UNIVERSITI SAINS MALAYSIA
GERAN PENYELIDIKAN UNIVERSITI PENYELIDIKAN
LAPORAN AKHIR

GOVERNANCE FOR DISASTER RISK REDUCTION: DEVELOPMENT OF STANDARD OPERATING PROCEDURE DURING FLOOD DISASTER IN HEMODIALYSIS PATIENTS

PENYELIDIK

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2017

KEMENTERIAN PENDIDIKAN MALAYSIA

FINAL REPORT
GERAN PENYELIDIKAN PENGURUSAN BENCANA BANJIR
Laporan Akhir Skim Geran Penyelidikan Fundamental (FRGS)
Tahun 2015

A

RESEARCH TITLE: GOVERNANCE FOR DISASTER RISK REDUCTION: DEVELOPMENT OF STANDARD OPERATING PROCEDURE DURING FLOOD DISASTER IN HEMODIALYSIS PATIENTS

YEAR: 2015

THEME CODE: 1.0
(Please refer attachment)

SUBTHEME CODE:

Please Tick (√)

PHASE:	01: Pre-Disaster	√	02: During Disaster		03: Post-Disaster		
AREA:	01: Preventive		02: Preparedness	√	03: Rescue and Recovery		
	04:Adaptation		05: Mitigation	√			

START DATE: 1 APRIL 2015
END DATE: 31 DECEMBER 2015
EXTENSION PERIOD (DATE): RMC LEVEL: 1 JANUARY 2016 – 31 APRIL 2016
KPM LEVEL:

PROJECT LEADER: PROF. MADYA DR AZREEN SYAZRIL ADNAN
I/C / PASSPORT NUMBER:

PROJECT MEMBERS: 1. PM. DR. MOHD YAZID IDRIS
(including GRA/RA/RO) 2. DR. DAISY KEE MUI HUNG
3. PROF. DR. MOHD AIZAINI MAAROF
4. DR. FAUZIAH JUMMAAT
5. DR. AMER HAYAT KHAN
6. NURUL JANNAH AMBAK
7. ZULKEFLI SANIP
8. RAJA AHSAN AFTAB (GRA)

PROJECT ACHIEVEMENT *(Prestasi Projek)*

B

ACHIEVEMENT PERCENTAGE			
Project progress according to milestones achieved up to this period	**0 - 50%**	**51 - 75%**	**76 - 100%**
Percentage (please state #%)			100%

RESEARCH OUTPUT		
	Indexed Journal	***Non-Indexed Journal***
Number of articles/ manuscripts/ books *(Please attach the First Page of Publication)*	1. Dengue-Induced Acute Kidney Injury(DAKI): A Neglected and Fatal Complication of Dengue Viral Infection – A Systematic Review. Journal of The College of Physicians and Surgeons Pakistan(JCPSP), 25(11):828-834. Impact Factor: 0.35 2. Dialysis Disaster Management During Massive Flood –The Malaysian Northeastern Experience. Haemodialysis International, 19: S12-S73. Doi. 10.1111/hdi.12368. Impact Factor: 1.24	
Conference Proceeding *(Please attach the First Page of Publication)*	***International***	***National***
Intellectual Property *(Please specify)*	ViTaL Kit and Wristband for ADNAN System Application (Kindly refer Attachment below)	
Number and title of Policy Paper / SOP / Technology Solution *(Please specify)*	1. Standard Operating Procedure for Disaster Recovery and Contingency Plan For Dialysis Services- A Manual for Receiving End Hospital and Dialysis Facilities. 2. Standard Operating Procedure for Disaster Preparedness and Contingency Plan For Dialysis Facilities (State Level). 3. Standard Operating Procedure for Disaster Recovery and Contingency Plan For Dialysis Services- A Manual for Hospital and Dialysis Facilities (National Level)	

HUMAN CAPITAL DEVELOPMENT

Human Capital	Number				Others (please specify)
	On-going		Graduated		
Citizen	Malaysian	Non Malaysian	Malaysian	Non Malaysian	
No. PHD STUDENT					
Student Fullname: IC / Passport No: Student ID:		((			
No. MASTER STUDENT					
Student Fullname: IC / Passport No: Student ID:					
No. RA/RO					
Student Fullname: IC / Passport No: Student ID:					
Total		1			

