results of interdisciplinary research which would support health problem solving, especially by developing traditional medicine in Yogyakarta. We believe that collaboration in interdisciplinary research would improve quality of human life.
Finally,
Thank you for your attention. We wish you a successful conference.

Wassalamu'alaikum Warahmatullahi Wabarakatuh,

On behalf of
the Head of Provincial Health Office
Special Region of Yogyakarta

Drg. Pembajun Setyaningastutie, M.Kes

SPEAKER OF INTERNATIONAL CONFERENCE

Zahid Iqbal
Al-Nafees Medical College Isra University Islamabad Campus Islamabad, Pakistan
"One Health Program for Public Health Benefit"

Prof. Dr. Abdul Khaliq
Professor, Department of Agronomy, University of Agriculture, Faisalabad
"Role of Agriculture in Poverty Alleviation of Rural Areas"

Fitri Arofati
Universitas Muhammadiyah Yogyakarta, Indonesia
"Continuing Professional Development of Practicing Nurses in Indonesia"

Tri Wahyuliati

Universitas Muhammadiyah Yogyakarta, Indonesia
"Diabetic Neuropathy - A Chance Towards A Better Treatment"

Mohammad Khalid Ashfaq
University of Mississippi, USA
"Natural Products –Use or Misuse"

Muhammad Mukhtar
American University of Ras Al Khaimah, United Arab Emirates
"Emerging Biotechnologies and Genomic Medicines in Human Health and Well-Being"

Muhammad Sasmito Djati
Brawijaya University Malang, Indonesia
"Herbal Medicine a Holistic Approach: in case of food supplement formulation of Sauropusandrogynus and Elephantopusscaberto modulate immune and hormonal system in pregnant Salmonella typhi infected mice"

REVIEWER

1. Dr. Zahid Iqbal, Ph.D (Isra University, Islamabad, Pakistan)
2. Prof. Dr. Abdul Khaliq (University of Agriculture, Faisalabad)
3. Dr. Mohammad Khalid Ashfaq, DVM, DTVM, MS, Ph.D (University of Mississippi, USA)
4. Dr. Muhammad Mukhtar, Ph.D (American University of Ras Al Khaimah, United Arab Emirates)
5. Dr. Ir. Muhammad Sasmito Djati, MS. (Brawijaya University Malang, Indonesia)
6. Fitri Arofiati, S.Kep., Ns., MAN., Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
7. Dr. SN Nurul Makiyah, S.Si., M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
8. dr. Iman Permana, M.Kes, Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
9. Dr. dr. Ikhlas M. Jenie, M.Med, Sc (Universitas Muhammadiyah Yogyakarta, Indonesia)
10. Dr. dr. Arlina Dewi, M.Kes, AAK (Universitas Muhammadiyah Yogyakarta, Indonesia)
11. dr. Oryzati Hilman, M.Sc, CMFM (Universitas Muhammadiyah Yogyakarta, Indonesia)
12. Dr. Dra. Yoni Astuti, M.Kes, Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
13. Dr. drg. Tita Ratya Utari, Sp. Ort (Universitas Muhammadiyah Yogyakarta, Indonesia)
14. Dr. dr. Tri Wahyuliati, Sp.S, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
15. Dr. Elsye Maria Rosa, M.Kep (Universitas Muhammadiyah Yogyakarta, Indonesia)
16. Dr. dr. Titiek Hidayati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
17. Dr. Shanti Wardaningsih, M.Kep., Ns., Sp.Kep.J., Ph.D. (Universitas Muhammadiyah Yogyakarta, Indonesia)
18. Dr. dr. Sri Sundari, M.Ke (Universitas Muhammadiyah Yogyakarta, Indonesia)
19. Dra. Lilis Suryani, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
20. Drh. Tri Wulandari K, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
21. Dr. dr. Wiwik Kusumawati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
22. Sabtanti Harimurti, S.Si., M.Sc., Ph.D., Apt. (Universitas Muhammadiyah Yogyakarta, Indonesia)

SPEAKER OF INTERNATIONAL CONFERENCE

ICMHS-O-1-20

Analysis of Infection Control Risk Assessment and Strategies to Reduce Health-Care Associated Infections in RS PKU Muhammadiyah Gamping Yogyakarta

Nurmalita Sari[1], Elsye Maria Rosa[2]

[1] Master of Hospital Management, Postgraduate Program
UniversitasMuhammadiyah Yogyakarta.

