

# Advanced Radiation Therapy Treatments at the Rajiv Gandhi Cancer Institute, New Delhi

The Rajiv Gandhi Cancer Institute (RGCI), a dedicated oncology center in New Delhi, India, is one of the few medical centers in the country to have Intensity-Modulated Radiation Therapy (IMRT) technology. An interview with Dr. Y. P. Bhatia and Dr. Anil Kumar Anand.

*Interview conducted by Lalitha Maheshwaran, Siemens Ltd., India*

One of the greatest challenges of using radiation therapy for the treatment of cancer is to deliver the highest possible dose to the malignant tissue and, at the same time, ensure that normal tissues closest to the tumor receive the lowest possible dose. Medical centers with radiation therapy departments face this challenge, but the situation can be more serious at dedicated oncology centers due to the fact that a majority of patients with advanced cancer or complex malignancies are referred to these types of centers more often than they are to hospitals. The Rajiv Gandhi Cancer Institute (RGCI), a dedicated oncology center in New Delhi, India, is one of the few medical centers in the country to have Intensity-Modulated Radiation Therapy (IMRT) technology from Siemens Medical Solutions. Top officials of RGCI consider Siemens a key, long-term partner in the institute's efforts to develop a cancer hospital of repute throughout South Asia. In a recent meeting with Siemens, Dr. Y. P. Bhatia, Director of RGCI, and Dr. Anil Kumar Anand, Chief of the Radiotherapy Department, spoke extensively on these issues and addressed



Dr. Anil Kumar Anand (left) and Dr. Y. P. Bhatia (right) at the interview with Medical Solutions.

additional topics of importance regarding advanced radiation therapy treatment in India today. Following are some excerpts from the interview:

**MEDICAL SOLUTIONS:** What is the overall mission of your institution? How does IMRT help to fulfill your objectives?

**DR. BHATIA:** We observed long ago that oncology services were lacking in Northern India, and the demand for these



THE RAJIV GANDHI CANCER Institute in New Delhi is one of the few oncology centers in India to provide IMRT. It is one of the most modern oncology centers in India.

services was increasing steadily. We therefore wanted to build a facility that would be compatible with global standards and, at the same time, offer medical care at an affordable cost to patients. From the beginning, this was our overall objective and IMRT was an important development because of its high-precision technique, in which the associated morbidity is much lower than with other modalities of treatment.

**MEDICAL SOLUTIONS:** How has Siemens partnered with your institute in meeting these goals?

**DR. BHATIA:** The history of our association with Siemens dates back to the inception of the institute. At that stage, we were assisted by a soft loan from the German government to help purchase the technologies we required. Today, Siemens advanced radiation therapy equipment is an integral part of our system.

We handle approximately 25 to 30 new patients each day. The linear accelerator, for example, treats over 140 patients per day and, clearly, we cannot afford a breakdown of the equipment – even for one day – as there would be sheer



IN INDIA, CANCERS OF THE HEAD, neck and brain are the most common tumors. Dr. Anand, Dr. Kataria (radiation oncologist) and physicist Mr. Munjal (from left to right) discuss the treatment planning of a patient.

chaos if that were to happen. Because of Siemens' tremendous uptime commitment, we are able to keep the downtime in our facility to a bare minimum.

**MEDICAL SOLUTIONS:** How has the demand for radiation oncology services increased compared to existing treatment facilities currently available in India?

**DR. BHATIA:** The demand is steadily increasing. When we set up our institute, we expected to handle seven or eight new patients per day, but we actually receive approximately three to four times that number. The situation in other institutions is similar, because cancer patients requiring radiation therapy are underserved in our area.

**MEDICAL SOLUTIONS:** Is there need for major expansion of these facilities? If yes, in what way?

**DR. BHATIA:** Certainly there is a need for expansion, and we have already moved ahead in that direction. For example, a new extension is opening up in the same campus, which will

have 120 additional beds and two new linear accelerators. It is expected that this will be completed in June or July of 2005. Additionally, we are putting together an outreach program, and there are ongoing discussions with the government of Meghalaya (a province in Eastern India) to build their own cancer control program. This would be a natural expansion because we have already trained some of their doctors in clinical oncology.

**MEDICAL SOLUTIONS:** What are your major challenges?

**DR. BHATIA:** There are two issues that we need to handle simultaneously. One is the growing number of people who need oncology care services in the wide area that we have to cover in Northern India. The second issue is the rapid obsolescence of technology. In order to remain compatible with world standards, we have to offer the latest equipment and technology to our patients. We need to continuously advance ourselves at every opportunity. Apart from this,



140 PATIENTS per day are treated with the PRIMUS linear accelerator.



BEFORE THE RADIATION treatment begins, radiologic technicians verify the individual settings for each patient.

there is the challenge of keeping spare parts available for our existing equipment. I spoke earlier about the need for maximum uptime, and how the absence of this can become a hindrance to our goal of maximum treatment time.

**MEDICAL SOLUTIONS:** Could you explain your views on the role of health insurance providers in India, and their impact on patient care and treatment economics?

**DR. BHATIA:** Health insurance in this country needs to mature a lot – basically, it has a long way to go to become acceptable. If you look at all types of insurance, including the schemes run by the Indian government, only 12 percent of the population is covered. For the rest, any medical expense is an out-of-pocket expense to the patient. If the insurance system were to become more widespread, it would significantly help out a lot of people.

**MEDICAL SOLUTIONS:** What are the most important technological advantages that IMRT offers compared to earlier techniques?

**DR. ANAND:** In radiation therapy, IMRT is the most important development since the introduction of the linear accelerator, because it offers a number of advantages. For example, the dose distribution is better and we can handle irregular tumors more effectively, with minimum damage to the surrounding normal tissue. We can design the treatment in such a way that the maximum dose follows the contour of the tumor.

**MEDICAL SOLUTIONS:** What were the main considerations that prompted you to choose Siemens equipment?

**DR. ANAND:** We have had two previous experiences in dealing with Siemens over the past seven years, and we were quite happy – a certain comfort level had developed over the years. More importantly, their technology is superior

to others. The SIMTEC IM-MAXX technology allows us to provide faster delivery of IMRT, so the patient is on the treatment table for a shorter period of time. Hence the patient remains comfortable and we can handle a greater number of patients. And, Siemens has a significant presence in Northern India with very reliable service, which results in very high uptime for our equipment.

**MEDICAL SOLUTIONS:** Head and neck cancer is one of the most common cancers in India. Could you explain the impact of IMRT in these cases?

**DR. ANAND:** IMRT is most useful particularly in head, neck and brain tumors. We can increase the dose even if there are critical structures in the close vicinity. We now have experience with IMRT treatment in more than 250 cases, putting us fairly high up the learning curve.

One of the most common problems in head and neck cancer is dryness of the mouth. With earlier types of treatment, this condition would distort the internal structure of the oral cavity, but with IMRT, the parotid glands are spared and mouth dryness is avoided. In a study of 19 cases, we were able to completely avoid this problem for 78 percent of the patients.

**MEDICAL SOLUTIONS:** What was the most dramatic patient experience in terms of therapeutic effectiveness at your center?

**DR. ANAND:** We have had several cases, but the one which particularly comes to mind is that of a 56-year-old woman who had a recurrent tumor in the paranasal sinus. The tumor was very close to the optic nerve, requiring us to be extremely cautious. With IMRT, she was able to recover completely; with previous treatments, this would not have been possible.