EXPENDITURE *(Perbelanjaan) as Borang K1(RMC)*

C

Budget Approved *(Peruntukan diluluskan)* :
Amount Spent *(Jumlah Perbelanjaan)* :

Balance *(Baki)* :
Percentage of Amount Spent :
(Peratusan Belanja)

ADDITIONAL RESEARCH ACTIVITIES THAT CONTRIBUTE TOWARDS DEVELOPING SOFT AND HARD SKILLS
(Aktiviti Penyelidikan Sampingan yang menyumbang kepada pembangunan kemahiran insaniah)

D

International

Activity	Date (Month, Year)	Organizer
(e.g : Course/ Seminar/ Symposium/ Conference/ Workshop/ Site Visit)		

National

Activity	Date (Month, Year)	Organizer
Training of Trainers For Advanced Dialysis Nephrology Application Network(ADNAN).	12 October 2015.	CKD Resource Centre, USM in collaboration with Computing Faculty, UTM
Flood Action Plan for Dialysis Services for The State of Kelantan	17-18 November 2015	CKD Resource Centre, USM in collaboration with Kelantan State Health Department, Malaysian Society of Nephrology(MSN) and National Kidney Foundation(NKF)

E	**PROBLEMS / CONSTRAINTS IF ANY** *(Masalah/ Kekangan sekiranya ada)*
	1. The SOP is developed for government and private based hospitals, few issues on governance and policies are needed to be resolved before fully implementing the SOP 2. The authority of endorsing the SOP relies on the Ministry Of Health, as such the endorsement require certain procedural matters to be resolved prior to the endorsement (will take longer time) 3. The dialysis staffs require serial workshops to understand the SOP, it was not possible as the duration of the study was limited
F	**RECOMMENDATION** (*Cadangan Penambahbaikan*)
	1. Supports from the higher authority required to fully implement the SOP 2. Serial workshops need to be conducted to ensure the understanding of the SOP among the healthcare providers
G	**RESEARCH ABSTRACT – Not More Than 200 Words** (*Abstrak Penyelidikan – Tidak Melebihi 200 patah perkataan*)
	The recent flood had affected many healthcare facilities, including the hemodialysis centers. End stage renal failure (ESRF) patients are hemodialysis dependant, depriving them from treatment may lead to increased morbidity and mortality. A specific Standard Operating Procedure (SOP) is required during disaster for hemodialysis services to ensure treatments are not disrupted. During our recent flood in Kelantan, we have identified several issues on human resources poor coordination, missing patients' clinical records, logistic issues for patient and medical supply transfer and unsupervised dialysis quality control as the major problems. This research is meant to develop a SOP for the hemodialysis staffs and patients during disaster, to ensure mitigation, preparedness, response and recovery process successful. The SOP will be developed in 4 phases, namely: Phase 1: identification of stakeholders and the experts and establishing working groups for specific areas (i.e: human resources management, development of web based medical data records, logistics coordination and dialysis quality control). Phase 2: Workshops and Guideline Reviews by the assigned working groups, and development of web based medical record system for hemodialysis patients. Phase 3 SOP development and consensus by the stakeholders. Phase 4: SOP Review and Approval (application of the SOP in a drill) The SOP developed from this study will be applied during flood disaster and the web based medical records will be referred in the clinical management of the patients. The outputs of this study will reduce mortality and prevent morbidities in patients on regular hemodialysis and will ensure the continuity of care with acceptable quality of services during disaster. Complications related to dialysis treatments can also be prevented and reduced with effective coordination of human resources and logistics. A specific Standard Operating Procedure (SOP) is required during disaster for hemodialysis services to ensure treatments are not disrupted.

Date : 31 APRIL 2016
Tarikh

Project Leader's Signature :
Tandatangan Ketua Projek

PROF MADYA DR AZREEN SYAZRIL A
MD M Med (Int. Med) (USM) FASN
Fellow American Society of Nephrology, NSR
MMC Full Registration No 37105
Consultant Nephrologist and Physician
Chronic Kidney Disease (CKD) Resource C
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H	COMMENTS, IF ANY/ ENDORSEMENT BY RESEARCH MANAGEMENT CENTER (RMC) *(Komen, sekiranya ada/ Pengesahan oleh Pusat Pengurusan Penyelidikan)*
	....
	Name: PROF. DR LEE KEAT TEONG *Nama:* Pengarah Pejabat Pengurusan & Kreativiti Penyelidikan Universiti Sains Malaysia Date: *Tarikh:* 24/5/16
	Signature: *Tandatangan:* [redacted]