[2] Lecture, Master of Hospital Management, Universitas Muhammadiyah Yogyakarta.

Email: nurmalitaasari2@gmail.com

Abstract

HAIs (Hospital-Acquired Infections) is the most commonly known complication in health care.In identifying the infection, it is important to initially analyze the risk management. One way to manage risk of HAIs is by using ICRA (Infection Control Risk Assessment). Developing risk assessment of infection control in hospital is important to prevent any unwanted infection incident.This research aimto analyze Infection Control Risk Assessment and strategies to reduce Health-Care Associated Infectionsin RS PKU MuhammadiyahGamping Yogyakarta.This was a descriptive qualitative study with case study approach. This study used informants that were considered competent to provide information relating the infection prevention and control (IPC) program in the hospital. Data collection was conducted by in-depth interview and documents review.Identification of HAIs in RS PKU Muhammadiyah Gamping found risks such as (1) microorganisms infection transmission by direct and indirect contact; (2) infections; (3) treatment duration, prolonged of stay, disability; (4)health care professionals, patients, visitor, treatment area and hospitalsurroundings.Analysis and risk assessment of HAIs resulted that HAIs with the highest risk was surgical site infection.Strategies of infection reduction were stopping the infection transmission, identifying HAIs bacteria, rational use of antibiotic, optimizing HAIs surveillance, regular meeting and discussion of things related to HAIs, reporting, cooperation, evaluation, socialization and monitoring of HAIs and its prevention, and refreshing of HAIs standard operating procedures.The managements of RS PKU Muhammadiyah Gamping should put more attention to implementation of infection prevention and control program.

Keywords: risk management, ICRA, strategy, HAIs, infection prevention and control

INTRODUCTION

HAIs (*Health-care Associated Infections)* or commonly known as nosocomial infection or infection in hospitals is the most commonly known complication in health care. HAIs affects the patient and his family in losing the source of income, danger, disability or death and increase in treatment duration. For the hospital, HAIs will create extra expense and lower its image.[1]

The quality of hospital service can be assessed by the community's service facility utilization rate, the service quality, and hospital efficiency level.[2] One of the indicators of good hospital quality is the low number of nosocomial infection (HAIs) rate in the hospital. Standards in 2012 hospital accreditation system prioritize patients' safety and security without any infection during their treatment in the hospital.

Preventing and controlling infection in hospital is a necessary program for the hospital. In identifying the infection, it is important to initially analyze the risk management, which is a basis of prevention and reduction the danger from Health-care Associated Infections.[3] Risk management is defined as a comprehensive approach to treat every incident that could lead to unwanted effects.[4] Risk management is necessary in the hospital to anticipate any unwanted incidents that could happen anytime.

The Joint Commission on Accreditation of Health care Organizations creates ICRA (Infection Control Risk Assessment) as one program of Infection Prevention and Control (IPC) in hospital accreditation standard. Developing risk assessment of infection control in hospital is important to prevent any unwanted infection incident. ICRA is an important tool in designing, developing, monitoring, evaluating, and making consideration of various cases of infection risks, which are VAP (Ventilator-Associated Pneumonia), PBI (Primary Bloodstream Infection), CAUTI (Catheter Urinary Tract Infection), and SSI (Surgical Site Infection) in the hospital.[5]

MATERIALS AND METHODS

This was a descriptive qualitative study with case study approach. This study used informants that were considered competent to provide information relating the hospital, which were director of HIPC (Hospital Infection Prevention and Control) team, IPCN (Infection Preventive Control Nursing), head of inpatient wards, IPCLN (Infection Preventive Control Link Nursing), and inpatient officers that were involved in infection prevention and control. Data collection was conducted by in-depth interview and documents review.

