Managing the ever-increasing demand for cancer services in the developing world

By James Howlett

Nicaragua's first linear accelerator received and set up through support from Japan and the IAEA.
(Photo: Nicaragua's National Radiotherapy Centre)

Cancer is not just a major health issue for people but also a growing development challenge with severe consequences on national well-being and government health budgets. According to the World Health Organization's International Agency for Research on Cancer, the total annual economic cost of cancer in 2010 was estimated at US $1.16 trillion. This number is expected to have continued to increase as more people develop cancer each year — globally, in 2018, the number of cancer cases exceeded 18 million, with 9.6 million deaths. By 2030, these annual figures are expected to rise to 24 million cases, with 13 million deaths.

Many low and middle income countries are unable to provide sufficient cancer diagnosis and treatment services and must send patients abroad for care, which is expensive and can be a burden on patients and their families. Establishing national cancer care services, including radiotherapy facilities and nuclear medicine units, is a complex undertaking that requires careful planning to set up the highly specialized infrastructure, equipment and training, as well as to mobilize funds.

The IAEA has a long history of supporting countries in using nuclear technology for health. In the area of cancer, it has been transferring technology and building human and institutional capacities for cancer diagnosis and treatment using radiation technology. The IAEA, through its technical cooperation programme, has trained over 2000 health professionals and provided more than €172 million since 2011 to assist countries in developing national cancer care services. In 2019 alone, it supported more than 125 cancer-related projects worldwide.

"Our goal is to work with our Member States, particularly from low and middle income countries, to build and strengthen their capacity in cancer control so that a greater number of patients can be treated safely and effectively," said Dazhu Yang, IAEA Deputy Director General and Head of the Department of Technical Cooperation.

The IAEA's support in this area includes specialized training to build human resources and expert advice at all stages of the process, as well as the tools, materials and equipment needed for an operational facility to be set up and be able to provide services.

The impact of this support can be seen in countries such as Sri Lanka, which has been collaborating with the IAEA for more than 40 years to develop the country's cancer care services. In the last eight years, for example, this collaboration has led to enhanced nuclear medicine imaging capabilities, with highly

trained specialists to provide diagnostic services in Sri Lanka.

In central Sri Lanka, a fully equipped nuclear medicine unit has been set up in the city of Kandy to complement a similar facility in Galle, a city in the southern part of the country. A new facility is also being set up in the north, around Jaffna. In October 2019, Sri Lanka is expected to host an IAEA imPACT Review mission, where experts will assess the country's progress and assist in defining plans for its future developments in cancer control.

Planning, funding, collaboration

Many countries work with the IAEA to get help in planning, raising funds and developing collaborations for cancer control priorities. The IAEA assists in organizing and facilitating discussions with donors, development banks and financial institutions.

In Nicaragua, for example, in close collaboration with the Ministry of Health and with the support of bilateral funding from Japan, the country's first linear accelerator, or linac, an advanced radiotherapy machine, was inaugurated in May 2019 at the National Radiotherapy Centre. The IAEA supported specialist training of staff for the new system to ensure an effective transition from the existing clinical practice to the latest 3D radiotherapy, allowing for safer and better-quality treatment. This is an important milestone for the country's cancer treatment services and will allow highly specialized radiotherapy techniques to be performed.

Similarly, radiotherapy services in Mongolia have been improved, and two linacs became operational in June 2019. Quality assurance systems for ensuring that patients receive the correct radiation doses were upgraded, and new technologies and a radiation safety system for radiotherapy services were also introduced. In addition, donors provided support in 2016 for a state-of-the-art cancer diagnosis and treatment system, and training through IAEA assistance helped to introduce highly accurate 3D radiation therapy and other modern technologies to the country.

As countries prepare for their new facilities to open, the IAEA, in partnership with leading international medical institutions, provides specialist training and fellowships that help ensure cancer care services have a sufficient number of well-trained staff, such as oncologists, radiologists and medical physicists.

Training professionals

Building a national cohort of skilled medical professionals, trained and ready to operate new facilities, requires carefully timed support, often initiated years in advance, said Fatima Haggar, Medical Oncologist at the Mother and Child Hospital (*Hôpital de la mère et de l'enfant*) in N'Djamena. "Our new centre will open in around three years, and it will take time for all the staff we need to become qualified."

Chad has recently developed a planning and funding document to establish its first radiotherapy facility as part of its National Cancer Control Plan 2017–2021. The IAEA is assisting the country with the required training of staff by sharing the cost of long- and short-term fellowships with the Government and providing advice and expert assessments.

Given the scale and complexity of cancer treatment facilities, progress can only be made with the close involvement of national governments and the cooperation of a broad range of stakeholders. Governments need to identify cancer as a national health priority to ensure that actions to address the national cancer burden are taken at every level — in national health plans, health budgeting, infrastructure development, fundraising and capacity building.

For a country like Sierra Leone, for example, recognition of the challenge of cancer at the very highest level of government means that the country is well positioned to make progress in the national fight against cancer.

"Our President recognizes that cancer is creating a huge burden for the country," said Frank Kosia, radiologist and focal point for the Ministry of Health and Sanitation in Sierra Leone. "His flagship project looks to make radiotherapy publicly available by 2023." The IAEA is working with the Government of Sierra Leone to make this goal a reality, providing support for the establishment of radiotherapy and nuclear medicine facilities at Lakka Hospital, which will be expanded to accommodate these services.

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