

Short Communication on the ‘Current Status of Nuclear Medicine Practice in the Middle East’

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Short Communication

The International Atomic Energy Agency (IAEA) recently published a paper on the ‘Current Status of Nuclear Medicine Practice in the Middle East’ in the Seminars in Nuclear Medicine which provoked great interest in the global medical community [1]. The IAEA is globally most recognized for its role in nuclear safeguards, but it is actually the world hub for a wide range of nuclear applications, including human health. The IAEA was founded in 1957 as part of efforts to establish an international body to regulate and promote the peaceful use of nuclear technology. As an independent, intergovernmental science and technology based organization within the United Nations family, it serves as the global focal point for nuclear cooperation worldwide. With its 168 Member States (MS) and multiple partners around the world, the IAEA works to promote the safe, secure and peaceful use of nuclear technologies worldwide. The Division of Human Health is part of the Department of Nuclear Sciences and Applications. The role of this Division is to strengthen the capabilities of MS to address the needs related to the prevention, diagnosis and treatment of health problems through the application of nuclear techniques.

The Human Health Programme is composed of four sub-programmes, namely Nuclear Medicine and Diagnostic Imaging, Nutrition and Health-Related Environmental Studies, Applied Radiation Biology and Radiotherapy, and Dosimetry and Medical Radiation Physics.

The IAEA focuses on strengthening both human and technical capacities by means of different delivery mechanisms. These include seminars, workshops, international conferences, training courses, fellowships, online trainings, scientific and technical publications, educational materials, international multi-centre coordinated research projects, information exchange and networking, scientific and technical meetings, quality management applied to clinical practice in nuclear medicine, radiation oncology and radiology, dosimetry and auditing services, and technical cooperation projects, among others.

The rationale for this publication was multi-fold. Firstly, good health is essential to socioeconomic development, and the ultimate goal of the IAEA is to support the socioeconomic development of all its MS. Secondly, nuclear medicine techniques have revolutionized healthcare in the past decades, and have become of paramount importance for the diagnosis and treatment of a wide range of health conditions, in particular non-communicable diseases (NCDs). These diseases account for the highest proportion of the global disease burden in general, and the region of Middle East is experiencing a great burden of NCDs. Thirdly, while all the MS benefit from its Human Health Programme, the IAEA places special focus on the needs of low- and middle-income countries (LMICs). From the 17 countries and

territories included in the publication, 9 are LMICs. A great shift in the disease burden has occurred in the past decades in LMICs – while communicable infectious diseases once accounted for the largest part of the morbidity and mortality burden, the balance has significantly moved in favor of NCDs. These countries are more vulnerable due to multiple factors, including demographic and socioeconomic factors. However, high-income countries in the Middle East, such as Cyprus, Israel and Kuwait are also facing a great NCD-death burden. Overall, within the region of Middle East, more than half of all deaths are attributable to NCDs in all the countries apart from Yemen and Syria, and in some countries more than 80% of people die due to an NCD. Cardiovascular diseases (CVDs) and cancer specifically make up the largest part of the NCD-death burden in the region. Early diagnosis of these conditions is essential for improving the patient outcome and nuclear medicine techniques provide an excellent tool for early diagnosis. Finally, conducting and sharing analysis such as this publication has a great potential to serve as a strong incentive to strengthen the practice of nuclear medicine. The IAEA has also published a similar analysis of the situation in Latin America and the Caribbean [2].

The findings of this publication are important on several levels. There are generally great disparities between the countries and territories analyzed as to the status of nuclear medicine practice, which is reflected both in the availability of technical capacities and human resources involved in the practice of this medical specialty as well as in the diversity of diagnostic and therapeutic procedures conducted. Overall, while a well-developed infrastructure and a high number of professionals are available in several countries, some still have only basic nuclear medicine capacities.

There exist profound differences in the number of nuclear medicine centres in the countries of the region, with more than 60% of all centres located in Turkey and Iran. An interesting finding is that the centres are spread out throughout the territory in most countries, and are not confined merely to capital cities, which is important as it makes nuclear medicine services available to the population living outside the capital. The fact that the majority of nuclear medicine centres are part of the public health sector is also important, as it testifies Governments’ commitment to include the services in publically available settings.

The availability of gamma cameras and PET/CT scanners relative to countries’ populations varies significantly across the region. However, with 2.3 gamma cameras per million people the region’s capacities in this regard are set below the level seen in other regions; likewise, one PET/CT scanner per 2.04 million people is below the level recommended in the literature. Concerning the technical capacities used for the production of medical radioisotopes, the situation is similarly heterogeneous – while some countries have a high availability

of cyclotrons, others do not have a single one, and there are no nuclear reactors to produce ^{99}Mo in the region. However, the relative shortage in the local production of radiopharmaceuticals is compensated by the presence of international companies. Similarly, there is marked heterogeneity as to the types of diagnostic and therapeutic procedures throughout Middle East.

An essential finding of the analysis conducted is a great regional disparity in the availability of all professionals involved in the practice of nuclear medicine and of formal training programmes at university level. The establishment and expansion of well-structured training programmes is recognized as one of the key components in the effort to further strengthen the practice of nuclear medicine in the Middle East.

We acknowledge that the region of Middle East has overall experienced considerable growth in the practice of nuclear medicine. However, there are evident disparities between the individual countries, nevertheless the fact that some of them already have well-established capacities can serve as a driver of regional efforts to

strengthen the practice of nuclear medicine in the Middle East, which may substantially contribute to betterment of health of the region's population of almost 400 million people. We also conclude that conducting analysis such as the current one and sharing the findings with the global medical community provides an excellent platform to consolidate and harmonize international efforts and collaboration with the ultimate goal of improving health worldwide and tailor future activities of the IAEA to support the MS to strengthen their capabilities in the nuclear medicine field.

References

1. Paez D, Becic T, Bhonsle U, Jalilian AR, Nuñez-Miller R, et al. (2016) Current Status of Nuclear Medicine Practice in the Middle East. *Semin Nucl Med* 46: 265-272.
2. Páez D, Orellana P, Gutiérrez C, Ramirez R, Mut F, et al. (2015) Current Status of Nuclear Medicine Practice in Latin America and the Caribbean. *J Nucl Med* 56: 1629-1634.