



# IMPACT ASSESSMENT REPORT

Procurement of Low Energy Linear Accelerator for  
Cancer Unit at AIIMS, Rishikesh

REPORT PREPARED BY  
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## Context

### Global Context – Sustainable Development Goals

In September 2015, the United Nations adopted *'The 2030 Agenda for Sustainable Development'*, a plan of action aimed at “ending all forms of poverty, fighting inequality and tackling climate change, while ensuring that no one is left behind”. The 2030 Agenda includes a set of seventeen sustainable development goals to be achieved by the year 2030.

A central principal of the 2030 agenda is that ‘no one is left behind’.

### Goal 3: Good Health and Well-Being



While all the goals are critical for development, ensuring healthy lives and promoting well-being is important to building prosperous societies. Thus goal 3 aims to Ensure healthy lives and promote well-being for all at all ages.<sup>1</sup>

Most countries, especially poor countries, have insufficient health facilities, medical supplies and health care workers for the surge in demand. Therefore, concerted efforts are required to achieve universal health coverage and sustainable financing for health; address the growing burden of zoonotic and non-communicable diseases, tackle antimicrobial resistance and environmental factors contributing to ill health.

Target 3.4 of this goal aims to reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being. Here one of the non-communicable diseases mentioned is cancer.

### Indian Context

In July 2023, Indian Government indicated towards the rising cancer mortality rate in India. Of the 14.61 lakh people detected with cancer in 2022, 8.08 lakh died, as against 7.89 lakh in 2021. The incidence has been increasing every year. According to an ICMR study, one in nine Indians will develop cancer during their lifetime. The incidence of all cancers is estimated to increase to 15.7 lakh by 2025.<sup>2</sup>

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<sup>1</sup> <https://sdgs.un.org/goals/goal3>

<sup>2</sup> <https://www.deccanherald.com/opinion/editorial/worrying-increase-in-indias-cancer-burden-1242328.html>

## Background to the Study

In order to contribute to this cause, Airport Authority of India funded Procurement of Low Energy Linear Accelerator for Cancer Unit at AIIMS (All India Institute of Medical Sciences), Rishikesh. Low Energy Linear Accelerator is a machine to cure the cancer tumours with pinpoint accuracy while sparing the surrounding normal tissues. AIIMS, Rishikesh is a medical college and hospital that operates autonomously under the Ministry of Health and Family Welfare, GoI (Government of India).

The MoU (Memorandum of Understanding) between AAI and AIIMS was signed in July 2018 and the machine was procured and inaugurated on 15 August, 2020.

In order to assess the Impact of this Program, AAI and TISS (Tata Institute of Social Sciences) entered into an agreement, whereby TISS conducted Impact Assessment of its CSR projects across 10 locations, one of those being AIIMS, Rishikesh.

## Study Objectives

The specific objective of the Impact Assessment Study of the aforementioned projects is as follows:

1. Conduct an Impact Assessment study to evaluate the impact of the CSR Program
2. Suggest measures for effective implementation of the CSR activities in the area under focus.

## Scope of the Study

This study's scope includes assessing the impact of the aforementioned CSR Project of AAI implemented in the financial year 2018-19.

The scope of study has been organized in the following tasks:

Task 1: Project Coordination

Task 2: Data collection by physically visiting the project locations and collecting data through interviews, FGDs of all the stakeholders along with Observation of all the infrastructures and activities.

Task 3- Data Analysis through the method of Content Analysis for Qualitative Data where coding was done manually.

## Task 4- Report Writing

### Study Methodology

Qualitative Research Methods such as Face to face Interviews and Physical Observation of the infrastructure was used in this study.

In Face to Face interviews, researchers conducted one-on-one interviews with Hospital Senior Doctors. These interviews involved a structured questionnaire to gather specific information from stakeholders. (See Annexure)

In addition to the above, Non-Participant Observational Research was conducted to observe the attitude of stakeholders towards the project in addition to observation of the machine. Researchers took detailed field notes during their observations and interactions. These notes captured contextual information, non-verbal cues, and other qualitative insights.



*Image 1: TISS team's interaction with Prof. Manoj Gupta- Head- Radiation Oncology and Ex Dean- AIIMS, Rishikesh and other Staff of the Hospital.*

### Study Limitation

This study didn't capture responses from patients or their relatives as they were enduring visible mental or physical pain and agony due to the life threatening disease. Interacting with them would have gone against the ethical consideration of voluntary participation.

## Study Findings

### 1. Equipment is present

The Low Energy Linear Accelerator worth INR 15 Cr was procured with the help of funding worth INR 10 Cr provided by AAI. The remaining amount of INR 5 Cr was provided by GoI. As mentioned by Prof. Manoj Gupta who is the President- AROI, Ex Dean, Head- Radiation Oncology Department of AIIMS, Rishikesh, the equipment was inaugurated on 15<sup>th</sup> august 2020 and is functioning till date. TISS team found it to be present and functional.

