



Evaluative Report of Tata Memorial Centre

1 Name of the CI

Tata Memorial Centre, Mumbai. It has two campuses: Tata Memorial Hospital, Parel, Mumbai; and Advanced Centre for Treatment, Research & Education, Kharghar, Navi Mumbai.

2 Year of establishment

Please see para 6 of the 'Profile'.

3 Is the CI part of the university

Yes

4 Names of programmes offered

TMC offers

- Ph.D. in life sciences and health sciences,
- M.Sc. (Nursing),
- MD in Anaesthesia, Radiotherapy, Pathology, Radio-Diagnosis, Microbiology, Immuno Haematology & Blood Transfusion, Nuclear Medicine, and Palliative Medicine,
- DM in Medical Oncology, Gastroenterology, Paediatric Oncology and critical Care,
- MCh in Gynaecological Oncology, Surgical Oncology, and Head & Neck Oncology, and
- Certified fellowship programme in 23 different disciplines

Please also see Appendix 1 of the profile.

5 Interdisciplinary programmes

NIL.

6 Courses in collaboration with other universities, industries, foreign institutions, etc.

In addition to MoU between HBNI and other institutions listed in Para 2.4.10 of the 'Criteria-wise Inputs', TMC has MoU with Sheth GS Medical College



(KEM Hospital), Mumbai since 2011. The purpose of this MOU is to facilitate Post Graduate Medical Training programme and research that involves hands on training of residents and fellows from TMC and KEM Hospital. This MOU envisages cooperation, coordination and utilization of the complementary facilities between the Parties and is also intended to facilitate long term collaborative research, development of faculties and related activities that are mutually beneficial to the missions of the Parties.

7 Details of programmes discontinued, if any, with reasons

TMH use to conduct MS in General Surgery which has been discontinued as TMH have started Super-Specialty in Surgical Oncology.

8 Examination System

Examination system followed for medical degrees is as per the stipulations of the Medical Council of India and for M.Sc.(Nursing) is as the stipulations of the Nursing Council.

9 Participation of the department in the courses offered by other departments

Within TMH, there are different departments and for medical degrees, students are rotated through different departments as required by Medical Council. Similar is the case for M.Sc. (Nursing). .

10 Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/ Asst. Professors/ Others)

Please see para 24 of the Profile.

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Please see Appendix 1

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors

Please see para 26 of the 'Profile'.

13. Percentage of classes taken by temporary faculty – programme-wise information :



NIL

14. Programme-wise Student Teacher Ratio

This is strictly in accordance with the stipulations of the Medical Council and Nursing Council. For Ph.D., it is ensured that number of students per supervisor is limited to a maximum of eight.

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

Please see para 24 of the 'Profile'.

16. Research thrust areas as recognized by major funding agencies

The funding for research essentially is given by Department of Atomic Energy. To facilitate research TMC have Tata Memorial Hospital research and administrative council (TRAC). TMC have 3 Institutional Ethics committees (IEC) (2 at TMH and 1 at ACTREC) which look after all the research proposals. This includes national and international clinical trials, topics for research leading to PhD, MD, MCh and DM. There is a separate Data Monitoring subcommittee which looks after the ongoing protocols. The support for clinical trials is provided by the Clinical Research Secretariat which provides support for sample size calculation, data collection, data analysis and interpretation and research publications.

The thrust areas for research are implementing low cost technology which can be applicable across the country, evaluating high cost technology for its impact on clinical outcome, challenging existing dogmas, Cancer Biology, Cancer Diagnostic and Therapeutic (which includes structural biology, stem cell biology, genomics, proteomics & Immunology and several Investigator initiated clinical trials at TMH).

In addition to DAE, funding is also provided by various other agencies such as Indian Council for Medical Research (ICMR), Department of biotechnology (DBT), Department of Science and Technology (DST) and international agencies like World Health Organization (WHO).

Please also see para 3.1 of the 'Criteria-wise Inputs'.

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the

**names of the funding agencies, project title and grants received project-wise.**

Full funding is received from the Department of Atomic Energy and all the faculties are involved in one or more projects. Details of ongoing projects and grants for TMC put together are given in Appendix 2.

18. Inter-institutional collaborative projects and associated grants received

TMC have received grants from various international agencies like International Atomic Energy Agency (IAEA), International Breast Group (BIG), world health organization (WHO) for inter-institutional collaboration and National Institute of Health (NIH) across various countries. In addition TMC have pharma sponsored studies which are collaborative protocols with various institutions across the country.