RESULTS

1. Implementation of HAIs risk management in RS PKU Gamping Yogyakarta

Aspects of Infection Risk Management System	Processes of Infection Risk Management System	Evaluation of Infection Risk Management System Process
Implemented IPC Program	**Implementation**: 1. Program has been conducted for 1 year and well implemented. 2. Program has not been comprehensively socialized. **Aim :** 3. Preventing HAIs and its transmission **Support :** 4. Management 5. Training 6. IPCLN involvement 7. Infrastructure provision 8. Hand washing program	Implementation of IPC program was not optimal There was support from hospital management in IPC program
Officers involvement	**Officers involvement**: 1. Involved as according to operational standard, treatment was following procedure. **Role of Head of Inpatient Ward, IPCN, IPCLN:** 2. Supervising and reminding of personal protective equipment (PPE), hand washing, 5 moments implementation 3. Reporting surveillance in Information Management System	There was participation from hospital officers in supervising HAIs reduction implementation in unit
Communication and information	**Dissemination of information :** 1. Communication and information were easily accessed from computer in each unit. 2. Up-to-date information was obtained from discussion, meeting, training, reports, and poster/leaflet. 3. IPCLN delivered information to their work units.	Information transfer from IPC to hospital officers in units was easy
Leader's role	**Role of hospital director:** 1. Has significant contribution 2. Very supportive to IPC program **Negative aspects in the role of hospital director:** 1. No direct participation. 2. No evaluation or feedback. 3. No reward-punishment	Involvement, full support and proactive participation from hospital director was necessary for the program

Awareness of HAIs risk	**Awareness of HAIs risk:** Every officer was aware of the risk of infection **Activities that could reduce and prevent infection** 1. Washing hands. 2. UsingPPE **Risk awareness behavior:** 1. The use of PPEwas sometimes improper. 2. Hand washing behavior was not optimal. 3. Infrequent lapse of 6-steps hand washing and 5 moments implementation	Awareness of HAIs risk in OK, inpatients and outpatients ward was good. Implementation of risk awareness behavior was not optimal Hand washing behavior was not optimal 5 moments implementation was not optimal
Obstacles	**Obstacles of program implementation:** 1. Lack of infrastructure provision in unit 2. Difficulties in infection prevention implementation, such as lapse in hand washing and 5 moments. 3. Difficulties in changing habits. 4. Lack of resources. 5. Every officer had unique characteristic.	Obstacles came from lack of human resources and difficulties in changing habits.
Cooperation	**Cooperation between IPC team and every unit:** 1. Well implemented, communication was good. 2. Cooperation in OK room was not optimal Cooperation between OK and CSSD was hindered by human resources in CSSD	Cooperation in OK room, inpatients and outpatients ward were not optimal.
Officers expectation	**Expectation of change, support, and improvement:** 1. Improving hand washing behavior. 2. Proper behavior to control HAIs 3. Routine control and evaluation 4. Reward-punishment 5. Feedback 6. Professional attitude, improvement in individual attitude to comply with standards	Proactive support from officers

HAIs identification. HAIs identification was based on activities or treatments in hospital that could lead to HAIs incident, which had potential to become risk source and infection transmission method. HAIs risk Identification covered infection risk in hospital from health care professionals, patients, visitors, treatment area and hospital surroundings.

Risks that were found and analyzed including (1) spread of infectious disease from direct and indirect contact, (2) microorganism migration, entry, and growth, (3) entry of airborne virus/bacteria (Tuberculosis, influenza), (4) infection incident (SSI, VAP, CAUTI, PBI, phlebitis and decubitus), (5) treatment duration, delay, discharge, disability, or even death.

2. Program of Infection Control Risk Assessment HAIs

NO	RISK/ PROBLEM POTENTIAL	PROBABILITY					RISK/IMPACT (HEALTH,FINACIAL,LEGAL,REGULATORY)					Current systems/ preparedness					Score
		EXPECTED	LIKELY	MAYBE	RARE	NEVER	Catastrophic Loss (life/limb/ function/financial	Serious Loss (Function/ financial/ legal	Prolonged length of stay	Moderate clinical/ financial	Minimal clinical financial	None	poor	Fair	Good	Solid	
		5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	
	Healthcare Acquired Infection																
a	SSI		4						3					3			24
b	VAP					1			3							1	4
c	PBI					1			3				4				7
d	CAUTI		4						3							1	16
e	Phlebitis	5							3							1	20
f	Decubitus	5							3							1	20