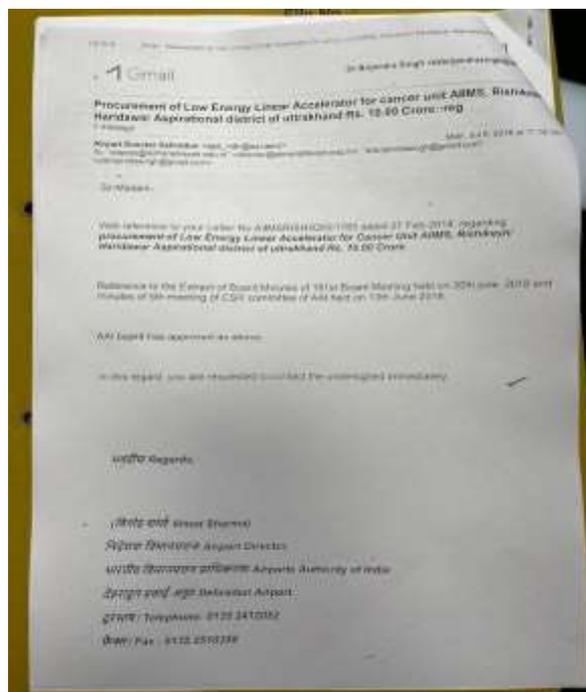


Image 2: Photo frame which mentions that AAI funded the Low Energy Linear Accelerator Machine (L) and copy of email stating the release of INR 10 crore for the machine.

### 2. Machine is Functional and Well-Maintained

As observed by TISS team, the machine was functional. Dr. Gupta mentioned that approximately 60-70 patients are benefitted from the machine on a daily basis.

A quarterly check is done to ensure that there is no damage in the machine. At certain times, when the machine has technical issues, it is resolved through the warranty and with the help of machine engineers who are remotely present. TISS team couldn't get any record of maintenance as the machine is remotely operated by the machine engineers.

### 3. Number of patients have increased as waiting time drastically reduced after procurement of the machine

It was mentioned that earlier it used to take 6-9 months waiting time to cure the patients. However, with this machine, now the waiting time has reduced to less than a month. Thus the number of patients for treatment has increased with the usage of this machine. Currently 60-70 patients are treated with this machine on a daily basis. He also mentioned that this machine is much efficient with better image guidance.

## Study Recommendations

### 1. More Equipment and Grants required as number of cancer patients substantially increasing

As per a ICMR study, the incidence of all cancers is estimated to increase to 15.7 lakh in 2025 from 14.61 lakh in 2022.<sup>3</sup> This concern was reflected in Dr. Gupta's statement when he mentioned that the number of cancer patients in the country have substantially increased and are set to rise in upcoming years. This increase in cancer patients requires more number of equipment and funds. He further added that according to our population size, there should be 1400 Low Energy Linear accelerator Machines (one machine per one million) but only 700 are available currently. Thus increasing the number of equipment or grants to different hospitals for cancer patients across India by AAI would help in saving many lives.

### 2. Support in conducting cancer awareness and early detection

In India, most of the patients ignore the early cancer symptoms as they are not aware about it. By the time, the illness is identified, cancer reaches to an advanced stage leading to very high mortality rate from cancer in our country. Therefore, it might be recommended that corporates like AAI can provide support in awareness programmes and campaigns which help prevent cancer and detect it early.

Deaths due to cancer have declined by 33% in the United States since 1991 and the main reasons are early detection, lower rates of smoking, and improvements in treatment<sup>4</sup>. India can also bring its mortality numbers down, if adequate support in terms of grants for equipment, awareness campaigns are provided by corporates and Government.

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<sup>3</sup> <https://www.deccanherald.com/opinion/editorial/worrying-increase-in-indias-cancer-burden-1242328.html>

<sup>4</sup> <https://www.deccanherald.com/opinion/editorial/worrying-increase-in-indias-cancer-burden-1242328.html>

## Annexure



### Procurement of Low Energy linear accelerator for Cancer Unit, AIIMS- Rishikesh

<b>Interview Questionnaire for the Hospital's Senior Management/ Senior Doctor</b>	
Date- <b>03-10-2023</b>	Time- <b>11:30 am</b>
Name of Interviewee 1- <b>Pro. Manoj Gupta</b>	Contact no. - <b>9816137344</b>
Designation- <b>President AROI, Ex Dean, Head, Radiation Oncology</b>	
Name of Interviewee 2- <b>Dr. Lekshmi</b>	Contact no. -
Designation- <b>Doctor</b>	
Name of Hospital & Location - <b>All India Institute of Medical Sciences (AIIMS), Rishikesh</b>	
1. Is this Hospital? <i>It's a Government Hospital</i>	
2. How did AIIMS get in touch with AAI (Airport Authority of India) regarding the CSR project? <i>The Managing Director and the senior doctors including Dr. Mr. Manoj Gupta who is the President AROI, Ex Dean, Head, Radiation Oncology department in AIIMS got in contact with the CSR wing of AAI to get the funds for the equipment required by the cancer unit of AIIMS.</i>	
3. What equipment were donated by AAI? (Investigators need to check if the donated equipment was Low Energy Linear Accelerator for Cancer Unit) <i>The equipment donated by AAI was Low Energy Linear Accelerator for Cancer Unit.</i>	
	