In addition TMC have inter institutional projects with various regional cancer centres.

Investigators at ACTREC have several extramural projects funded by the National funding agencies like Department of Biotechnology, Indian Council for Medical Research, Council of Scientific and Industrial Research, Department of Science and Technology. The multi-institutional projects include collaborations with major research institutes in India like TIFR, NCCS etc.

19. Projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.

TMC have multiple projects which have been funded by DAE, DBT, DST and ICMR. Please see Appendix 2 for details.

20. Research facility / centre with

- **state recognition**
- **national recognition**
- **international recognition**

The Tata Memorial Centre is the national comprehensive cancer centre for the prevention, treatment, education and research in Cancer and is recognised as one of the leading cancer centres in this part of the world. Research facilities at Tata Memorial Centre are accredited by Association for the Accreditation



of Human Research Protection Program (AAHRPP-USA). Institutional Ethics committees at TMC are accredited by WHO-Strategic Initiative for Developing Capacity in Ethical Review (WHO-SIDCER). This was first done in 2009 and got renewed in 2012 also. TMC are also registered with DCGI-New Delhi.

21. Special research laboratories sponsored by / created by industry or corporate bodies

All research laboratories in TMC are sponsored by the Government for the purpose of providing service to the patients, education to students and conducting research in the area of cancer.

The harvest of science should reach bedside. The most important source of the harvest is clinic with support from lab and final weeding process by statistical methods. We, at the Tata Memorial Hospital are bestowed with the widest range of patients in large numbers and finest laboratory support. A unique centre 'Clinical Research Secretariat' was commissioned in 1997 to temper the vast data generated from clinics/laboratory and draw meaningful conclusions with clinical endpoints.

The CRS offered a wide range of services from collection, maintenance, quality control & analysis of data to design & execution of prospective trials of importance to the institute and nation. The primary aim was to generate easily testable hypothesis from focused retrospective analysis or laboratory studies. To test novel avenues with survival or quality of life end points in observational studies or randomized trials. To support mega-trials from multiple centres spread all over India. To rethink on more technology in patient care and challenging dogma with appropriate clinical studies. To collate published evidence by Meta-analysis to define the state of art treatment.

CRS has supported over 50 retrospective studies, 18 prospective studies from clinic and lab, 25 randomized clinical trials and 10 meta-analyses. During 2009-2013 CRS has supported 46 clinical trials. Majority of the studies have been either presented or published in peer reviewed journals.

22. Publications:

Please see para 3.3 of the 'Criteria-wise inputs'.

23. Details of patents



A number of inventions have been patented. Please see Appendix 3 for a list.

24. Areas of consultancy and income generated

Not Applicable. Please see para 3.4 of the 'Criteria-wise Inputs'

25. Faculty selected nationally / internationally to visit other laboratories/ institutions/ industries in India and abroad.

Visits within India are numerous and are not listed. For visits abroad, please see Appendix 4.

26. Faculty serving in

- a) National committees b) International committees c) Editorial Boards
d) any other (please specify) 10 national Constituted Institutes**

Please see Appendix 3 of the 'Criteria-wise Inputs.

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).

HBNI encourages faculty to participate in and organise national and international workshop and conferences, go to universities abroad for post doctoral fellowships and short term research assignments, act as consultants for developing countries under programmes sponsored by IAEA, participate in collaborative projects with universities in India funded by BRNS, participate in collaborative projects with laboratories abroad under various MOUs. All this helps to recharge the faculty.

To encourage evidence based practices every year we conduct annual Evidence Based Management conference (EBM) which focuses on 2-3 core topics. Renowned international and national faculty members contribute to the evidence for that particular site. One of the highlights of this meeting is Oration which is given by renowned international faculty. Apart from this every year CRS supports various conferences in Anesthesia, Radiology, Pathology, Surgery, Radiation Oncology to promote evidence based practices.

28. Student projects :

- **percentage of students who have done in-house projects: 100%**
- **percentage of students doing projects in collaboration with other universities/ industry/ institute: 0%**



29. Awards / recognitions received at the national and international level by

- Faculty
- Doctoral / post doctoral fellows
- Students

Please see Appendix 1 of the 'Criteria-wise Inputs'.

30. Seminars/ Conferences/ Workshops organized and the source of funding (national/ international) with details of outstanding participants, if any.

Please see Appendix 5.

