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National Medical Physics Certification Programs for Low-Middle Income Countries (Project CERTI-PHY)

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ABSTRACT

Purpose: Creation of country/region-specific certification curricula that meet regional needs. Once established, experienced Medical Physicists in low-middle income countries (LMICs) are formally assessed against this standard to achieve certification. These certified Medical Physicists will then help manage the program for their region, creating a sense of 'ownership'. With appropriate guidance, individual organizations can grow their programs to meet changing needs of the profession in the region.

Methods: A pilot project by the Nigerian Association of Medical Physicists (NAMP) in partnership with the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) consisted of a national survey of the workforce, equipment and treatment practices to generate a locally relevant certification curriculum. Analysis of gaps in knowledge and skill from experienced candidates seeking certification provided insight into what external targeted training was of most value. Once a pool of experienced, certified physicists is created, the first residents will commence their locally provided training. After the program has been running for several years, evaluation of curriculum, training resources and assessment methodologies will determine program effectiveness and scope appropriateness.

Results: A local curriculum has been created and experienced medical physicists have been assessed with analysis of knowledge-gaps completed. The first residents will commence training by certified physicists in late-2026. Engagement of the NAMP community has been high, with members focused on ensuring a minimum standard of competence is reached by all Nigerian medical physicists.

Conclusion: Whilst an international-standard medical physics certification program is the ultimate aim, a regionally focused certification may be more feasible and allows countries to control and own their profession. This provides LMIC medical physicists much needed 'validation' of skills and value in the clinic, and professional recognition with national authorities.

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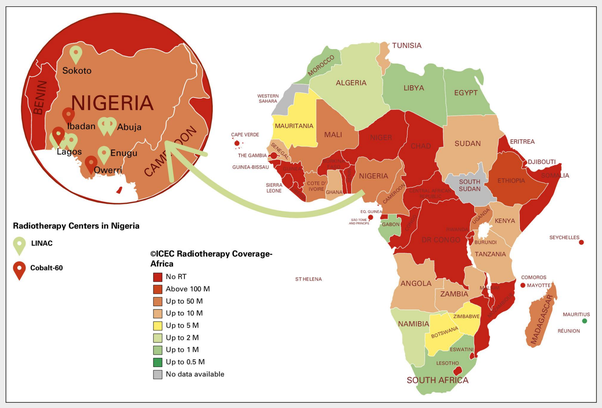
INTRODUCTION

Many Medical Physicists in low-middle income countries (LMICs) are often faced a disparity in the ability to undertake formal professional education & training within their country or region compared to high-income countries. This lack of structured learning & formal assessment leading to a national professional qualification can impact recognition of Medical Physicists in LMICs as medical professionals by their global peers, other health disciplines and government bodies.

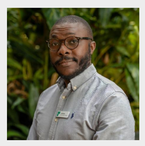
Nigeria has a population of over 240 million people. It is the largest population in an African country by over 100 million. The average life expectancy in Nigeria is 54 years (the lowest in the world). Over 120,000 people are diagnosed with cancer, with approximately 80,000 people dying of cancer every year.

Nigeria currently has 17 linear accelerators and 5 brachytherapy units. Approximately half of these are non-operational & others are only accessible to private patients.



In Nigeria, more than 200 Medical Physicists employed in the country are in dire need of 'validation'. The profession is unregulated with no recognition in the national scheme of service. Due to this, some Medical Physicists are working un-paid in clinics and having to hold second jobs to cover their living expenses. Having a national professional certification that meets nation al clinical needs & adherence to international best practice will be incredibly helpful in lobbying governments for professional recognition.

The Nigerian Association of Medical Physicists (NAMP) Clinical training and Certification Board (NCCB) was established in January 2023. Board members are Nigerian Medical Physicists who have certification from outside of Nigeria. The Board was given a mandate to develop a national clinical certification program (Project CERTI-PHY) & they have made considerable progress in achieving the mandate.



NATIONAL SURVEY

In 2023, the NCCB surveyed all Radiation Oncology centers to determine training needs in preparation for certification. The survey included staffing, clinical patient workload & treatment types, clinical & physics-related equipment.

The survey highlighted a wide disparity in clinical experience across the country.

To generate a cohort of national 'trainers' for Nigeria, policies were written to allowing Medical Physicists with a minimum of six years experience to apply for a grand-parenting pathway to certification. This pathway required acceptable evidence of experience & formal interview/exam covering key areas from the NAMP certification curriculum.

GOVERNANCE & ONLINE PLATFORM

In 2024, curriculum & governance documents were created to ensure appropriate methods and guidance were provided to potential certification candidates:

- NAMP Certification Curriculum Framework,
- NAMP Certification Policy,
- NAMP Certification Procedure for Experienced Candidates,
- NAMP Competences in the Medical-Scientific-Expert Domain, and
- NAMP Non-Scientific Domains Reference Guide

The Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) online learning platform was used to host a NAMP certification section, and the NCCB began to actively engage with Nigerian Medical Physicists via phone calls, webinars & discussions at conferences to identify the first cohort of candidates for certification.

FIRST APPLICATIONS

Although a large number of candidates expressed interest, only a few completed applications & upload of evidence in the online platform.

In 2025, applications were reviewed & assessed. Interview questions with marking rubrics were created & standard setting was performed to ensure robust assessment of candidates.

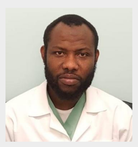
In late 2025, NCCB members interviewed four experienced candidates for national certification. Each candidate had a 2-stage interview as the evidence provided by candidates in the online platform was not of the quality to enable desktop assessment of their experience. The first stage consisted of questions tailored for each applicant to draw out more information on their clinical experience. The second stage was the formal interview/exam on key areas from the NAMP certification curriculum.

Unfortunately, no candidates met the standard for national certification. However, the assessment provided meaningful data to areas of knowledge & clinical practice where focused training of Nigerian Medical Physicists should occur. It also highlighted to candidates the need for proper quality assurance documentation for their clinics.

WHAT NEXT?

There has been significant interest from candidates with less than six years of experience & NCCB have created grand-parenting pathway to those with at least four years of recent clinical experience, with the proviso that they must successfully complete a written exam before they can progress to the formal interview.

NCCB has engaged with training organizations to ensure training meets the standard defined by the NAMP certification curriculum. NCCB has engaged with the Nigerian Nuclear Regulations Authority (NNRA) for collaboration in ensuring safe practice & on definitions, roles and responsibilities within their regulations that may be impacted by certification of Medical Physicists.

CONCLUSION

Interviewing candidates for certification was a huge achievement for NCCB as a milestone in implementation of a national certification program. In order for training organizations to be more effective, they require understanding of the specific countries training requirements. A connection with training, education and formal assessment is needed based on equipment & treatment profiles & the baseline of current knowledge within the local workforce.