

# **Improving Global Health Diagnostic Imaging Project Plan**

## **Implementation of Atomic Energy Council Regulations 2012 at St Mary Hospital Lacor**

# Document Control

<b>Document Type</b>	Project Plan
<b>Document Title</b>	Radiation Safety
<b>Version Number</b>	1
<b>Project Lead</b>	Paul Matthews
<b>Project Manager</b>	Helen Slattery
<b>Issue Date</b>	February 2022
<b>Review Date</b>	July 2022

## Introduction

St Mary's Hospital is a non-profit hospital located in the village of Lacor, Gulu City, Gulu District, Northern Region Uganda. The hospital was founded by the Italian Catholic Missionary Comboni in 1959 but is managed by board directors from Uganda today. It serves as a general hospital for population for Gulu City and Gulu District as well as referral hospital for the region, country and continent. Employing over 500 staff. Containing over 500 beds and treating over 30,000 inpatients and 300,000 outpatients per year. Performing over 30,000 x-ray examinations per year.

The hospital possesses the following radiation equipment: three fixed x-ray machines and two mobile x-ray machines; three fixed fluoroscopy machines and two mobile fluoroscopy machines and one mini fluoroscopy machine as well as two OPG/lateral cephalogram machines; one dental x-ray machine additionally one mammography machine.

The hospital employs the following radiation workers: two Consultant Radiologists; four Diagnostic Radiographers; eight Assistant Radiographers. There are classified as Radiation Workers in Uganda. Additionally Orthopaedic Surgeons are considered Radiation Workers when operating mobile or mini fluoroscopy machines. Dentists / Dental Surgeons are also considered Radiation Workers when performing Dental x-rays.

The Health Education England, Improving Global Health, Diagnostic Imaging Project will focus on Radiation Safety and implementation of the Atomic Energy Council Regulations.

## Rationale

St Mary's Hospital Lacor underwent an Atomic Energy Council inspection in October 2021 which highlighted only 43% compliance of regulations. It was given six months to meet outstanding requirements or recommendations.

An additional inspection of St Mary's Hospital Lacor for pre-authorisation to use new equipment also found lack of compliance with requirements and regulations. This was meant a license to use the equipment was not granted and instead a three-month deadline to implement requirements and regulations was set.

Furthermore, licenses for existing equipment are due to expire in August and need renewing but due to lack of compliance with regulations these are unlikely to be granted. This would inhibit services in Diagnostic Imaging and wider hospital.

A Radiation Safety Officer has been appointed to oversee implementation of the regulations and associated guidelines. Unfortunately, they have not yet been able to receive relevant teaching or undertake relevant training for the position. Moreover there is ongoing demand for their services as a Diagnostic Radiographer, which the time constraints placed by the Atomic Energy Council on St Mary's Hospital Lacor to fulfil regulations do not take into account.

Application of ionising radiation and radioactive materials in diagnostic imaging is beneficial to patients requiring diagnosis of injury or illness and staging of disease. However, using radiation in medicine has to involve careful balance between benefits to health and risk related to radiation exposure. The purpose of the Atomic Energy Council regulations is to protect individuals, society and environment from dangers of ionising radiation and ensure safety and

security. In turn individual facilities are answerable for implementation of regulations and associated guidelines ensuring radiation safety for patients, public and staff.

**Scope**

The project will involve writing documents, creating records and delivering teaching / training.

The project does not replace the role of Radiation Safety Officer but assists them with their responsibilities/duties/tasks and activities.

The project will incorporate Radiation Safety officer and radiation workers in ensuring policies, protocols, processes and procedures are implemented into practice, records maintained and teaching / training delivered.

**Stake Holders**

- **Atomic Energy Council Chief Executive Officer** – Noah Deogratias Luwalira or delegates
- **Medical Director & Consultant Radiologist** – Dr Cyprian Opira
- **Radiation Safety Officer** – Churchil Acaye
- **Radiation Safety Committee** – TBC
- **Radiation workers including:**
  - Radiographers
  - Assistant Radiographers
  - Orthopaedic Surgeons
- **Health Education England Improving Global Health Fellow** – Paul Matthews

**Goal**

Implement Atomic Energy Council Regulations 2012 at St Mary’s Hospital Lacor.

**Indicators**

Atomic Energy Council inspection report in October 2021 found 43% compliance with regulations and required implementation of outstanding requirements or recommendations within six months.

Atomic Energy Council pre-authorisation inspection report in February 2022 required implementation of outstanding requirements and recommendations within three months.

A radiation safety survey undertaken on 66.6% of staff found average score of x% indicating knowledge and skill gaps related to regulations and radiation safety.

**Outcome**

Licenses for use of radiography equipment granted by Atomic Energy Council.

**Indicators**

Licenses for new equipment not granted due to not to fulfilling requirements or recommendations.

Licences for existing equipment due to expire in August 2022 but not currently fulfilling requirements or recommendations to be granted renewal.

Compliance with Atomic Energy Council inspection criteria.

Self-assessment indicates compliance with criteria.

Atomic Energy Council inspection report confirms compliance with criteria.

