

Projects For Upgrade of Facilities at Saroj Gupta Cancer Centre & Research Institute, Thakurpukur:

The following equipment will be used to diagnose and treat malignancies in all patients, including those in general and free beds.

A. Radiotherapy:

A1. IMRT (Intensity Modulated Radiotherapy) & IGRT (Image Guided Radiotherapy)

Radiotherapy is a rapidly changing technology in the field of oncology and each jump in newer technology makes the cost spiral up the ladder which becomes unaffordable to most of the Indian population. Yet the impact of technology and the good results it keeps producing cannot be denied to our population. Hence the goal of this centre would be to harness the latest technology which in this case will imply IMRT & IGRT and provide them to the unaffordable section of the society which would therefore improve the outcome of the disease and help patients to live better quality lives.

At present our Institute has 3 bunkers of which 2 are occupied by 2 Linear Accelerator machines which are 10 & 8 years old respectively and having frequent breakdowns. With these 2 machines at least 65 patients can be treated in a month, where the requirement is nearly 120.

Our centre is already having a waiting period of more than 3 weeks. We therefore propose to replace our 10 years old Linac machine with a latest generation IGRT machine for complicated cases and use the empty bunker for another Low end Linac machine which will be a Work Horse for most of the patients, cutting down the waiting period to nil.

Considering the present status in India, with ten lakh new cancer cases a year, there is a requirement for 1000 Radiotherapy machines, having a short fall of 450 machines thereby producing a long wait for many cancer patients to start their treatment. When we know the only chance of cure is early diagnosis and treatment, we are failing to produce these opportunity to many patients.

With the increasing incidence of cancer, the demand for this treatment will almost double up in 10 years time.

The primary beneficiaries would be the underprivileged cancer victims who require high technology for better cure rates and improving the quality of lives. Patients of the head and neck

cancer, prostate, brain tumours especially require this form of Radiotherapy for better outcome, minimal side effects and better survival results. The affordable can easily access such treatments from corporate cancer hospitals who offer such treatments at premium costs which is obviously denied to the financially handicapped. **No. of Beneficiaries-** Approx 90 patients per month.

Project Plan – Intervention- To install 2 sophisticated Linac Accelerator machine for treatment of cancer patients. The machines will be placed in refurbished existing bunkers and licensed by AERB (Atomic Energy Regulatory Board), replacing two old Linear Accelerator machines.

Timeline and Milestones for Project Execution- Remodeling of existing bunkers which includes civil, electrical & interior works. Please note, the major civil work includes the thickening of the existing RCC structure with steel & concrete for radiation protection.

- Equipment-placing of purchase order on receipt of Grant,
- Delivery of the equipment-12 weeks at site.
- Installation & commissioning- 4 weeks.

Therefore, on obtaining the grant/fund both the activities can start immediately and project is expected **to be complete within 16 weeks.**

Results Expected and Measurable Outcomes- A more scientific technology in medical applications will bring better clinical results. Hence IMRT and IGRT applied to our daily service will undoubtedly generate better overall survivals and improved progression free disease periods. Moreover it will help clinicians in generating better outcome with minimal side effects to their patients and undoubtedly far superior quality of lives and better cur rates.

Project Evaluation Plan- This project will have to be evaluated in stages:

- A) The ordering of equipment which has already been selected by the expert panel.
- B) Completion of civil construction for the bunker housing the equipment. The plan has already been certified by AERB. This will take minimum three months time.
- C) Installation of equipment which will take three months to reach this hospital from overseas and additionally one month more to complete its erection in the housing bunker.

Finally one more month will be necessary for inspection and licensing by AERB personnel.

Budget Expenditure - Recurring & Non Recurring (Detailed break up):-

FINANCIAL IMPLICATIONS:

i) Low End Linac:

In order to set up **IMRT/IGRT** at Thakurpukur a new state-of-the-art machine with all sophisticated capabilities will have to be installed in an existing bunker of this hospital, which was previously used to house an old Telecobalt Radiotherapy machine. The approximate cost would be close to Rupees eight crores. The average load of our LINAC equipments is nearly 120

patients a day where only 60 patients can be handled by these two old machines and with the replacement of one 8 year old Linac machine output will increase by at least another 30 patients a day. This hospital will be able to provide all other infrastructural support for optimum functioning of this technology. The following equipment model described below will ideally suit our purpose to achieve our present goal.

Varian model- Unique Performance

1) Approx cost of IGRT equipment with ancillaries.....	Rs. 6. 90 Crores
2) Approx cost of remodeling of existing bunker.....	Rs. 1.10 Crores
Total :	Rs. 8.00 Crores

The initial quotation for ‘Varian Model unique Performance’ was Rs. 8.50 crores. However, on our request for this noble cause, the final price was negotiated down to Rs. 6.90 crores.

ii) **High End Linac:**

Varian Model- True Beam with accessories

In view of the fact that our earlier old conventional Linac Radiotherapy machine is nearly 10 years old and requires replacement and is having frequent break down we will need to replace this machine to serve our patients fruitfully with the cutting edge technology. This equipment will help us deliver the state-of-the-art technology comparable to International standard so that our patients receive all forms and techniques for cancers in delicate region that can be possibly be delivered under any situation. The existing bunker for this equipment is already conformed to this high end machine but will require additional supportive equipments for proper utilization. The total cost will touch more than seventeen and half crores rupees as tabled below.

