

Expanding Access to Advanced Radiotherapy in the Brazilian Public Health System (SUS): Implementation of a Center of Excellence

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Purpose

The aim of this study is to present the implementation process of a Center of Excellence in Radiation Oncology at São Vicente de Paulo Hospital, Passo Fundo, Brazil, dedicated to patients treated through the Brazilian Public Health System (SUS). The project demonstrates how the incorporation of advanced radiotherapy technologies expanded free access to high-precision cancer treatments, establishing an innovative care model focused on quality, equity, and excellence in patient-centered oncology care.

Materials and Methods

Cancer remains a major public health challenge in Brazil, with approximately 781,000 new cases diagnosed annually. The expansion of advanced radiotherapy services is limited by the high cost of technology, low reimbursement rates, and the country's vast geographic dimensions. In 2024, our institution launched a project to establish a Center of Excellence in Radiation Oncology within the Brazilian Public Health System (SUS). Following an assessment of regional clinical needs, a strategic proposal was developed and approved by the hospital administration, state health authorities, and the Ministry of Health, enabling the acquisition of advanced equipment through a public procurement process. The project included the installation of a Versa HD linear accelerator equipped with a robotic couch, cone-beam CT (CBCT) image guidance, and the Brainlab ExacTrac Dynamic (ETD) system.

Results

The acquisition of a Elekta Versa HD linear accelerator equipped with Brainlab (ETD) enabled the implementation of hypofractionated and stereotactic treatments for prostate and breast cancer, as well as stereotactic radiosurgery (SRS) and stereotactic body radiotherapy (SBRT). A comprehensive multidisciplinary training program, including theoretical and hands-on sessions, ensured the safe implementation of the new clinical workflows. The new platform reduced patient positioning and treatment time by approximately 30%, increasing treatment capacity and operational efficiency. For selected breast cancer patients, treatment schedules were reduced from 15–20 fractions to 5 fractions, representing a 67–75% reduction in the number of treatment sessions. In addition to reducing direct and indirect healthcare costs, the technology improved dose delivery accuracy, enabled smaller treatment margins, and enhanced normal tissue sparing. This project demonstrated the feasibility of incorporating advanced radiotherapy technologies into the Brazilian Public Health System (SUS), providing a scalable model that can be replicated in other regions of the country.

Conclusion

Public investment and the incorporation of advanced technologies, such as image-guided radiotherapy (IGRT) with ExacTrac Dynamic (ETD), into the Brazilian Public Health System (SUS) expanded access to high-precision radiation therapy while improving treatment efficiency, patient safety, and overall patient convenience. The implementation of hypofractionated protocols shortened treatment courses, reducing transportation, accommodation, and operational costs while increasing treatment capacity.

For countries with large geographic territories and limited healthcare resources, technologies such as ExacTrac Dynamic may provide significant clinical and economic benefits in the short and medium term. However, successful implementation requires more than technology acquisition alone; it also depends on strategic planning, comprehensive workforce training, and the development of expertise in advanced hypofractionated and stereotactic radiotherapy techniques.