3. Risk Assessment

Probability	Effect				
	Insignificant 1	Minor 2	Moderate 3	Mayor 4	Catastrophic 5
Expected 5			Phlebitis, decubitus		
Likely 4				SSI	
Maybe 3			CAUTI		
Rare 2					
Never 1	VAP		PBI		

: lowrisk : moderate risk
: high risk : extreme risk

4. Risk Evaluation

SSI Risk	Risk Description	Risk Evaluation
SSI Identification	Identification report and control of Surgical Site Infection	SSI reporting was not detailed where SSI control identification, infection classification of sanitary and unsanitary surgery, time of incidents, infection duration, wound treatment, SSI control including surgery procedure, treatment in ward, and post-surgery wound control in polyclinic were not optimal
Implementation of Infection Prevention and Control	In inpatients and outpatients ward a. Maintaining hand sanitary, washing hands before and after treating surgical wound, and the use of PPEbefore treatment	Washing hands before and after treating surgical wound had been conducted, but health care professional sometimes forgot implementing 5 moments. Health care professionals used of PPEsuch as gloves during surgical wound treatment.
	b. Use of instruments for treating surgical wound	Instruments used in wound treatment were sterile medication set. The medication set was immersed in enzymatic liquid after use, before submitted to CSSD.
	c. Measure after having spatter of blood or other body liquid when treating wounds	Wash with alcohol and washing hands immediately
Human Resources	Nurses' knowledge regarding signs of Surgical Site Infection	Signs of infection including edema, redness, and pus.
	Infection risk awareness	1. Health care professionals behavior showed good awareness of infection risk in OK room, inpatients and outpatients ward 2. Risk awareness behavior was not optimal 3. 5 momentsimplementation was not optimal 4. After using PPE, infection transmission was stopped by maintaining hand sanitary, however this was not optimal. In operation room, the probability of infection is very high. All team members had been aware of the risk and all the procedures (instrument management, waste treatment, cleaning, sterilized instrument after use)

SSI Risk Management	SSI risk management implementation in inpatients ward	Risk management including washing hands, use of PPE such as gloves, use of sterile instrument and technique in wound treatment.
	SSI risk management implementation in operation room	Maintaining hand sanitary by washing hands after surgery had been conducted. Use of sterile instrument and skin antiseptic use during surgery also had been performed. CSSD was regularly involved in sterilization of surgery instruments and operation room.
	Use of prophylactic antibiotic	Used before surgery, duration of use depended on operation type, which was 3-4 times after surgery in the treatment ward
Management Support	Management support in reducing SSI risk	1. Supervision of HIPC team through IPCN to IPCLN, where HAIs surveillance activities was reported by HIMS (Hospital Information Management System). 2. No monitoring of comprehensiveness of HAIs surveillance report by HIMS. 3. Reporting of SSI surveillance was not efficient. 4. Lack of mentoring and socialization to the health care professionals, regular evaluation was not optimal. 5. Regular meeting and discussion of SSI were not optimal. 6. SSI surveillance activities were not optimal. 7. Infrastructure was adequate. 8. Hospital director support on reducing HAIs was necessary.

5. Follow through of risk and strategy of reducing HAIs

HAIs	Score	Risk Level	General Purpose	Specific Purpose	Strategy	Risk Evaluation	Follow through analysis
SSI	24	Extreme	Reducing the number of SSI incidents	The number of SSI incidents declined	IPC training, procurement of hand hygiene facilities (sinkand hand-rub), education materials and leaflet regarding IPC (hand hygiene), refreshing pre-surgery, surgery, and post-surgery management, refreshing surgical wound treatment, creating SSI surveillance format and socialization of how to fill it.	IPC training had been conducted, hand hygiene was not optimal, no refreshing of surgery management to the patient, SSI surveillance format had been created but the socialization had not been conducted.	Need immediate attention of every officers (including hospital director), need extensive review and audit of Standard Operational Procedure (SOP), improvement of hand hygiene monitoring,patients' surgery management refreshing, socialization of SSI surveillance was needed, identification and control of surgical wound should be more detailed
VAP	4	Low	Reducing the number of VAP incidents	The number of VAP incidents declined	IPC training, procurement of hand hygiene facilities (sink and hand-rub), education materials and leaflet regarding IPC (hand hygiene), refreshing of patients nurse care by installing ventilator, creating VAP surveillance format including how to prevent it, and socialization of how to fill the format.	IPC training had been conducted, lack of hand hygiene facilities, presentation of patients nurse care by installing ventilator had been conducted, VAP surveillance format including how to prevent it had been created.	Conducting simple investigation of routine procedures. Auditing hand hygiene facilities, monitoring hand hygiene, conducting regular VAP surveillance and how to prevent it

