

## ***Building capacities for radiopharmaceutical manufacture in Bangladesh***

### ***The challenge...***

In the advanced stages of many cancers—including breast, lung and prostate—skeletal metastases or secondary cancerous lesions can be common. In Bangladesh, these symptoms are typically treated with a combination of external beam radiotherapy and the administration of painkillers.

Bone-seeking radiopharmaceuticals offer an effective alternative treatment for non-inflammatory, non-neuropathic pain. Radiopharmaceuticals are also essential for the performance of imaging and for functional studies of internal organs. In order to produce radiopharmaceuticals, however, technetium-99m cold kits are needed. Cold kits are freeze-dried, injectable solids whose active ingredient is non-radioactive. They are designed to produce radiopharmaceuticals when mixed with the requisite radioisotopes.

Prior to this technical cooperation (TC) project, 17 nuclear medicine centres in Bangladesh depended on foreign producers for the much-needed cold kits. However, the raw materials necessary for producing these technetium-99m cold kits were not only comparatively cheap to the cost of importing foreign-made one, but they are easily available to the Government of Bangladesh. If radioactive pharmaceuticals could be produced locally, the sustainability and future viability of Bangladesh's nuclear medicine programme would be strengthened.

### ***The project...***

The principal aim of this TC project was to enhance national capacity for the local production of radiopharmaceuticals. Focusing on building the necessary facilities and capacities for local production, the project furnished equipment to support the construction of a 'clean room facility', procuring a radio thin-layer chromatography scanner, a horizontal scanner and a freeze dryer.

Training played a key part in the project: fellowships, expert missions and training workshops were organized in order to build the expertise necessary to produce and deploy radiopharmaceuticals domestically. Training modules provided national staff with guidance on how to operate and maintain an heating, ventilation, and air conditioning system, validate and test laboratory equipment, and develop a business plan for the sale and distribution of radiopharmaceuticals.



*The preparation room of the quality control laboratory.*

### ***The impact...***

The key outcome of the project was the establishment of a fully-functional clean room facility for the manufacture of radiopharmaceutical cold kits. Because these critical hospital supplies will be produced locally, the project has enhanced the longevity and sustainability of Bangladesh's nuclear medicine programme. Six expert missions were launched as part of this TC project, in addition to four IAEA fellowships and two scientific visits, in order to ensure the availability of the human resource capacities necessary to sustain the new facilities.