Technical Cooperation Programme

September 2013

Establishing a national tissue bank in Ecuador

The challenge…

For severely burned, injured and disabled people around the world, tissue grafting or transplantation offers the opportunity for a new quality of life. The process relies on the use of sterilized bone, skin and other tissues to heal serious injuries and wounds.

Sterilization methods using heat and chemicals have been used for a long time, but are not as precise as radiation disinfection, which uses ionizing radiation to kill bacteria and reduce the risk of transferring communicable diseases. Irradiation allows tissue to be sterilized in the final packaging, which dramatically lowers the risks of recontamination. Furthermore, heat and chemicals can potentially damage the biological composition of tissue, whereas irradiation has no effect on tissue properties.

The creation of a national tissue bank in Ecuador will help to resolve a large number of public health problems, such as the availability of skin used for patients with severe second- and third- degree burns.

The project…

For the successful establishment of the tissue bank, Ecuador required expertise on procurement, processing, tissue storage and distribution and radiation sterilisation, all of which were provided through an IAEA technical cooperation project.

Fellowships were awarded to staff from the Eugenio Espejo hospital in Quito, where the tissue bank would be located. The fellows were trained in various subjects, including radiosterilization and tissue banking, skin management, tissue collection, preservation and use in the hospital, bone preparation and donor selection. The project also provided the laboratory equipment necessary for the tissue bank to operate successfully.

Training tissue bank technicians.

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The impact…

Ecuador's national tissue bank opened on 7 December 2011. The project provided technical assistance to ensure all processes associated with the collection, handling, processing, preservation, storage and distribution of tissues and cells were successfully in place. Since the creation of the tissue bank, Ecuador has resumed the procurement and processing of corneas, benefiting a large number of patients, mostly low-income, who have waited for up to six years for a transplant. Most of these patients had been condemned to live in blindness. Each procedure represents a saving of up to US $2,500 per patient.

The introduction of nuclear applications for the production of bone, tendons, meniscus and amniotic membrane has addressed health problems that previously could not be solved at the national level. During the first year of the bank's operation in 2012, 247 tissues were processed and 111 patients received transplants.

The tissue bank serves the whole country, providing biological tissues to public institutions in the provinces of Quito, Guayaquil and Cuenca. Tissue has also already been provided to other countries in the Latin American region, specifically to support emergency care for burns.

Technical cooperation project ECU/6/019: Creating a National Tissue Bank