HAIs	Score	Risk Level	General Purpose	Specific Purpose	Strategy	Risk Evaluation	Follow through analysis
PBI	7	Moderate	Reducing the number of PBI incidents	No PBI incidents	IPC training, procurement of hand hygiene facilities (sink and hand-rub), education materials and leaflet regarding IPC (hand hygiene), refreshing of preparations and treatment of insertingCentral Venous Catheters (CVC) ventilator, and socialization of how to fill the PBI surveillance format	Hand hygiene was not optimal, no refreshing of preparations and treatment of insertingCVC, PBI surveillance format and its prevention had been created but the socialization had not been conducted.	Conducting specific monitoring or audit, managing risk, auditing hand hygiene facilities, monitoring hand hygiene, conducting refreshing of preparations and treatment of insertingCVC, and conducting socialization of PBI surveillance its prevention.
CAUTI	16	High	Reducing the number of CAUTI incidents	The number of VAP incidents declined	IPC training, procurement of hand hygiene facilities (sink and hand-rub), education materials and leaflet regarding IPC (hand hygiene), refreshing of preparations and treatment of insertingurine catheter, creating and socialization of CAUTI surveillance format and its prevention and socialization of how to fill it.	Hand hygiene was not optimal, no refreshing of preparations and treatment of inserting urine catheter, CAUTI surveillance format and its prevention had been created but the socialization had not been conducted.	Conducting detailed interview, need immediate attention involving hospital management, auditing hand hygiene facilities, conducting bed site teaching of hand hygiene, monitoring hand hygiene, conducting refreshing of preparations and treatment of inserting urine catheter and conducting socialization of CAUTI surveillance its prevention.

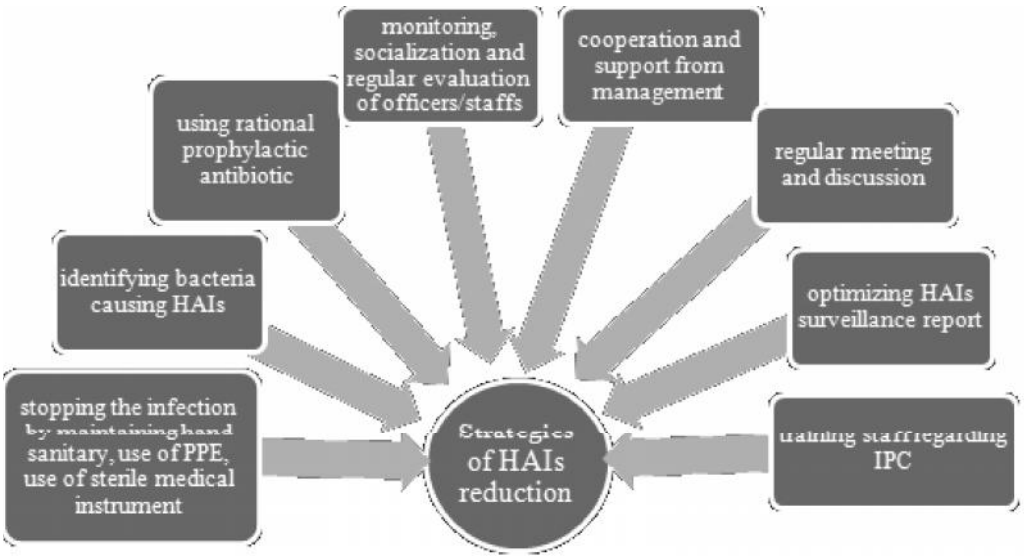
HAIs	Score	Risk Level	General Purpose	Specific Purpose	Strategy	Risk Evaluation	Follow through analysis
Other infection (Phlebitis)	20	High	Reducing the number of phlebitis incidents	The number of phlebitis incidents declined	IPC training, procurement of hand hygiene facilities (sink and hand-rub), education materials and leaflet regarding IPC (hand hygiene), refreshing of inserting and treating intravenous infusion SOP.	Hand hygiene was not optimal, no refreshing of inserting and treating intravenous infusion SOP.	Conducting detailed interview, need immediate attention involving hospital management, auditing hand hygiene facilities, monitoring hand hygiene, conducting refreshing of inserting and treating intravenous infusion SOP.
Other infection (decubitus)	20	High	Reducing the number of decubitus incidents	The number of decubitus incidents declined	IPC training, procurement of hand hygiene facilities (sink and hand-rub), education materials and leaflet regarding IPC (hand hygiene), procurement of anti-decubitus mattress, refreshing of decubitus nursing care.	Hand hygiene was not optimal, anti-decubitus mattress was available, and refreshing of decubitus nursing care had not been conducted.	Conducting detailed interview, need immediate attention involving hospital management, auditing hand hygiene facilities, monitoring hand hygiene, conducting refreshing of decubitus nursing care.