ATTACHMENT 1

Dengue-induced Acute Kidney Injury (DAKI): A Neglected and Fatal Complication of Dengue Viral Infection - A Systematic Review

ARTICLE JOURNAL OF THE COLLEGE OF PHYSICIANS AND SURGEONS--PAKISTAN: JCPSP · NOVEMBER 2015

Impact Factor: 0.75

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REVIEW ARTICLE

Dengue-induced Acute Kidney Injury (DAKI): A Neglected and Fatal Complication of Dengue Viral Infection - A Systematic Review

Tauqeer Hussain Mallhi[1], Azmi Sarriff[1], Azreen Syazril Adnan[2], Yusra Habib Khan[1], Azhar Amir Hamzah[3], Fauziah Jummaat[4] and Amer Hayat Khan[1]

ABSTRACT

Dengue Viral Infection (DVI) imperils an estimated 2.5 billion people living in tropical and subtropical regions. World Health Organization (2011) guidelines also classified dengue as 'Expanded Dengue Syndrome' to incorporate wide spectrum of unusual manifestations of dengue infection affecting various organ systems - including liver, kidney, heart and brain. Renal involvements are least appreciated area of dengue infection, therefore, we systematically reviewed studies describing renal disorders in dengue infection, with emphasis on Acute Kidney Injury (AKI). The purpose of current review is to underscore clinicians' attention to this neglected intricacy of DVI. It suggests that dengue induced renal involvements vary from glomerulonephritis, nephrotic range proteinuria and AKI. We observed great disparity in incidence of AKI among dengue patients, based upon criteria used to define AKI. AKI among dengue patients was found to be associated with significant morbidity, mortality and longer hospitalization, adding financial burden to patients and healthcare system. Additionally, we identified several predictors of AKI in dengue patients including old age, obesity, severe dengue infection and concurrent bacterial or viral infection. Direct viral injury and deposition of antigen-antibody complex in glomerulus were found to be possible causes of renal disorders in dengue infection. Prior knowledge of clinico-laboratory characteristics and risk factors with early detection of AKI by using appropriate criteria would not only reduce morbidity and mortality but also decrease burden to patients and healthcare system.

Key Words: *Dengue. Dengue hemorrhagic fever. Dengue shock syndrome. Acute kidney injury. Tropical infections.*

INTRODUCTION

Dengue Fever (DF) and its severe forms – Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS) – have become major international public health concerns. Over the past three decades, there has been a dramatic global increase in the frequency of DF/DHF/DSS and their epidemics, with a concomitant increase in disease incidence.[1] This disease is caused by four closely related serotypes (DENV-1, DENV-2, DENV-3, DENV-4) of dengue virus (DENV), an arbovirus belonging to Flaviviridiae family that is transmitted from human to human with the bite of infective female mosquitos mainly by *Aedes aegyptii* and to lesser extent by *Aedes albopictus* and *Aedes polynesienses*.[2] Alarmingly, discovery of fifth serotype (DENV-5) in Malaysia demands more authoritative measures in terms of surveillance, prevention and treatment.[3] Today about 2.5 billion people (40% of the world's population) live in areas where there is a risk of dengue transmission. Dengue is endemic in at least 100 countries in Asia, the Pacific, the Americas, Africa, and the Caribbean. The World Health Organization (WHO) estimates that 50 - 100 million infections occur yearly, including 500,000 DHF cases and 22,000 deaths, mostly among children.[4] Classification of dengue infection remains challenging to healthcare professions. Based on WHO 1997 classification, symptomatic dengue infection can be classified into DF, DHF and DSS.[5] In 2009, WHO revised classification of dengue infection and dengue was divided into probable dengue, DF without warning signs, DF with warning signs and severe dengue.[4] More recently, WHO 2011 regional revised guidelines classified dengue into DF, DHF without shock or with shock hemorrhage (DSS) and expanded dengue syndrome.[1]

Expanded Dengue Syndrome (EDS) is new entity added to WHO guidelines to incorporate wide spectrum of unusual manifestations of dengue infection affecting various organ systems. The involvements of various organs are increasingly being reported in DHF, while EDS can also occur in DF cases without evidence of plasma leakage.[1] Atypical and unusual manifestations of DVI are shown in Figure 1.[6,7]

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