

The mere two-year-old Oncology Center at Moinhos de Vento strives to provide the latest oncology treatment available with the use of Intensity-Modulated Radiation Therapy in order to sustain its tradition of an integrated approach to healthcare.

# The Rise of a Southern Star

Hospital Moinhos de Vento, located at Brazil's southernmost tip, aims to become a regional and global leader in radiation oncology with the help of Siemens technology.

By Reinaldo José Lopes







The PRIMUS Linear Accelerator not only allows Hospital Moinhos de Vento to provide fully digital radiation therapy, but was also easy to implement.

It might be hard for someone who sees it today to imagine, but the whole oncology sector of Hospital Moinhos de Vento, in the southern Brazilian city of Porto Alegre – three stories high, bustling with activity, and equipped with the best technology available – did not even exist two years ago. When João Polanczyk, MD, the hospital's CEO, is asked whether the administration had expected the project to take off in such short time, he smiles and says, "Actually, we wish we could have been faster." His colleague, Flávio Antônio Santos Borges, MD, Medical Superintendent at Moinhos de Vento, adds, "We had a whole year to prepare everything and to release the project. We were sowing seeds back then. This year, we feel the time is ripe for the harvest." After a short tour of the Oncology Center, one cannot help but agree with him. Nearly 1,500 patients are treated here every month, and they all benefit from the close partnership Hospital Moinhos de Vento shares with Siemens Medical Solutions. Technologies like Intensity-Modulated Radiation Therapy (IMRT), along

with a reliable system for planning and quality assurance, allow the hospital to compete shoulder-to-shoulder with the best oncology centers in Brazil and Latin America, and to look beyond into the global healthcare market.

### **Making a Name in Oncology – under a Different Name**

This new approach is certainly a major change for Moinhos de Vento, despite its long tradition of an integrated approach to healthcare. However, in a way, this is an institution that has learned to reinvent itself time and again. It all started in 1927, with a bold plan drawn by the German immigrant community in Rio Grande do Sul State, the southernmost, most European region of the country. Backed by technical and financial support from their homeland, the immigrants raised enough money to create the Hospital Alemão (German Hospital). In 1942, however, the board of directors decided it was best to change the institution's name to Hospital Moinhos

de Vento. Brazil had just entered World War II, joining the Allies, and there was growing hostility everywhere against all things German. Still, the hospital retained strong ties with the German immigrants and their descendants in Rio Grande do Sul.

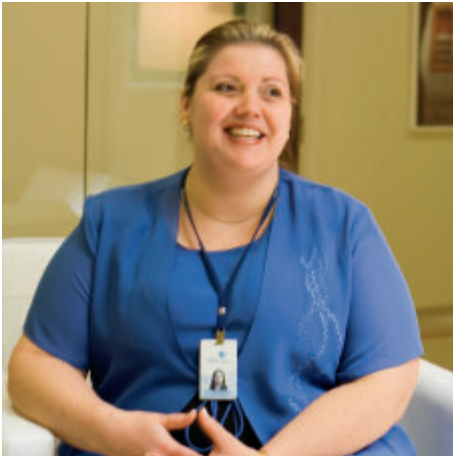
"By the late 1990s, we already had an established tradition in treating cancer patients. But since our clinical staff had their own offices and did not only work with us, we tended to lose track of those patients. They came here, they were diagnosed or underwent surgery, and then went on to complete the treatment with their own doctors," says Sérgio Roithmann, MD, Head of the Oncology Center. "We had no ambulatory facilities for cancer patients."

For this reason, he explains, Moinhos de Vento decided to move to a more comprehensive approach. "We wanted to create an environment where we could offer every kind of oncology treatment available today," he says. "But since we were the new kid on the block, so to speak, we had to bring innovation. We had to be pioneers, and we decided to focus on new technologies."

According to Dr. Borges, Siemens emerged as the ideal partner for the project because no other vendor could offer solutions that were so integrated – not only in oncology, but also in many other fields that were strategic for Moinhos de Vento. "More importantly," he adds, "Siemens enables us to constantly have state-of-the-art equipment, even compared to other top institutions in Latin America."

### **Precisely Targeting Tumors**

At the heart of the new Oncology Center, established in 2004, are two PRIMUS® Linear Accelerators (a third, identical machine is to be installed in the near future) where the IMRT treatments are performed. However, unlike most radiation oncology facilities, Moinhos de Vento looks nothing like a dark basement. A unique system of shafts brings daylight right to the underground. "For a radiation oncologist, this is bright news indeed," jokes Rosemarie Stahlschmidt, MD. "We're used to not knowing how the weather is outside." Stahlschmidt and her colleagues say they encountered no substantial problems in implementing IMRT. "All of us had the



From top left: Rosemarie Stahlschmidt, Sérgio Roithmann, Daniela Barletta, Wilson Almeida Jr., Roseli Class, Flávio Borges, Francine Santos, and João Polancyzk.

required training and knew a lot of the theory. It was nice to incorporate this into our daily work and, above all, to be able to offer it to our patients," says Daniela Barletta, MD. What strikes the doctors most is how important the planning and time dedicated to each individual patient has become – and with good reason.

