

Guest Editorial

About developing a new profession – Medical Physics in Malta

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Far and away the best prize that life offers is the chance to work hard at work worth doing.
Theodore Roosevelt – 1858–1919, 26th U.S. President.

1. Introduction

Developing a new profession is not easy – and in a small, insular, island state, it is even more difficult. You knock on many doors – the response is always the same: “Medical Physics, what’s that?” They don’t even give you the time of day. Of course, in hindsight, it was to be expected when most administrators’ knowledge of physics was limited to Physics SEC level and Newton’s laws of motion. You are mocked when armed with a short well-crafted presentation you land at the Ministry of Health ready to do your bit to help ensure the effective and safe use of medical devices and physical agents (sources of energy such as x-rays, ultrasound, lasers) in Malta. But you persevere, slowly but surely build support, and in the end prevail. This editorial will first provide some background to the medical physics profession. This will be followed with some lessons learned based on my journey in developing the medical physics profession in Malta, the intention being to help any future leaders who might find themselves facing a similar challenge.

2. The Medical Physics profession

The profession was new to Malta, but of course, it had been established in other European countries for many years. X-rays were discovered in 1895 by Wilhelm Conrad Roentgen, who received the first Nobel Prize in Physics in 1901. Surprisingly for that era, a woman, Marie Curie, is regarded as the first medical physicist. She became one at a time when the physics profession was completely male-dominated. Marie Curie is remembered for her work on radioactivity and her huge contribution to the use of radiation to fight cancer (IAEA, 2020). However, the carcinogenic side-effects of x-rays, gamma-rays and radioactive materials used in radiation medicine brought home the obligation that a profession be developed to help ensure that whilst we make full use of the benefits of such radiations, particularly in x-ray and nuclear medicine diagnosis and cancer radiation therapy, we reduce the carcinogenic risk to patients by avoiding unnecessary radiation and we prevent cancer recurrence by delivering the right quantity of radiation dose to tumours. The medical physics profession was thus born and its position in healthcare was strongly entrenched via a European directive to overcome the indecisiveness of national decision-makers (European Council, 2013). It is important to note that the directive insists on the presence of medical physicists at the *expert level* i.e., EQF Level 8 (‘Medical Physics Experts’) in all hospitals. As the use of ever more sophisticated physics-intensive medical devices and physical agents increases exponentially in medicine so does the scope of the profession leading to an ongoing expansion of the role. At present, in Malta, medical physics services focus on the specialities of diagnostic and interventional

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radiology (also known as medical imaging), nuclear medicine and radiation oncology. However, the number of speciality areas is set to expand as the Maltese health care system becomes more technology-oriented, more medical physicists graduate from the programmes at our faculty and political pressure increases as more patients become aware of the need to employ more scientists in health care.

3. Lessons learned

Here are some lessons learned along the way:

3.1. INVOLVE yourself in professional organizations at the European and perhaps also international level

Initiating a new profession often means that you start as a very, very small group (there were many times when I was working alone), so linking with professional colleagues in Europe is important for support. In my case, I involved myself in the Education and Training Committee of the European Federation of Organizations for Medical Physics (<https://efomp.org/>) and was subsequently elected Chair of the committee. During this period, the Federation, together with a consortium of universities, professional associations and hospitals was awarded funds by the European Commission to develop the *European Guidelines on the Medical Physics Expert* (EC, 2014), a document which laid the foundation for the harmonisation of the qualifications for medical physics experts in Europe. I ended up being the main author of the Education and Training chapter (a chapter which included 900 learning outcomes, a testament to the wide scope of the profession). At a later stage, I spearheaded the development of the policy statement for Education and Training for the European Federation (Caruana et al, 2014; Caruana, 2014). The policy statement is based not only on the aforementioned European guidelines but also on the official training manuals for Medical Physicists of the International Atomic Energy Agency.

3.2. ENGAGE with stakeholders

Ultimately developing a new profession requires funding and you need the support of stakeholders for this to be forthcoming. Discussions were also held with Ministry of Health officials, the Commission for Protection from Ionising and Non-Ionising Radiation and of course prospective students. Since the number of professionals in Malta was extremely low, it was not possible to

organize clinical training locally (the clinical training of medical physicists is of two years' duration and follows the Master's degree in medical physics). The Ministry of Health in partnership with the University managed to acquire European Social Funds to send the first two cohorts of Masters graduates to the UK on clinical traineeships.

3.3. CARRY OUT a situational analysis

If you are to be successful in such an enterprise it's important to ask yourself: What are the strengths of the profession (comes easy) and what are its weaknesses (more difficult to admit, but crucial to identify as they need to be addressed if the profession is to thrive). What are the opportunities that exist for the profession and very importantly what are the threats?

3.4. DEVELOP a strategic plan based on the results of your situational analysis

Once you are aware of your SWOTs develop a strategic plan: develop a vision of where you want the profession to be in the future, a definite set of objectives and how best to get there. The path is rarely linear and one needs to continuously adapt, innovate and look for creative solutions.

3.5. IMPROVE leadership qualities and be resilient

Developing a new profession from close to zero is not a task for the faint-hearted. You find help from a few quarters and hindrance from more as sometimes you need to take on entrenched interests. However, look for kindred spirits, they make all the difference, and you cannot succeed on your own.

3.6. LEARN marketing skills

It's no use having highly skilled professionals capable of doing wonderful things for patients if nobody knows about it. Think of ways of ensuring that more stakeholders become aware of your vision and its importance for the well-being of patients.

3.7. PREPARE the next generation of leaders

If by now you have managed to acquire some student followers rope them in as they are the leaders of tomorrow

and will continue the work that you started when it is time for you to retire. Ultimately, they are the future and the ongoing success of the profession depends on them.

4. Conclusion

A few years ago, there was no Master's in Medical Physics, no Bachelor in Physics, Medical Physics and Radiation Protection, and no PhD programme in Medical Physics in Malta. The number of clinical medical physicists in our healthcare system was less than five, but this will soon exceed twenty. We don't look any more with trepidation if the minister for health announces that a new MRI system is to be installed or a new health centre is opening; we have grown, the human resources necessary for the task are being produced, the profession is legally recognised and slowly but surely becoming mainstream.

If you dream of developing a new profession, I will not tell you it is going to be easy, because it will not – but with perseverance, patience and belief in what you are doing, it can be done.

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