Status of Education and Training in Africa: Focus on South Africa

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Abstract— Medical Physics training and education in Africa continues to be limited in many ways. Information gathering is difficult in the region due to limited communication channels and relatively few formal contact people within the field. It appears only five countries in Africa have formal courses offered toward recognized Medical Physics qualifications. Much of the training is achieved via International Atomic Energy Agency (IAEA) sponsored training courses. These focus on specific training needs and are presented around the continent in member countries. Many qualified individuals currently in Africa obtained their qualifications in other countries.

Formal recognition of the profession is well established in South Africa (SA) where professional registration with the Health Professions Council of SA is required after formal, structured and approved training. An active education and training program has been in place there since the 1960s. The regulations are kept current by national regulatory authorities to ensure that areas within health care where Medical Physicists are employed are adequately serviced by properly educated professionals. Functional academic and practical training programs are available at six accredited SA universities and most offer postgraduate training programs up to PhD level. Postgraduate students from at least seven other African states are currently studying at SA institutions.

Active efforts have been made since the 2006 IOMP World Congress in Seoul to form a regional federation of African Medical Physics organizations in order to attempt to address some of the urgent needs in the field. This process is well supported by the IAEA and the IOMP, and is aimed at comprehensive support of the profession on the continent.

Many challenges exist in providing Medical Physics services within Africa. To overcome these coordinated education and training is vital.

Keywords— Education, Training, Africa, Medical Physics, IAEA.

I. INTRODUCTION

The training and education of Medical Physicists in Africa is very limited and is available in only a few countries. It is very difficult to get accurate information on the status of the profession within Africa, as there is limited communications technology and there are many countries where the profession is not officially recognized in any way. This makes it difficult to define how many people in Africa are doing the work of a Medical Physicist.

Not all countries in Africa have current technology for the diagnosis and treatment of many of the common diseases which afflict the people of the region. Some countries do have access to the technology, but do not have the support services to properly utilize the technology within the constraints on their finances. The services of Medical Physicists are generally more limited than in the rest of the World. Usually they are only available in Radiotherapy Departments. The limited immediate need and lack of recognition mean that the training of people to carry out the tasks of Medical Physicists within Africa is often sporadic and not comprehensive, nor is it strongly supported by governments with apparently more pressing priorities. Often that training does not give them a qualification, or the ability to register as a Medical Physicist within either the country where the training was given, or in their home country. In many countries even those adequately educated and trained abroad do not get properly recognized as Medical Physicists. The support for all aspects of their function is limited, from recruitment and training to professional recognition and remuneration.

If the situation is to improve, good quality coordinated support for comprehensive appropriate training of Medical Physicists must be provided within the countries where it is needed.

II. CURRENT STATUS

From the information that is available it seems only five countries on the continent (of 61 territories within Africa) provide formal education and training courses toward a recognized Medical Physics qualification. Many of the territories in Africa are small and rely on neighbors for health care services that require the expertise of a Medical Physicist. The education and training that does take place is due largely to the inputs of the International Atomic Energy Agency (IAEA) which funds and organizes about 5 or 6 training workshops relevant to the field of Medical Physics each year through one of their African Regional Cooperation Agreement (AFRA) projects (Table 1) [1].

These projects have specific goals and aims and often provide training within the narrow goals set for the projects. The courses are usually presented by experts in the various fields and these experts

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are often from countries outside Africa. The projects through which these training programs are funded often also have a component which includes expert visits in order to support Medical Physicists, amongst other professionals, in the region.

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Title</th>
<th>Year</th>
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<tr>
<td>RAF/6/024</td>
<td>Management of the Most Common Cancers in Africa (AFRA II-4)</td>
<td>2004</td>
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<tr>
<td>RAF/6/027</td>
<td>Strengthening Regional Capability in Medical Physics (AFRA II-5)</td>
<td>2004</td>
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<tr>
<td>RAF/6/030</td>
<td>Diagnosing Diseases using Clinical Nuclear Medicine</td>
<td>2004</td>
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<tr>
<td>RAF/6/031</td>
<td>Medical Physics in the Support of Cancer Management (AFRA II-8)</td>
<td>2004</td>
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<tr>
<td>RAF/6/032</td>
<td>Promoting Regional and National Quality Assurance Programmes for Medical Physics in Nuclear Medicine (AFRA II-7)</td>
<td>2004</td>
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<tr>
<td>RAF/6/035</td>
<td>Enhancing Accessibility and Quality in the Care of Cancer Patients (AFRA II-10)</td>
<td>2004</td>
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The IAEA also provides Fellowships to many to study at various institutions in various countries around the World. Unfortunately there are still many who perform profession specific tasks (carried out on other continents by specifically trained and qualified people) who do not have formal recognized profession specific qualifications. Currently many qualified individuals working in the field obtained their qualifications in other countries. These qualifications are often not entirely appropriate and offer only limited registration possibilities upon completion.

Formal regulatory recognition of the profession is well established in South Africa (SA) where national registration following formal, structured and approved training is required for individuals to practice in the profession. This registration requirement has been in place since the 1950s when the then Atomic Energy Board was formed. Since then various bodies have regulated the profession which is currently controlled by the Health Professions Council of South Africa. An active education and training program has been in place since the 1960s. Most of the Founder Members of the South African Association of Physicists in Medicine and Biology (SAAPMB) were trained overseas, but they soon set up formal education programs in SA. The national regulatory authorities have ensured that current needs within the fields where Medical Physicists are employed are adequately serviced by properly educated professionals. The curriculum is well defined. Educational institutions and training hospitals are properly accredited by peer review. Functional academic and practical training programs are available at six accredited universities in SA and some of these offer active undergraduate and postgraduate training programs up to PhD level [2].

The active education and training program in SA has had some effect in other countries to the North. Over the past several years many SA experts have been used by the IAEA on missions into other countries. Many foreign students have studied for various degrees in SA. Postgraduates from at least seven African states are currently studying in South African institutions.

III. EDUCATION FOR THE FUTURE

Various efforts are underway at different levels around the continent to improve the situation.

The IAEA has several projects currently running which have as part of their stated objectives the improvement of academic and clinical training. This focused effort will hopefully improve not only the training and education of Medical Physicists, but also ameliorate the shortage and enhance recognition by national registration authorities, all with the ultimate goal of improving the therapeutic and diagnostic services offered to people in Africa.

The Education and Training Committee (ETC) of the IOMP has been functional for many years and has several very relevant stated goals within its charge. It is stated in the ETC charge [3] that:

"1 The charge to the IOMP Education and Training Committee (ETC) is to improve medical physics worldwide by disseminating systemized knowledge through education and training of medical physicists especially in developing countries.

"2 The mission of the IOMP ETC is to advance the practice of physics in medicine by fostering the education, training and professional development of medical physicists, and by promoting highest quality medical services for patients worldwide.”

The charge continues and covers all of the major requirements for education and training within African institutions, including the provision of support and education materials. It endorses cooperation with the IAEA in an attempt to ensure that appropriate education and training is done in all countries, even to the extent of setting up training centers.

"8 The ETC will stimulate the foundation of regional centers for education and training in collaboration with IAEA, WHO and other agencies.”

This commitment by the IOMP should make a significant difference to the current situation, especially when considered along with the efforts of the IAEA.

On a more regional scale the formation of a Federation of the existing Medical Physics Organizations within Africa could also be used as a forum for support of education and lobbying for accepting the status of Medical Physics. Efforts have been made since the 2006 World Congress in Seoul to form a regional Federation of African Medical Physics Organizations (FAMPO) in order to at-