Outputs	Indicators
Delegation of tasks and lines of communication established for radiation protection and safety.	<p>Radiation safety officer evidence of 75% activities/tasks associated with position as listed in role/responsibility/duty documents.</p> <p>Radiation Safety Committee hold first meeting and produce minutes. Schedule second meeting and share agenda.</p>
Policies, procedures protocols & processes	<p>All radiation workers sign to confirm Emergency plan written and disseminated.</p> <p>Display local rules in x-ray rooms, on mobile x-ray units as well as in fluoroscopy rooms and on mobile fluoroscopy units. Test all radiation workers awareness and understanding through spot check assessment.</p> <p>Radiation safety officer approves quality assurance/control plan.</p> <p>Direct observation of practice used to confirm staff following standard protocols.</p>
Create records	<p>All radiation workers receive new Thermoluminescent dosimeter on time at least once during six-month project.</p> <p>Up-date requisition form to include section for verifying pregnancy status of child baring patients and audit use/compliance.</p> <p>A spot check confirms use of fault logs and maintenance records.</p> <p>Test radiation protective equipment and record results once during six-month project.</p>
Teaching materials and training workshops	<p>Teaching/training session on radiation safety attended by 100% radiation workers.</p> <p>Comments on feedback form highlight new knowledge and skills in radiation safety.</p> <p>Repeat radiation safety survey finds average score 90%.</p> <p>Undertake four image quality audits during four-month period with four different staff.</p>
Activities	Schedule
Organisation Chart Displayed	Week 14
Allocation of roles/responsibilities/duties/tasks	Week 14
Radiation Safety Committee Established	Week 14
Child baring radiation workers policy written	Week 4
Emergency Plan written	Week 5
Local Rules written	Week 8
Create / Update exposure charts	Week 10
Quality Control/Assurance Programme written	Week 9
Personal Dosimeters changed	Week 21
Protective Equipment testing	Week 12
Equipment fault and maintenance log books in place	Week 12

Update requisition form childbearing age patients	Week 11
Radiation Safety teaching/training	Week 15 & 16
Share acts and regulations	Week 15 & 16
Assess radiation workers knowledge / skills	Week 17
Reject Analysis	Week 13, Week 18, Week 22
<b>Tools</b>	
<ul style="list-style-type: none"> <li>• Atomic Energy Council Pre-Authorisation Inspection Report on St Mary's Hospital Lacor – February 2022</li> <li>• Atomic Energy Council Inspection Report on St Mary's Hospital Lacor – September 2021 2021</li> </ul>	
<b>Measures</b>	
<ul style="list-style-type: none"> <li>• Atomic Energy Council Inspection Criteria / Report.</li> </ul>	
<b>Resources</b>	
<ul style="list-style-type: none"> <li>• Atomic Energy Council Radiation Regulations.</li> <li>• Atomic Energy Council Guidance for Documenting Quality Assurance Programme.</li> <li>• Atomic Energy Council Guidance on Documenting Radiation Protection Programmes.</li> <li>• Ministry of Health Standards on Diagnostic Imaging and Therapeutic Radiology for Uganda.</li> </ul>	
<b>Sustainability</b>	
<ul style="list-style-type: none"> <li>• Radiation safety committee schedule &amp; agenda</li> <li>• Policies, protocols, procedures, processes written</li> <li>• Records created</li> <li>• Staff teaching / training sharing skills and knowledge</li> <li>• Teaching/training resources</li> <li>• Atomic Energy Council inspections will mean continued re-assessment of outputs to achieve outcomes.</li> </ul>	
<b>Risks</b>	
<ul style="list-style-type: none"> <li>• Unplanned leave for project team</li> <li>• Unplanned leave for staff due to undergo teaching/training</li> <li>• Patient demand</li> <li>• Communication</li> <li>• Engagement</li> <li>• Policies, protocols, procedures, processes not approved</li> </ul>	

## Theory of Change

Activities	Outputs	Outcomes	Goal
Organisational Chart	Job plans	Licenses for use of conventional radiology equipment granted by Atomic Energy Council	Implement Atomic Energy Council Regulations 2012 into practice at St Mary's Hospital Lacor
Allocation of roles / responsibilities / duties			
Radiation Safety Committee			
Child baring employees	Write documents		
Emergency Plan			
Local Rules			
Quality assurance & Quality control programme	Create records	Compliance with Atomic Energy Council inspection criteria	
Standard Protocols			
Personal Dosimeter Monitoring			
Protective Equipment Testing	Teaching materials and training workshop		
Equipment Log Books			
Child Baring Patients			
Radiation Safety teaching/training			
Share acts and regulations with radiation workers	Assess radiation workers knowledge and skills	Reject Analysis	
Assess radiation workers knowledge and skills			
Reject Analysis			

# Schedule

## Diagnostic Imaging Project - Gulu - St Mary's Hospital Lacore

	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday									
February	Week 1		Arrive Uganda	Arrive Gulu				Week 2							Week 3							Week 4		Project Plan	Project Plan	Project Plan	Project Plan	Project Plan	Week 5		Write Document								
			Write Document	Write Document	Away	Away	Away	Away	Away	Away	Away	Away	Away	Kampala	Away	Away	Write Documents	Write Documents	Write Documents	Write Documents	Write Documents	Away	Week 8		Write Document	Write Document	Write Document	Write Document	Write Document	Week 9		Write Document	Write Document	Write Document	Write Document				
March																																							
April																																							
May	Week 14		Radiation Safety Committee	Radiation Safety Committee	Radiation Safety Committee	Radiation Safety Committee				Teaching/Training	Teaching/Training	Teaching/Training	Teaching/Training	Teaching/Training			Teaching/Training	Teaching/Training	Teaching/Training	Teaching/Training	Teaching/Training			Assess Learning	Assess Learning	Assess Learning	Assess Learning	Assess Learning	Week 18		Reject Analysis	Reject Analysis							
June																																							
July																																							



## Change Log

Version	Author	Job Title	Date	Log	Details
1	Paul Matthews	Improving Global Health Fellow	March 2022	1	First Draft

## Consultation

Version	Individual	Job Title	Date Consulted	Date Responded	Comments
1					