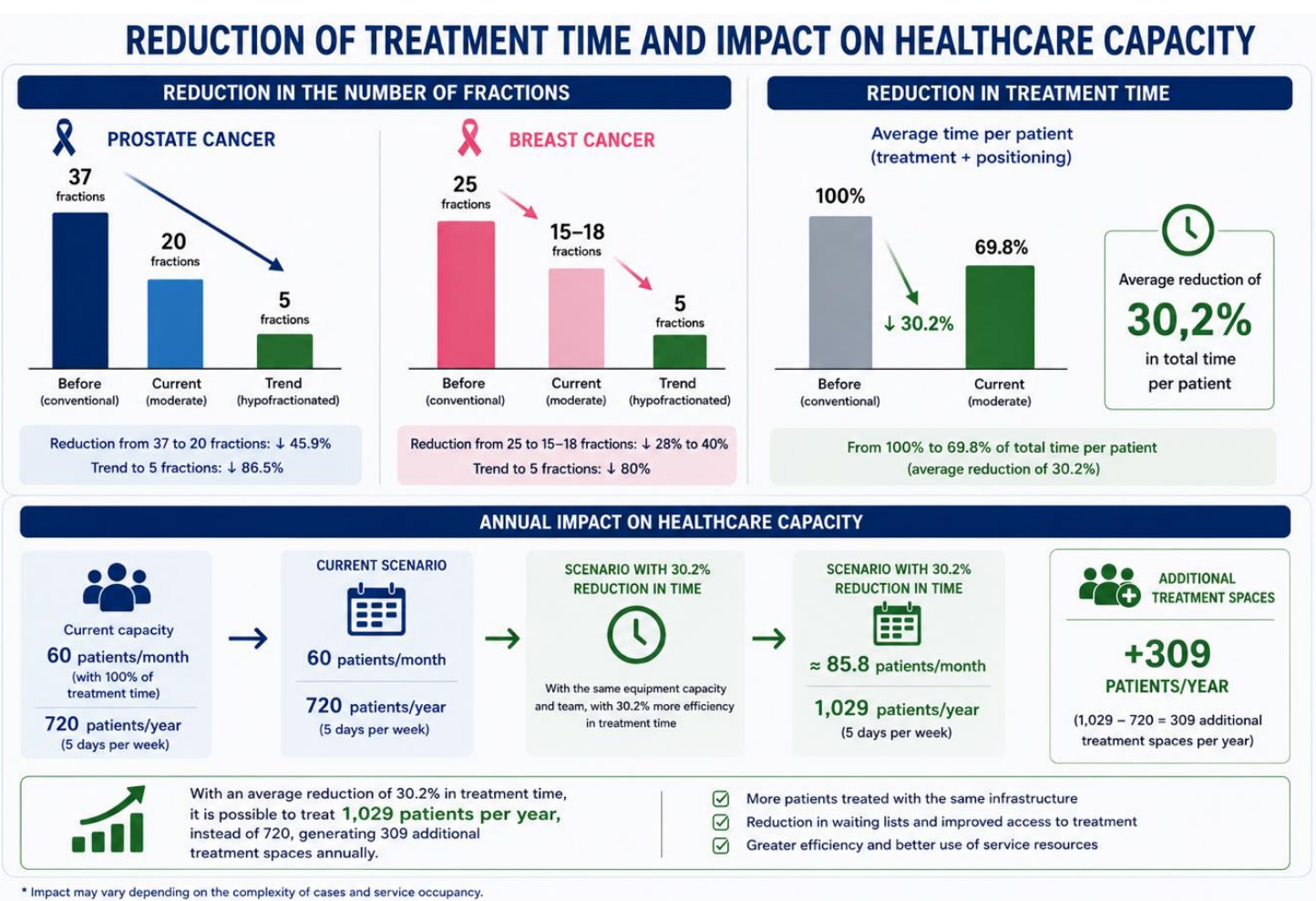


Figure 1 : Impact on Treatment Capacity

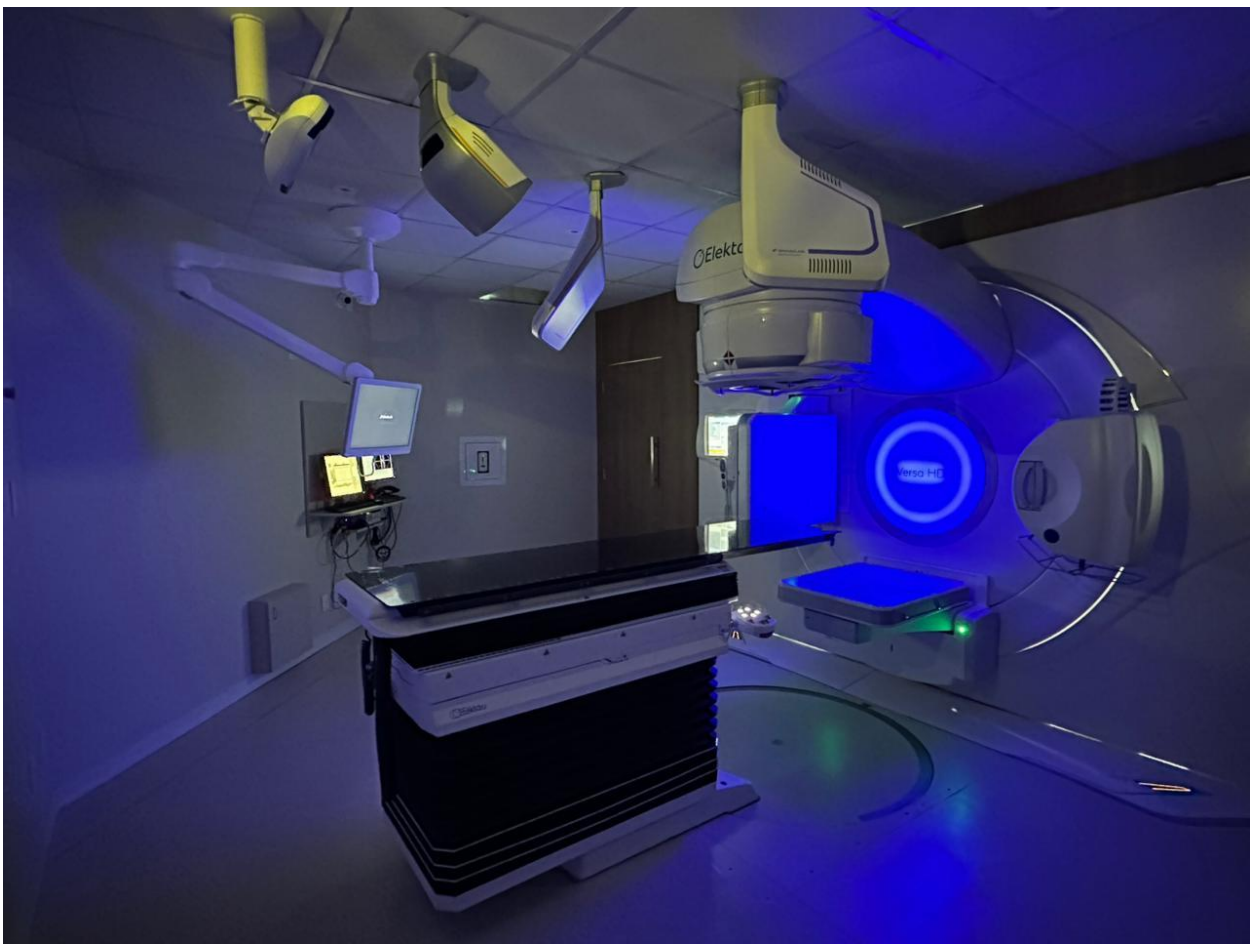


Figure 2 :Final installation of the Versa HD linear accelerator equipped with the Brainlab ExacTrac Dynamic (ETD) system.