DISCUSSION

Stopping HAIs transmission in hospitals can be conducted by preventing HAI with using personal protective equipment and maintaining hand sanitary of health care professionals. According to informants' interview, they were aware of the importance of washing hands, however infrequent lapse could occur. Washing hands is important to reduce microorganism contagion and prevent infection.[6] Proper hand washing could prevent microorganism contagion and reducing the number of HAIs incidents.

Based on the risk assessment result in this study, HAIs with the highest risk was SSI. Surgical site infection is reported as the most common type of HAIs, 20-25% of all HAIs incidents in the world. SSI is responsible to the increase of hospital fee, morbidity and surgery related mortality and currently considered as one of the significant problems in the world.[7]

Figure 2. Strategies of HAIs Reduction



The first strategy is by increasing visitor immunity by providing active or passive immunization from health presentation. The second strategy is by deactivating infection agent by heating (pasteurization or sterilization), cooking food in necessary amount, and chemical method (water chlorination or disinfectant). The third strategy is by stopping the infection transmission. This is the easiest method, yet it relies on health care professionals' full attention in implementing predetermined procedures. These prevention strategies were mentioned in isolation precaution that included standard precaution and transmission-based precaution. The fourth strategy is by anticipating post-exposure prevention such as, transmission from blood or other body liquids from used needles or other things.[8]

Use of prophylactic antibiotic in pre-surgery is aimed to control infection risk and prevent post-surgery infection.[9] The success of antibiotic treatment depends on various aspects, such as antibiotic types, anti-microbe spectrum, pharmacological aspects, germ microbiological aspects, patient aspects and anti-microbe administration pattern.[10] Re-examination of prophylactic antibiotic use in surgery is needed, including antibiotic administration pattern, suitability of antibiotic therapy with standard and rationality of antibiotic use that covers proper indication, proper medicine, proper dosage, proper patient, awareness of medicine's side effects and awareness of medicine interaction in RS PKU Muhammadiyah Gamping.

Hospital can identify bacteria of surgical site infection or other type of HAIs by microbiological examination. The result can be used as basis of treatment or therapy of the bacteria causing HAIs. Previous studies reports that the most common bacteria that causes surgical site infection is Gram negative rods, a normal flora from intestines (*Pseudomonas sp,. Escherichia coli* and *Klebsiella sp.*)apart from normal flora from skin, which is Gram positive cocci bacteria (*Staphylococcus epidermidis*) in RSAM. These bacteria were identified by preparing cultures, conducting Gram staining and biochemical test.[11]

Hospital staffs need training to improve their knowledge. The aims of staff training are: (1) to develop skills needed to complete the jobs effectively; (2) to improve knowledge of completing their jobs rationally; (3) to develop positive behaviors of cooperation between staffs and hospital director.[12] Training of IPC program is expected to refresh and improve staffs' knowledge, improve their motivation and performance.

