

## ISRRT Research Fund Application

### PART I: SUMMARY OF RESEARCH PROPOSAL

**1 (a) Project title: PATIENT SAFETY MEASURES AND PRACTICES IN MEDICAL IMAGING DEPARTMENTS IN MALAWI**

**1(b) i.** Primary Field: PATIENT SAFETY MEASURES EMPLOYED IN MEDICAL IMAGING DEPARTMENTS IN MALAWI

Secondary Field: COMPARING THE PATIENT SAFETY MEASURES EMPLOYED IN MEDICAL IMAGING DEPARTMENTS TO THE INTERNATIONAL STANDARD OPERATIONAL PROCEDURES

**1(b) ii.** A maximum of five keywords to characterize the work of your proposal  
 I. .Patient safety II. .radiographer III. Radiation safety IV. Infection prevention V. safety measures and practices

**2. Investigator(s):** *(Attach CV of each of the investigators)*

	Name (First name, Last name)	Email address	Affiliation	Address
Principal Investigator	Moses Chipembo Soko	Its <a href="mailto:mchipembo@gmail.com">mchipembo@gmail.com</a>	Ministry of health-gvernment	Radiology department, zomba central hospital, box 21 zomba, Malawi
Co-investigator(s)	John Khosa	Its <a href="mailto:johnkhosa2@gmail.com">johnkhosa2@gmail.com</a>	Ministry of health-gvernment	Radiology department, zomba central hospital, box 21 zomba, Malawi
Co-investigator(s)	Linda Kalumbi	Its <a href="mailto:kalumbilinda@gmail.com">kalumbilinda@gmail.com</a>	Ministry of health-gvernment	Radiology department, zomba central hospital, box 21 zomba, Malawi
Co-investigator(s)	Madalitso Liponjera	Its <a href="mailto:madalitsoliponjera@gmail.com">madalitsoliponjera@gmail.com</a>	Ministry of health-gvernment	Radiology department, kamuzu central hospital, box 149 lilongwe, Malawi

**3. Total Allocation Requested** [in Pound Sterling]:   3000 GBP

**4. Duration of Project:** 24 months

**5. Significance/Outcome of Project:**

- 1. It will help to identify the gaps in health safety measures practiced in various hospitals**
- 2. It will help to come up with national standard operating procedures and guidelines in patient health safety in medical imaging**
- 3. It will help to identify innovative measures that are employed to ensure patient's safety in medical imaging in resource limited settings**
- 4. It will help to identify gaps in patient safety measures practiced that shall need the development of other research**

**6. Project proposal**

- i) **Abstract of research** [limited to  $\frac{1}{2}$  page or 250 words, and comprehensible to a non-specialist]:

Patient safety is the absence of preventable harm to a patient during the process of health care and reduction of unnecessary harm associated with health care to an acceptable minimum . Medical imaging department uses body images to diagnose and treat diseases such as tumours in the case of radiotherapy. The acquisition of these images is through Ionising radiation which may cause injuries to bodies of patients. Other body images are produced by the effect of non ionising radiation such as ultrasound and magnetic resonance imaging. Though not producing non-ionizing radiation, they also have side effects to the body of patients such as production of high temperature. Some procedures require contrast agents that may risk the patients to reactions and introduction of infections. Some risks come from equipments and flow of patient in the department Patient safety measures are to be practiced in order to reduce and minimize infections and injuries in medical imaging departments such as radiation injuries, infections, reactions to drugs and contrast, patient handling issues, fire and incidences occurring in medical imaging departments just to mention a few. It is the responsibility of Research Grand Application form Chesney Award 2017

the medical imaging department personnel to provide a safe environment for the patients when they are getting medical imaging services to minimize unnecessary harm to the patients. However, there are no standard operational procedures in patient safety in Malawi. It is not known the safety measures that are employed in various hospitals to patients attaining radiological investigations as compared to the international standards. It is further not known the innovations in patient health safety that are made in various hospitals in order to discharge radiological investigations while ensuring patient safety. The study seeks to explore the health safety measures and practices employed in government hospitals. The study will take place in radiography departments of 31 government hospital. Checklist will be used to collect data. The findings will help to come up with standard operational procedures on patient health safety in Malawi.

