

## STATUS OF MEDICAL PHYSICS AND ACTIVITIES TO BOOST THE PROFESSIONAL DEVELOPMENT IN THE AFRICAN REGION

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**Abstract** — The paper is part of the IOMP-IUPAP Workshop “MEDICAL PHYSICS PARTNERING WITH THE DEVELOPING WORLD” at the World Congress in Prague WC2018. The paper presents the status in the IOMP Regional Organization FAMPO (Federation of African Medical Physics Organizations).

**Keywords**— Medical Physics Professional Development, Medical Physics Education and Training.

FAMPO as the youngest regional federation of IOMP has come a long way in the nearly one decade of her existence to fulfill the aspirations and yearnings that informs her existence in the first instance. Established in 2009, the federation currently has members in 27 African nations including Algeria, Angola, Botswana, Burkina Faso, Cameroon, Cote D'Ivoire, Egypt, Ethiopia, Gabon, Ghana, Kenya, Libya, Madagascar, Mauritania, Mauritius, Morocco, Namibia, Niger, Nigeria, Senegal, South Africa, Sudan, Tunisia, Uganda, United Republic of Tanzania, Zambia and Zimbabwe.

AFRICA – Is the World's second largest and second most populous continent. At One Billion people – It accounts for about 15% of the World's human population, It has 55 fully recognized sovereign states - 49 are UN members, 38 are IAEA member states and 32 are AFRA (regional) member states ; Algeria is the largest African country by Area (2.382 x 10<sup>6</sup> Sq. Km.) and Nigeria is the largest by Population (198 M – 2018 Estimate)

The aim and functions of FAMPO include among others - promotion of improved quality service to patients and the community in the region ; the co-operation and communication between Medical Physics Organizations in the region, and where such Organizations do not exist between Individual Medical Physicists. To promote appropriate use of technology to the benefit of rural populations, to organize and/or sponsor international conferences, regional and other meetings, to collaborate or affiliate with other Scientific Organizations and overall, the activities of the Federation are not aimed at profit.

The African imaging infrastructure is such that most countries have only basic radiology equipment, only 20 countries have access to nuclear medicine, fewer medical

physicists are dedicated to imaging than to RT, high end imaging (e.g. mammography, MRI, PET/CT) is available in the public sector in only 10 countries and Tele-radiology is limited by telecommunications infrastructure.

The Radiotherapy facilities exist in 25 countries and 12 of this number have one centre only, with just 5 adjudged to have a 'basic' radiotherapy service as defined by the IAEA. About seven countries including Angola, Benin, Rwanda, Mauritania, Senegal and Uganda have recently commissioned new projects. A detailed analysis of the status of radiotherapy in Africa could be summarized as: Twenty-eight (28) countries do not have radiotherapy services, 14 have three or fewer machines and only seven have more than 10 machines. Cobalt machines represent 30% of the equipment. There is an average of 3.8 million people per machine, which varies a lot between different income groups. Between 22 and 28% of the needs are covered depending on the benchmark used. Countries without radiotherapy are slowly setting up their first departments. Sustainability is a problem and expansion is mainly happening in countries with a larger number of machines.

The number of Clinically Qualified Medical Physicists in the region hovers around 550 to 600 and only 3 countries (Egypt, Morocco and South Africa) accounts for more than 50% of the CQMP's . The recently published Global Workforce Data for MP's clearly under report the data from Algeria, Morocco, Sudan and Tunisia. There are some few other NMO's that were not mentioned albeit with less than 10 members. DR, NM and RT sub-specialization are under gradual implementation in the region and some MP's also work in more than one of the three disciplines, and they do move between as well. At least 30% MP's are females and 75% are government employees. MP baseline data in Africa is now available and can gradually be improved upon. The database can serve as the formal reference for competent agencies in an attempt to create harmony in the uses of resources that will be invested in the continent. The database will help in planning for future programs and launching projects that could be of benefit to all the MP's in the region.

Efforts to raise awareness and activities to boost professional development in the region have been promoted through education and training, information dissemination especially via the federation's website ([www.fampo-](http://www.fampo-)

africa.org) , the yearly celebration of the International Day of Medical Physics (IDMP), accentuating the efforts at recognition of the MP's and international partnerships. FAMPO has endorsed some IAEA/AFRA publications which include among others - Regional Postgraduate Medical Physics Syllabus for Academic Programmes (2013), Regional Clinical Training Programme for Radiotherapy Medical Physics (2013) and Template Portfolio for the Regional Clinical Training Programme in Radiotherapy Medical Physics (2013). These publications have largely harmonized standard of MP academic education in the region. Ongoing attempts to implement FAMPO accredited clinical training for MP's have resulted in two task force meetings (TFM's) held in Vienna. Survey to assess capability and willingness of RT centres to provide full/partial accreditation of clinical training programme were conducted and the workplan for implementing accredited clinical training is aligned with workplan for IAEA's TC Project RAF 6050 on Improving Access to Quality Cancer Management through Sustainable Capacity Building. Countries with post-graduate academic programmes include Algeria, Egypt, Ghana, Libya, Morocco, Nigeria, South Africa, Sudan and Tunisia.

On recognition of MP's , countries with proper legislation (national recognition) of MP's include Ghana (through her Allied Health Professional Council – AHPC) and South Africa (HPCSA – Health Professional Council of South Africa). Other countries are at various stages of legislative processes. Professional Development Committee (PDC) of FAMPO is mandated to establish regional mechanism by which CQMPs can be recognized through formal process of certification and registration, working closely with E&T Committee to help increase the number of accredited academic training programmes and establish accredited clinical training programmes in the region. This is necessary for developing MP profession in the Africa region and also to ensure that trained MPs from accredited institutions automatically receive registration from FAMPO.

The concept of Audits and Continuous Professional Development (CPD's) are also being espoused and arising from a recent TFM recently hosted by the IAEA, the Agency has been graciously tasked to make documentation available from Coordinated Research Projects (CRP's) related to audit to all member states, support National Workshops in the region to initiate audits, to make available relevant phantoms as suggested in the audit CRPs and support changes in the design (remote to on-site dosimetry) if requested, to encourage SSDLs to work closely with Medical Physicists to establish and sustain audits and to

encourage regulatory bodies to include the implementation of QMS in radiotherapy as their licence requirements. Also, FAMPO have been mandated to encourage Medical Physicists to organise internal audits within their hospitals, to encourage Medical Physicists to organise external independent audits within their region. To encourage Medical Physicists to engage with their heads of oncology department to request QUATRO audits. AFRA (the regional cooperative agreement) was to support audit activity through the regional projects such as radiotherapy, SSDL, radiation protection and safety of patients.

In summary, FAMPO roles in promotion of E&T have been encapsulated as establishment of a regional MPs competencies data base, establishment of an inventory of Institutes delivering academic programmes, establishment of an inventory of Institutes delivering Clinical Training programmes, drafting accreditation criteria for Academic and Clinical Training programmes, drafting certification criteria for MP profession, organizing activities to support CPD of MP's and launching a regional journal of MP (African Journal of Medical Physics).

In conclusion, FAMPO's role is key to achieve harmonized and high standard of education and training programmes in Africa, which leads to: improved quality and quantity of trained MPs who would readily be in position to practice competently and independently and improved medical imaging and radiotherapy treatment delivery in the region.

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