Mentoring and socialization, in addition with routine evaluation of staffs that are conducted effectively and efficiently are expected to improve hospital quality. Proper control will bring various benefits.[13]

CONCLUSION

Identificationof HAIs in RS PKU Muhammadiyah Gamping found risks such as (1) microorganisms infection transmission by direct and indirect contact;(2) infections (SSI, VAP, CAUTI, PBI, phlebitis and decubitus); (3) treatment duration, prolonged of stay, disability; (4)health care professionals, patients, visitor, treatment area and hospital surroundings. Analysis and risk assessment of HAIs resulted that HAIs with the highest risk was SSI. Evaluation and follow through of HAIs risk resulted that hand hygiene monitoring, surgical wound control and management support were not optimal. Strategies of infection reduction were stopping the infection by maintaining hand sanitary, use of PPE, use of sterile medical instrument, identifying HAIs bacteria, rational use of antibiotic, optimizing HAIs surveillance, regular meeting and discussion of things related to HAIs, reporting, cooperation, evaluation, socialization and monitoring of HAIs and its prevention, and refreshing of HAIs standard operating procedures.

REFERENCES

1. Weston, D. *Fundamentals of Infection Prevention and Control: Theory and Practice 2nd Edition.* Wiley-Blackwell. 2013. Page 6
2. Muninjaya, AAG. *Manajemen Kesehatan*. Jakarta: Penerbit Buku Kedokteran EGC. 2004.
3. National Health and Medical Research Council. (2010). *Australian Guidelines for the Prevention and Control of Infection in Health care, HEALTHCARE ASSOCIATED INFECTION RISK MANAGEMENT AND PATIENT SAFETY STANDARDS : Categorised guidance on recommended practice and legal and professional standards in Infection Control.*Australian goverment. NHMRC—ICG Project Team, Canberra. Cited January 5, 2016 Available from: http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/cd33_infection_control_healthcare.pdf
4. Anonim. Asesmen manajemen risiko berbasis ISO 31000: 2009. Cited January 25, 2015 Available from: http://latarmarif.weblog.esaunggul.ac.id/wp-content/uploads/sites/1079/2015/04/Manajemen-Resiko-ISO-3001-2009.pdf
5. Lardo S., Prasetyo B., Purwaamidjaja D.B. Infection Control Risk Assessement (ICRA). CDK-238, 2016; 43 (3) Cited March 4, 2016 Available from: http://www.kalbemed.com/Portals/6/19_238Analisis-Infection%20Control%20Risk%20Assessment-ICRA.pdf
6. Ernawati, E., Tri. A.R., Wiyanto. S. Penerapan Hand Hygiene Perawat di Ruang Rawat Inap Rumah Sakit. *Jurnal Kedokteran Brawijaya*. 2014. Cited August 1, 2016 Available from: Http://jkb.ub.ac.id___/idex.php___/jkb/artcle/_view.file/523/409.
7. Mawalla, B., Mshana SE, Chalya PL, Imirzalioglu C and Mahalu W. Predictors of Surgical Site Unfections among Patients Undergoing Major Surgery at Bugando Medical Centre in Northwestern Tanzania. BMC Surgery, 2011; 11:21.
8. Darmadi. *Infeksi Nosokomial: Problematika dan pengendaliannya.*Jakarta: Penerbit Salemba Medika. 2008.
9. Amin, L.Z *Pemilihan antibioik yang raisional*. 2014. Vol 27 cited August 18, 2016 Available from: http://cme.medicinus.co/file.php/1/MEDICAL_REVIEW_Pemilihan_Antibiotik_yang_Rasional.pdf
10. Bratzler, D.W., Dellinger, E.P., Olsen, K.M. ASHP clinical practice guidelines for antimicrobial prophylaxis in surgery. ClinPharm. ASHP Commission on Therapeutics. 2013. Cited August 19 2016 Available from: https://www.idsociety.org/uploadedFiles/IDSA/Guidelines-Patient_Care/PDF_Library/2013%20Surgical%20Prophylaxis%20ASHP,%20IDSA,%20SHEA,%20SIS%281%29.pdf
11. Warganegara E, Apriliana E, Ardiyansyah R. Identifikasi Bakteri Penyebab Infeksi Luka Operasi (ILO) Nosokomial pada Ruang Rawat Inap Bedah dan Kebidanan Rsam di Bandar Lampung. 2012. ISBN No. 978-602-98559-1-3
12. Usman, H. *Manajemen Teori, Praktik, Riset Pendidikan*. 2006. Jakarta: Bumi Aksara.