4. When was the aforementioned equipment donated to the Hospital? <i>(Please take an approx. date. Try to see docs like purchase order etc. related to the same)</i>  <i>With reference to the extract of the board meetings of 181<sup>st</sup> held on 20-06-2018 and minutes of 5<sup>th</sup> meeting of CSR committee of AAI held on 13-06-2018, the MOU had been signed in July 2018 whereas the machine was procured and inaugurated 2 years later and was inaugurated on 15 August, 2020</i>	

*\*Attaching the email confirmation image as shared by Dr. Manoj Gupta*



5. What is the purpose of the equipment that you mentioned? (Try to understand its medical use)

*The core purpose of the machine is to cure the cancer tumors with pinpoint accuracy, sparing nearby healthy organs of the patient's body by radiations. The patient under goes a CT scan first which is called the simulation process, after that the scan is then transferred to the planning where it gets digital image processing and planning is done by the group of doctors.*

*Once the plan is approved the same is being sent to the machine where the radiation cures the patients. This machine is much efficient with better Image Guidance.*

*\*Attaching the pictures for the reference*



6. Did you already have the aforementioned equipment from other sources before this was provided?

If no,

- Where did you refer patients for administration of these equipment earlier?
- How far was that place?
- What was the approximate cost elsewhere and what is the cost here of administering this equipment?

*The hospital had other linear machine of Versa HD, which was under maintenance.*



7. Approximately how many patients are benefitted by the equipment daily?  
(Please ask for any supporting document if available)

*Near about 60-70 patients are being benefitted from the machine on the daily basis.*

8. Has there been any technical issue with the equipment from the time it was donated? If yes, please mention the issues.

*At certain times the machine would have certain technical issues which are being covered under the warranty and with the help of remote operations of the machine engineers the issues are being resolved.*

9. How do you ensure that the equipment is well-maintained?

*The equipment was maintained because it is functioning on a daily base and has a quarterly check to ensure that there is no damage in the machine.*

10. Do you think the no. of patients have increased after these equipment was installed here? (Please see if any documents to support the response is there)

*As we were being told by Dr, Manoj Gupta, it use to take 6-9 months waiting time to cure the patient, however after the addition of the machine the waiting time had reduced to 15 days to 1 month.*

*So yes definitely the number of patients have increased in terms of treatment.*

11. What do you think has been the impact of this equipment?

*The machine has definitely benefitted many patients as well as the hospital staff because the waiting span for patients has decreased i.e. from 7 to 9 months the time span is zero months as 60 -70 patients are being treated everyday.*

12. What do you think is further required in this Hospital to further benefit the patients?

*The number of cancer patients across the country have substantially increased and are set to rise more in forthcoming years. Therefore, the increase in cancer patients in the hospitals require more no of equipment's and grants.*

13. Any suggestion for further improvement of this project?

*There should be a separate CSR cell so that there are regular follow ups and also the staff concerning should be more proactive.*

**Note for Investigators**

1. Please click good, clear photograph of the equipment etc
2. Please click pictures of your interaction with the beneficiaries/stakeholders.

**Please make sure that no one from AAI is present at the location of interview.**

**For Investigators – (Investigators need to physically verify the following)**

1. Was the following equipment there in hospital? Mention Yes/No and remarks wherever applicable.

- Low Energy linear accelerator for Cancer Unit, AIIMS

*Yes, the equipment was very well present and was functioning properly.*

2. Was the equipment functional – Yes/ No (If no, what is the issue?)

- *Yes, the equipment is functional, as it is curing 60 to 70 patients every day and 1800 in a year*

3. Does the Hospital management have any evidence of purchase of this equipment?

- *We were being provided with the copy of email stating the release of 10cr for the machine. Dr. Gupta had told us that the machine costs around 15 Cr. And 10 Cr was funded by the AAI and rest 5 Cr by GoI.*

4. Does the Hospital management have any evidence of maintenance of this equipment?

- *We could not get any such record of maintenance as the machine gets remotely operated by the machine engineers.*

5. Any other observation-

- *There should be more awareness regarding cancer and its different types. According to the doctors the patients ignore the symptoms and by the time they realise the problem it has already been aggravated to an advance level. Also according to the population size there should be 1400 machine ( 1 machine per million) but only 700 are available vaccines for cancer are not so known by the people due to lack of awareness, so the hospitals can conduct awareness programs with the help of big institutions.*

**Investigators are requested to take clear pics of the equipment and their interaction with the stakeholders**