- ii) **The project objectives and long-term impact [maximum 1 page]:** *[State the purpose of the proposed investigation, identify the key issues and problems being addressed, and state the possible outcome of the research project in terms of its relevance, significance and value. Please list in point form where appropriate].*

### **Purpose of the study**

The purpose of the research study is to explore the patient health safety measures and practices employed in medical imaging departments in government hospitals in Malawi

**Key issues to be addressed in the study**

Malawi has no standard operational guidelines on health safety in terms of

- a. Radiation safety
- b. Infection prevention
- c. Health safety in medical imaging

Each hospital conducts differently from the other. The research seeks to explore the safety measures employed in various hospitals and compare to the international standard. The research will also explore best practices in safety measures in limited resource setting that needs to be supported. The findings will help to recommend for standard operational procedures and also expose gaps that require intervention

Possible outcome of the study

- a. It will help to identify the gaps in health safety measures practiced in various hospitals
- b. It will help to come up with national standard operating procedures and guidelines in patient health safety in medical imaging
- c. It will help to identify innovative measures that are employed to ensure patient's safety in medical imaging in resource limited settings
- d. It will help to identify gaps in patient safety measures practiced that shall need the development of other research

- iii) **Background/literature review of related work that has been done** [*maximum 2½ pages, including references*]:

**NOTE: the literature review is still under development as the protocol is not yet finalized has not yet gone for approval to the local ethics committee. When it is complete and approved, the full protocol and approval letters will be emailed to you in few months time. The few items written here are from the concept.**

Patient safety is the absence of preventable harm to a patient during the process of health care and reduction of unnecessary harm associated with health care to an acceptable minimum<sup>1</sup>. Medical imaging department uses body images to diagnose and treat diseases such as tumours in the case of radiotherapy. The acquisition of these images is through Ionising radiation which may cause injuries to bodies of patients. Other body images are produced by the effect of non ionising radiation such as ultrasound and magnetic resonance imaging. Though not producing non-ionizing radiation, they also have side effects to the body of patients such as production of high temperature. Some procedures require contrast agents that may risk the patients to reactions and introduction of infections. Patient safety measures are to be practiced in order to reduce and minimize infections and injuries in medical imaging departments such as radiation injuries, infections, reactions to drugs and contrast, patient handling issues, fire and incidences occurring in medical imaging departments just to mention a few<sup>2</sup>. It is the responsibility of the medical imaging department personnel to provide a safe environment for the patients when they are getting medical imaging services to minimize unnecessary harm to the patients.

The scenario of patients getting injuries and infections in medical imaging departing is not uncommon. It can be either from the equipments or from the environment where the procedure is done. The human factor of lack of skills and knowledge in handling patients as well as not performing quality assurance are contributing to poor patient safety. In Malawi, there are 31 government hospitals that have imaging departments. Four (4) out of thirty four (4) are referral hospitals, 24 are district hospitals (secondary health care hospitals) and 3 are health centres (primary health care hospitals). The country has a population of approximately 17 million people. The medical imaging equipments commonly available are general x- ray machines and ultrasound machines in all hospitals. There is one (1) magnetic resonance imaging (MRI), one (1) computed tomography (CT) and four mammography machines located in the four referral hospitals. The nuclear medicine and radiotherapy facility is not yet opened

but construction. Most of the contrast studies are done in the referral hospitals. The medical imaging departments are run by radiographers as the country has an acute shortage of radiologist. There is one radiologist serving a population of 17 million<sup>3</sup>.

Medical imaging department plays a major role in diagnosis of diseases and is hub of the hospitals. Patients are referred for general x -ray examination and ultrasound daily. This calls for ensuring high patient safety measures in the departments due to the nature of procedures done, congestions and balancing the quality of images and safety of the patients. Despite having the equipped medical imaging departments, there are no official standard operation procedures regarding patient safety in the country to guide the standards in the medical imaging departments. However, medical imaging services are being delivered across the country. It is from this background that a case can be made to explore the patient safety measures that are practiced in the 34 hospitals in order to minimize risk to the patients.

Chinamale et al conducted the study on quality assurance in selected medical imaging department in Malawi and found out that there were fault equipments that posed a risk to the staff and patients. Further, more Cowles Chilungulo assessed the radiation protection measures applied in some government hospitals and found out that there were variations in practice risking the patients, staff and public to dangers of ionizing radiation. In relation to infection prevention measures Denis Nyirenda etal, studied the work environment of medical imaging departments in referral hospitals in relation to infection prevention procedures, he also found out the low level of adherence in infection preventions in medical imaging department. There has be no study that regarding patient safety the few studies done focused on the medical imaging department as a whole. This study seeks to explore patient safety measures and practice employed in various government hospitals across the country. The study will help to come up with recommendations for better practice in patient safety

