

Strengthening the capacities for Medical Physics in Tunisia: gaps and challenges

1. Background:

Medical physicists have long played an integral role in medical imaging, radiation therapy, and radiation protection. In Tunisia, the status of the profession is flawed, the most important of which are the system of obtaining certificates and the legislative framework that regulates the sector. Most importantly, this situation can negatively impact treatment quality, patient and worker safety, whether through reluctance or relocation of staff.

2. Methodology:

Statistical studies were conducted on the number and location of medical physicists and a national report on the status of medical physicists was prepared. Gaps have been identified and solutions presented to relevant decision-makers in the form of recommendations to advance the health care system.

Medical physicists exist only in the field of radiation therapy, absent in the fields of medical imaging (diagnostic nuclear medicine and radiology) and radiation protection. Therefore, we only focus on the first area. Then, update the radiotherapy health card (equipment, medical physicists).

Since the number of medical physicists is related to the number of devices emitting ionizing radiation, the number of devices must be given:

The thirteen radiation therapy centers (5 public and 8 private) contain: 15 linear accelerators (10/15 equipped with CBCT and 3/15 with Free Flattening Filter FF), 10 medical Cobalt-60 sources (3 sources not usable), 4 brachytherapy sources (2 low dose rate and 2 high dose rate), 4 scanners dedicated to radiotherapy, and this is another problem: not all radiation therapy services have their own scanners.

About 40 physicists with hospital technician status and no residency program. Not all studied medical physics, some have a physics background.

3. Results:

- *Certification of medical physicists:*

Since 2013, the Higher Institute of Medical Technologies of Tunis is running a master's degree in medical physics to meet the demand. About 6-7 medical physics degrees graduate each year. Despite the efforts, there are still quantitative and qualitative deficiencies: some modules are missing compared to international medical physics courses such as anatomy, biostatistics, and diagnostic radiology.

- *Regional and international collaboration:* Masters and Ph.D. students seeking guidance often have difficulty finding specific expertise needed for their research in Tunisia. Contribution of IAEA in providing technical support in the field of medical physics. We cite the regional project RAF6058 "Strengthening the capacities for Radiopharmacy and Medical Physics and Radiology for expansion and sustainability of Medical Imaging Services", the Master's Program in Medical Physics from the Abdus Salam International Centre for Theoretical Physics in Italy and the ICTP-IAEA Sandwich Training Educational Programme (STEP).

- *Residency program:* There is no accredited society that offers a clinical medical physicist's certificate. Here, through this paper, we appeal to the European Federation Organizations of Medical Physics (EFOMP) and the Middle East Federation of Medical Physics (MEFOMP) in the capacity building, empowerment, and experience acquisition of medical physicists in Tunisia.

4. Conclusion:

Medical physics in Tunisia must fulfill the need of hospitals and the current legislative framework must be updated.

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