1)Approx cost of IGRT equipment (True Beam) with ancillaries.....	Rs. 15.7 Crores
2)Approx cost of additional ancillary units.....	Rs. 2.0 Crores
Total:	Rs. 17.7 Crores

B. Surgery:

Kalelker Multi Tract Retractor System:

Abdominal Cancer Surgery is a complex surgical procedure which requires extensive manipulation and a lot of assistances. But there is a lack of space for so many hands inside the small abdomen.

Again to do such surgery, surgeons need to keep both the hands free to do a proper job. So for such a complex job with fewer hands in the field, a proper self retaining retractor is required. Moreover it must be effective to retract the wound in several directions without compromising the surgeons work and also local sterility. So this instrument is one of the indispensable instruments in any complex abdominal surgery.

Approx cost Rs. 1.40 Lakhs (US \$ 2,333)

C. PICU:

C1. PICU Bed (Fowlers Bed):

We need 8 such bed for our new paediatric ICU.

Approx cost Rs. 2.00 Lakhs, (US \$ 3,333)

C2. Multipara Monitor:

In Medicine, Monitoring is the observation of a disease condition of one or several medical parameters over time. It can be performed by continuously measuring certain parameters by using a medical monitor (for example, by continuously measuring vital signs by a bedside monitor). Multimodal monitors that simultaneously measure and display the relevant vital parameters are integrated into the bedside monitors in critical care units. These allow for continuously monitoring of a patient, with medical staff being continuously informed of the changes in general condition of a patient. The parameters measurements are:-

1. Heart rate/ pulse Rate, 2.Respiration Rate, 3.ECG tracing continuous, 4. SPO₂, 5.NIBP, 6. Temperature.

Approx cost Rs. 1.58 Lakhs (US \$ 2,633)

D. Pathology:

D1. Automated Compact Electrophoresis System:

Capillary Electrophoresis (CE) has emerged as a powerful analytical tool in the last decade.

This machine has the following technical advantages:

1. Can be used for protein electrophoresis (diagnosis of multiple myeloma and plasma cell dyscrasia)
2. Hemoglobinopathies diagnosis
3. Urine for BJ Protein
4. Lipoproteins
5. β_2 Transferring α antitrypsin
6. CDT etc
7. CSF Iso-focussing
8. Quantification along with graphs
9. Can be used for one sample and low sample volume required
10. High throughput
11. Inbuilt software for reporting

User friendly (bench top and fully automated).

Approx cost Rs. 7 Lakhs (US \$ 11,666)

E. Urology:

Lower Track Urology Resectoscope:- This set of instruments is used for:-

- 1) Endo-Urological treatment of Urinary Bladder Cancer.
- 2) To help preserve the bladder, thereby avoiding open surgery.
- 3) To perform channel TURP in patients with Carcinoma Prostate
- 4) To perform fulguration of radiation cystitis in patients who have received radiation.
- 5) To perform D.J. stenting in patients with obstructive uropathy due to Carcinoma Cervix.

Approx cost Rs. 10.41 Lakhs (US \$ 17,350)

F. Blood Bank

F1. Refrigerated Centrifuge:

This is the most important equipment for component separation (RBC, platelet, plasma) from whole blood. There are either 8 or 12 blood bag buckets inside the machine, one blood bag in each bucket. The machine is pre-programmed to operate at a specific temperature with specific revolutions per minute and for a specific period of time. There are various programs put in the machine for various components to be prepared.

Approx. cost Rs. 9.23 Lakhs (US \$ 15,383)

F2. Ultra Low Plasma Freezer: -80°C deep freezer is required for storage of FFP as well as Cryo-preserved Peripheral Blood Stem Cells (PBSC). Presently we have got only one such freezer; in case of any sudden shut down or functional disturbances, the 2nd freezer can be used.

Approx cost Rs. 4.01 Lakhs (US \$ 6,683)

G. Bronchoscope:

Fibreoptic Bronchoscope is a flexible bronchoscope with videoscopic arrangement. It is used for diagnosing of tumours in the respiratory track, and detecting the presence of any foreign body in the respiratory track. Through this instrument we can take biopsy if any growth is detected, we can take photo of the respiratory channels, we can do suction if any materials in the respiratory passage, we can remove foreign body also. It is also being used by the anaesthetist in different intubation.

Approx cost Rs. 15.29 Lakhs (US \$ 25,483)

H. Battery Operated Ambulance:

Battery operated ambulance has become an urgent requirement as we often have to ferry patients from one block to another block inside our huge campus for different types of treatment.

Approx. cost Rs. 6 Lakhs (US \$ 10,000)

I. Expansion Projects (New Building & Renovation):-

I.1. Construction of Nursing Hostel with Nursing Training Centre at Bivabhari (Ground Floor):- The Saroj Gupta Cancer Centre & Research Institute has planned to construct a new Nursing Training Centre, along with a Nursing Hostel in its "Ashavari" complex, Thakurpukur. The new Nursing Training Centre will be housed in a two-storeyed building, providing state-of-the-art facilities to better train the next generation of nurses. The building will feature comfortable classrooms and offices for the concerned faculty. The new Nursing Hostel has been envisioned to provide comfortable residential facilities for the student nurses of the Nursing Training Centre. The Hostel will be housed in a four-storeyed building, with each floor having a capacity to accommodate 53 student nurses (the total capacity being 212).

Approx cost Rs. 1.5 Crores (US \$ 1,75,000)

I.2. Renovation of SROT Building (Social Rehabilitation Occupational Therapy Unit): This building was inaugurated by former Prime Minister Mrs. Indira Gandhi in 1981 for providing accommodation for patients. This needs immediate renovation. Once renovation is completed, this building will be used to accommodate our Residential Doctors.

Approx cost Rs 81 lakhs (US \$ 1,35,000)