**REFERENCES (the list is not complete as the protocol is still under development)**

- a. Ministry of Health. Malawi Healthy sector strategic plan 2011- 2016. Moving towards quality and equity.2009. Gazzeted on 2010 Dec (accessed on 2019 Mar 24). Available from: <http://www.health.gov.org.com>.
- b. Bushong, SC. Radiologic science for technologists, physics, biology and protection. 9 th ed. St Louis: Elsevier; 2008.
- d. Medical Council of Malawi. Procedures and ethical guidelines for radiographers. 2000. Gazzeted on 2002 June 21 (accessed on 2017 Aug 6). Available from: <http://www.medicalcouncil.org.mw>.
- e. Malawi National radiology policy 2020-2025

- f. Brink H, van der Walt C, Rensburg G. Fundamentals of research methodology for healthcare professionals. 3<sup>rd</sup> ed. Cape Town. Juta. 2012.
- g. Armstrong P, Wastle M, Rockall A. Diagnostic imaging. 6th ed. London: Blackwell publishers; 2010.
- h. Aldous C, Rheeder P, Esterhuizen T. Writing your first clinical research
- i. Creswell JW, Clark VP. Designing and conducting mixed methods research. 2<sup>nd</sup> ed. Los Angeles; SAGE :2011.

iv) **Research plan and methodology** [*maximum 3 pages, including references*]:

**STATEMENT OF THE PROBLEM**

The country has medical imaging departments providing a range of medical imaging services such as general x-rays, contrasts radiography, MRI, CT, ultrasound, mammography. Some are owned by government, others private while others mission hospital. There are no standard operation procedures and guidelines in patient safety in medical imaging departments in Malawi. However, the radiographers are compelled to offer services to the patients in their respective departments. It is not known about the patient safety measures that are practiced in these respective departments in order to minimize patient harm during the health care delivery process. Poor patient safety measures risk patients to injuries, infections and incidences in medical imaging department.

**THEORETICAL FRAMEWORK OF PATIENT SAFETY**

Patient safety includes continuous quality assurance of equipments, ensuring radiation safety to patients and public, safe work environment, availability of patient safety materials and information, proper handling of patients, adhering to infection prevention and expertise in executing the procedures. There are no guidelines on patient safety measures in medical imaging department and the study seeks to explore the safety measures and practices in various department in line with the recommended standards.

## **RESEARCH DESIGN**

A quantitative, non-interventional descriptive comparative design research, using cross sectional data collection method will be utilized in this study<sup>7</sup>.Such a research design enables comparing the variables and systems whether the other variable is better than the other. In this study the outcomes of the patient safety measures practiced in various hospitals will be compared to the international patient safety standards in medical imaging departments

### **. METHODS**

Methods are steps taken in the research study in order to answer the research question<sup>8</sup>.In order to answer the research question, the following steps to be followed will be discussed in terms of criteria for recruiting participants, selection of measurement tools, measurement techniques, data collection and data analysis.

### **POPULATION / UNIT OF ANALYSIS**

The study population consists of the diagnostic radiographers running medical imaging departments and the units of analysis are medical imaging departments

### **INCLUSION CRITERIA AND EXCLUSION CRITERIA**

All 31 government hospitals with medical imaging departments will be assessed in patient safety measured that are employed

All private hospitals and mission hospitals will be excluded because their practice is regulated by government and is emulated from government.

Knowledge and skills of radiographers in patient safety will not be assed as the study focuses on the practice available on a particular setting.

### **UNIT ANALYSIS**

These will be imaging departments and the components in relation to patient safety such as availability of patient safety protocols and materials, equipments and infection prevention measures

### **SAMPLING**

Purposive sampling will be used to recruit participants as well as units of analysis

### **SAMPLE SIZE**



31 government imaging departments across the country will be assessed

## **MEASUREMENTS**

Checklist tool will be used to assess the safety measures practiced in various imaging departments. There will also be open ended question on any innovation employed in some hospitals should that innovation not appear on check list.

The scores will be made into percentage on safety measures applied in relation to the international safety guidelines.

### **Variables**

In this study, the research variable which is the patient safety practice in medical imaging department will be studied. A research variable is defined as “neither dependent nor independent variable where the focus of quantitative research is neither causative nor predictive .The other variables that will be studied are the association of level of practice in patient safety to level of institution and work load.

## **DATA COLLECTION AND ORGANISATION**

The researchers will be responsible to collect data during work hours. The research project is anticipated to take 20 months to a maximum of two years.