The major goal of IMRT is to deliver the highest possible amount of radiation to the tumor while sparing the healthy and critical tissues that surround it. In a sense, the photon beams of IMRT 'sculpt' the tumor three-dimensionally. "That's why we need to use computed tomography (CT) daily to check the

patient's position before taking him to the accelerators. Otherwise, we can't be sure of the tumor's exact location and may end up hurting the critical tissues that we want to spare," explains Dr. Stahlschmidt, a former Senior Registrar in the Royal Marsden Hospital in London. So far, IMRT is employed in the treatment



The hospital, with its new Oncology Center, hopes to become a leader in oncology care not only in South America, but in the US and Europe as well.

of around ten percent of all radiotherapy patients at Moinhos de Vento. It has proven to be especially useful for treating head and neck cancer as well as prostate cancers. "In the case of prostate tumors, I think the medical literature may soon show an increase in life expectancy linked to the use of IMRT. As for the head and neck, it protects areas that are very sensitive to damage, like the optical nerve or the base of the cranium," says Stahlschmidt. "A head and neck patient may not realize it during the treatment, but his salivary glands, for example, may function properly again right after the treatment is completed," adds Barletta. The potential for IMRT, though, is far from being fully realized. "There are good possibilities in treating the pelvis, for example. The fact is, we don't really know because the technology is still quite young," explains Wilson Almeida Jr., MD. Stahlschmidt adds, "With medical information now easy to find on the Internet, many patients are able to discuss the option of using IMRT with the medical staff." Several rectum and breast cancer cases have already been treated with this technology at Moinhos de Vento. IMRT also benefits the patients who undergo radiosurgery by integrating PRIMUS with equipment from Brainlab AG. "Using intensity modulation makes it possible to tackle an even tighter area," says Stahlschmidt. "In lesions half of a centimeter wide, this is very important."

### Emphasis on Quality of Life

The unprecedented degree of precision with IMRT has a direct bearing on the patient's quality of life. "In this regard, I think the most important thing is that the



patient doesn't need to be taken out of his social context – to leave his job or his family while he is being treated," emphasizes Dr. Almeida Jr. Side effects tend to be minimal, even with elderly patients, according to Stahlschmidt. "They rarely have diarrhea, even if the IMRT is combined with chemotherapy. It is not uncommon to see that even the hemogram was not affected – we see no change in the patient's leukocyte count, for example." Nurse Roseli Claas, who has worked at Moinhos de Vento for 24 years and deals with radiotherapy patients on a daily basis, is also a witness to the reduction of side effects. "It's so gratifying to see this result, and the trust the patients have in the hospital and the staff is visible," she says. According to Claas, the changes brought about by the new oncology sector were "immense." She adds, "It was a completely different challenge, and you have to work harder to help the patients understand the new treatments. But, thankfully, I was never afraid of novelty." The results in terms of patients and their quality of life could not have come without first carefully planning how to set up the new equipment and systems. For the team of physicists that coordinates the use of the PRIMUS systems, that was the key to the hospital's success.

In many hospitals, the implementation of new technologies can be a time-consuming process because the staff has to adapt to the new systems while already working with them. At Moinhos de Vento, they had a clear plan about how to implement radiation oncology, and everything was defined from the outset in order to ensure ample treatment, planning, and quality assurance. According to the team, Siemens offered solutions to do just that.

Physicists at the hospital already had technical experience working with Siemens equipment in the past, in particular with PRIMUS. They had learned how to use IMRT to its full effect.

Francine Santos, one of the physicists at the hospital, on the other hand, had had only academic knowledge of IMRT previous to the change, just like some of her medical colleagues. "But that wasn't really a problem for me," she says. "I think we all grow under pressure, and the opportunity to work with this technology was just too good to pass up."

Physicists at the hospital highlight the need for absolute care and precision in IMRT treatment. "You have to be sure that, in a given field, you are getting the maximum dose, and sometimes, right by it – a millimeter to the right or left – that you are getting zero," says Santos. "Our job is to make sure that what the doctor saw and liked during the planning will come true." In this regard, the CT systems are crucial. Their three-dimensional capabilities help to build a virtual patient. This enables one to then test, in a very precise way, the dose distribution in and around the tumor in very thin 'slices.'

### Looking Ahead

Although the progress in oncology care made at Moinhos de Vento in just two years may seem astonishing, the hospital staff shows no signs of slowing down. Accredited by the Joint Commission International in the United States, Moinhos de Vento maintains a vigorous academic interchange with other institutions in Brazil and abroad. It has also created a fellowship for doctors interested in radiation oncology. The main struggle for the

hospital is to achieve recognition as being able to compete with others from the main Brazilian cities. The signs, at least, are encouraging. Although healthcare and insurance systems in the country do not yet include IMRT as an option for their members, the investment made in the new Oncology Center should pay for itself with just 20 more treatments.

"The major hospitals in São Paulo still attract a considerable portion of the patients whom we now could treat here," says Dr. Roithmann. "But the good news is that many of them are now realizing they can stay here and actually get first-class treatment."

Moreover, Moinhos de Vento's location in Porto Alegre is ideally poised to receive patients from neighboring countries like Argentina and Uruguay. Ultimately, says the hospital's CEO, Dr. Polanczyk, the goal is to become a reliable and affordable option for patients from developed countries. "To do that, you need to have good doctors, a hospital with a history of excellence, and state-of-the-art equipment. And, of course, you have to be cost-effective. We hope that people in Europe or in the United States may consider us a good option for many kinds of treatments, given all those factors." Dr. Borges adds, "In that sense, I do feel that we are already among the best in Brazil – and we would love to become number one."

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