

10 YEARS OF MEDICAL PHYSICS TRAINING IN GHANA: SUCCESSES, CHALLENGES AND THE WAY FORWARD

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Abstract – Medical Physicists are an important part of Cancer management worldwide. In Ghana, Medical Physics education and training first started in 2004 with 6 students. The Medical Physics Department is currently located in the School of Nuclear and Allied Sciences, University of Ghana – Atomic Campus which was founded by a collaboration between the Ghana Atomic Energy Commission (GAEC) and University of Ghana, with support from IAEA. The training comprises of didactic lectures, clinical practicals and thesis work. The department incorporates the latest developments of imaging and radiotherapy in its training. It has led to graduates who are equipped for their task.

Keywords – medical physicist, clinical training, School of Nuclear and Allied Sciences.

I. INTRODUCTION

In response to the need of adequately trained medical physicist in the health delivery system of Ghana and Africa at large, the M.Phil Medical Physics programme was established in 2004. The programme was initially hosted by the School of Allied Health Science (SAHS), University of Ghana. In 2006, with support from the International Atomic Energy Agency (IAEA), Ghana Atomic Energy Commission (GAEC) in collaboration with University of Ghana (UG) established the Graduate School of Nuclear and Allied Sciences (SNAS) to promote Post Graduate university education and training for preservation and enhancement of nuclear knowledge in Ghana and Africa. A department of Medical Physics was created and the programme was moved from the SAHS to SNAS. In 2008, PhD in Medical Physic was also introduced and currently has a duration of four (4) years.

Over the years, the Medical Physics programme has grown from initially admitting local students to admitting foreign students from across Africa. Governments and the IAEA have also sent students from across Africa to be trained in the programme.

II. FACULTY

The Medical Physics department has a well-resourced faculty comprising of Professors, Associate Professors, Senior Lecturers and Lecturers. In addition to the faculty members from GAEC, UG and Kwame Nkrumah University of Science and Technology (KNUST), adjunct professors, lecturers and scholars have been recruited from partnership institutions and the IAEA Member States to

lecture and co-supervise PhD Sandwich programmes of the School.

III. ADMISSION REQUIREMENT

The minimum qualification for this programme is a good first degree (at least a second class lower division) in Physics from any approved University. A candidate who does not satisfy the requirement in an appropriate field of study as above but is otherwise adjudged suitable by virtue of appropriate experience could be considered.

IV. ACADEMIC & PRACTICAL TRAINING

The MPhil programme includes two (2) semesters of didactic academic work followed by one (1) year of research and clinical training. Academic courses pursued in the first year include: Radiation Physics, Research Methodology, Radiobiology, Anatomy and Physiology, Professional and Medical Ethics, Nuclear Medicine, Radiation Dosimetry, Physics of Radiation Oncology, Physics of Imaging and Diagnostic Radiology.

The two year training is followed by a one (1) year clinical internship for local graduates. The internship comprises 6 months radiotherapy, 3 months diagnostic radiology and 3 months nuclear medicine. This arrangement ensures that clinically qualified medical physicists receive minimum of two years clinical training. After internship, interns are certified to practice only after passing an examination of the Allied Health Professions Council [1]. The PhD programme comprises of one (1) taught course and three (3) years of research work.

The training programme is accredited by the National Accreditation Board (NAB) of Ghana. Assessment by NAB is carried out periodically at a frequency of once in every three years, using the services of international experts and consultants to ensure neutrality. Recommendations provided are scrupulously applied to ensure that international standards are upheld in the programme.

Graduates of the Medical Physics programme have over the years benefitted from further training in the form of IAEA short courses and fellowships, ICTP – College of Medical Physics, ICTP – short courses and workshops and ESTRO training. This has further increased capacity and abilities in the field.

V. ENROLMENT DATA

Table 1. MPhil and PhD enrolment statistics

Year	M.Phil.				PhD		
	No. of Students	LOCAL STUDENTS	IAEA fellows	Other Nationals	No. of Students	Male	Females
2004	6	6	-	-	-	6	-
2006	4	4	-	-	-	3	1
2008	3	3	-	-	1	3	-
2009	4	4	-	-	-	4	-
2010	4	4	-	-	1	4	1
2011	7	5	2	-	2	9	-
2012	10	6	2	2	-	8	2
2013	13	7	5	1	-	11	2
2014	10	9	-	1	-	9	1

VI. TRAINING FACILITIES

The School collaborates with the following institutions where practical training are undertaken:

- National Centre for Radiotherapy and Nuclear Medicine, Korle-Bu Teaching Hospital, Accra
- Oncology Directorate, Komfo Anokye Hospital, Kumasi
- Sweden Ghana Medical Centre, Accra
- Laboratories of GAEC
- 37 Military Hospital, and other diagnostic facilities throughout the country

With the collaboration of Ghana Society for Medical Physics (GSMP) students are placed on Internships after completion of the programme.

VII. SUCCESSES

Regional Designated Center (RDC): Due to the demand for Medical Physicist across the continent, the School of Nuclear and Allied Science applied to IAEA to be considered for RDC status. By this, the IAEA will be positioned to send fellows from other African countries to be trained in Ghana.

Provision of Human Resource: The programme has and will continue to provide Human Resource for the nation and Africa at large. Graduates from the School find themselves in the field of research, academia and in the clinical environment.

Ghana Society of Medical Physics (GSMP): In 2011, GSMP was establishment to regulate activities of professional medical physicist especially in clinical setting. GSMP collaborated with other health professions and in 2013, medical physics was legally recognized with the passing of “Health Professional Regulatory Bodies Act (Act 857)”. GSMP is affiliated to FAMPO & IOMP. Members of GSMP in IAEA RAF 6044, RAF 6048 & RAF 6017.

Table 2. Classification of Medical Physicists in Ghana

Classification of Members	Number
Clinical	9
Research	6
Academia	13
TOTAL	28

VIII. CHALLENGES

Dedicated clinical training facilities: The School has no dedicated clinical training facilities on school premises. Studies and lecturers must travel to facilities before clinical practicals can be undertaken. This sometimes serves as a disincentive for studies especially those who are self-funding.

Lack of advanced phantoms: Lacking is advanced phantoms especially in diagnostic radiology and radiotherapy for students to undergo practicals in quality control and quality assurance. This limits the scope of practicals to be conducted.

IX. WAY FORWARD

To position the Medical Physics programme as a centre of excellence, IAEA support in terms of equipment for quality control especially in diagnostic radiology is required.

X. CONCLUSION

On this 10th anniversary of the Medical Physics education and training in Ghana, it can be said that there has been a success. Student enrollment has increased with other African nationals and IAEA fellows also going through the programme. Graduates from the training programme are serving as medical physicists in clinical, research and academic institutions across Africa.

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