### **REFERENCES ( the list is not complete as the protocol is still under development)**

- c. Ministry of Health. Malawi Healthy sector strategic plan 2011- 2016. Moving towards quality and equity.2009. Gazzeted on 2010 Dec (accessed on 2019 Mar 24). Available from: <http://www.health.gov.org.com>.
- d. Bushong, SC. Radiologic science for technologists, physics, biology and protection. 9 th ed. St Louis: Elsevier; 2008.
- j. Medical Council of Malawi. Procedures and ethical guidelines for radiographers. 2000. Gazzeted on 2002 June 21 (accessed on 2017 Aug 6). Available from: <http://www.medicalcouncil.org.mw>.
- k. Malawi National radiology policy 2020-2025
- l. Brink H, van der Walt C, Rensburg G. Fundamentals of research methodology for healthcare professionals. 3<sup>rd</sup> ed. Cape Town. Juta. 2012.

- m. Armstrong P, Wastle M, Rockall A. Diagnostic imaging. 6th ed. London: Blackwell publishers; 2010.
- n. Aldous C, Rheeder P, Esterhuizen T. Writing your first clinical research
- o. Creswell JW, Clark VP. Designing and conducting mixed methods research. 2nd ed. Los Angeles; SAGE :2011.

v) **Working schedule** [Describe what will be done under “tasks” and shade the boxes to indicate when the task will be done]

Tasks	Year 1				Year 2			
	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
WRITING THE PROPOSAL	XXXX							
SUBMISSION OF PROPOSAL		XXXXX						
APPROVAL OF PROPOSAL			XXXXX					
DATA COLLECTION				XXXXX	XXXXX			
DATA ANALYSIS						XXXXX		
WRITE UP OF FINDINGS							XXXXX	XXXXX

**7. i) Allocation requested:**

**Total cost of project:**

Description of items	£
(a) Staff ( travel, meals and accommodation,stationary)	2300
(b) Equipment...(Laptop for the project)	400
(c) General expenses ( research supervision and biostatistics consultation,research processing payment)	500
(d) Conference (Max. £600)	600
Total amount requested :	£3800

**ii) Justifications for allocation**

**The cost allocated have been also allocated with the description of each expenditure.**

**There is cost for travel for researchers ( 4) in terms of fuel allowances, meals and accommodation during data collection(approximately 2300 pounds).**

**There is also an allocation of laptop (approximately 400 pounds) for all writing materials during research process**

**There is also location of cost for payment for approval of research ( approximately 200 pounds) supervision of research (150 pounds) and biostatistician consultation service (150 pounds) from Malawi University of science and Technology ( MUST) that will supervise the study for standards and validity of findings.**

**Lastly, there is allocation of conference costs. This will be incurred during dissemination of research findings in conferences**

**8. Supporting documents** *[List documents submitted in support of this application e.g. support letter for research from institution, ethics approval from Institute Review Board etc.]*

**The research is under development and in few months time will go for approval at the National Health research ethics committee (NHRC) before data collection. The documents will be emailed to you when all is finalised**

**9. Research ethics/safety approval:** *[The primary responsibility of seeking the relevant approval rests with the PI. If human subjects are involved in the research, the respective subject consent form together with the information sheet for subjects should be attached with this proposal.]*

*Please check the appropriate boxes to confirm if approval for the respective ethics and/or safety issues is required.*

**The study involves measures and practices that are employed as patient health safety measures in each department. Permissions will be obtained from NHRC the head of the institution and head of radiography department. No ionization radiation will be used during the study**

	Approval not required	Approval Obtained	Approval being sought
(i)	Human research ethics		
(ii)	Ionizing radiation safety		



**PART II INSTITUTIONAL ENDORSEMENT**

[The PI's institution is required to complete this part to certify his/her status in the institution.]

1.a  I confirm that the Principal Investigator **\_MOSES CHIPEMBO**  
**SOKO**\_\_\_\_\_ has been a full-time employee as \_\_\_\_\_**HEAD OF**  
**RADIOLOGY DEPARTMENT** of this institution since \_\_\_\_\_**24 June , 2017**

OR

1.b  I confirm that the Principal Investigator \_\_\_\_\_(name) will be a full-  
time / part-time\* \_\_\_\_\_(position of Principal Investigator) of this  
institution starting \_\_\_\_\_(date).

2. Our institution **ZOMBA CENTRAL HOSPITAL**\_\_\_\_\_ will fully support the conduct of the proposed project if the application is successful.

Signature : \_\_\_\_\_

Name : **\_\_\_BEATA MAKUNI ZUZA**\_\_\_\_\_

Designation : **\_\_\_CHIEF NURSING OFFICER ( CNO) AND DEPUTY HOSPITAL**  
**DIRECTOR**\_\_\_\_\_

Institution : **\_\_\_ZOMBA CENTRAL HOSPITAL**\_\_\_\_\_

Date : **\_\_\_24/02/2021**\_\_\_\_\_

Department /  
Institution chop