31. Code of ethics for research followed by TMC

In addition to excellence in Science and Engineering, a strict adherence to high ethical standards is a necessity. The core ethical policy of DAE is to establish a tradition with highest ethical standards, ensuring a harmonious future for the entire humankind, where every individual can live with dignity and self-respect. In accordance with the guidelines of the DAE, adhering to highest ethical standards is one of the guiding values of TMC. Every complaint of malpractice or plagiarism received is investigated and appropriate action is taken.

TMC has 3 Institutional Ethics committees (IEC). Two of IECs are at TMH and 1 at ACTREC. All are accredited by AAHRPP.

32. Student profile programme-wise

Please see para 15 and para 28 of the 'Profile.'

33. Diversity of students

Please see Para 2.1 of the 'Criteria-wise Inputs'.

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

Please see para 1.1.3 of the 'Criteria-wise Inputs. This question is not



applicable to HBNI.

35. Student progression

Selection of students for medical programmes is on the basis of all India basis examinations and therefore, this question is not applicable to TMC.

36. Diversity of staff

Please see para 2.4.3 of the ‘Criteria-wise Inputs.’

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period

Two of the faculty members in Medical Physics have received PhD

38. Present details of infrastructural facilities with regard to

a) Library: Please see para 4.2 of the ‘Criteria-wise Inputs’. The library has adequate physical facilities such as reading-rooms, reprography, internet and is stocked with number of books (7775) and other library resources (i.e. CDs/ cassettes, etc.). In addition the Department of Atomic Energy (DAE) has set up a consortium to subscribe 2405 journals through Science Direct and these are available to TMC.

b) Extensive internet facilities are available to staff and students

d) TMH has five lecture halls, four round table conference halls and all associated infrastructural facilities. ACTREC has two auditoria and one seminar room. Adequate ICT facilities are available in the class rooms.

e) Students’ laboratories Yes

f) Research laboratories Yes

39. List of doctoral, post-doctoral students and Research Associates

Please see Appendix 6.

40. Number of post graduate students getting financial assistance from the university.



All students perusing medical degrees and Ph. D programme get financial assistance from the university. Please see para 5.1 of the “Criteria-wise Inputs.”

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

Please see para 1.1.2 of the ‘Criteria-wise Inputs.

- 42. Does TMC obtain feedback from**
- a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does TMC utilize the feedback?**
 - b. students on staff, curriculum and teaching-learning-evaluation and how does TMC utilize the feedback?**
 - c. alumni and employers on the programmes offered and how does TMC utilize the feedback?**

Obtaining feedback from faculty, alumni and employees is a continuous process. Feedback from students is obtained once every year at the end of the academic session. All feedbacks received is analysed by the academic committee for deliberation and decision. Introduction of new research areas and changes in syllabus are decided as needed. Stipulations of statutory agencies as applicable are always adhered to.

43. List the distinguished alumni of the CI (maximum 10)

Sl. No	Name
1.	Dr P B Desai
2.	Dr S A Pradhan
3.	Dr Dhananjay Kelkar
4.	Dr Shantswaroop Vege
5.	Dr Anita Borges
6.	Dr K M Mohandas
7.	Dr Sunil Badwe
8.	Prof M. G. Deo
9.	Prof A. N. Bhisey

44. Give details of student enrichment programmes (special lectures/ workshops/ seminars) involving external experts.

TMC regularly hosts international experts to give seminars in their field of specializations. Several interaction meetings/workshops have been organized at



TMC during the last five years

To encourage evidence based practices amongst students every year we conduct annual Evidence Based Management conference (EBM) which focuses on 2-3 core topics. Renowned international and national faculty members contribute to the evidence for that particular site. One of the highlights of this meeting is Oration which is given by renowned international faculty.

Apart from this every year CRS supports various conferences in Anesthesia, Radiology, Pathology, Surgery, Radiation Oncology to promote evidence based practices which are well attended by students who are undergoing training.

45. List the teaching methods adopted by the faculty for different programmes.

Besides standard class room teaching, interaction through discussions in laboratories.

There are weekly seminars, journal clubs which are supervised by the faculty members for the students. In addition there are weekly lectures by the faculty members from TMH for the students. There are hands-on training programs in the labs, machines, theatre and ICUs.

46. How does TMC ensure that programme objectives are constantly met and learning outcomes are monitored?

Medical programmes conducted at TMH prepare students for a lifelong career in medicine and are structured in accordance with the guidelines of MCI or Nursing Council as applicable.

Quality of theses produced by doctoral students is demonstrated by comprehensive research abilities acquired by students. Invariably number of publications in peer reviewed journals coming out of a thesis varies from one to several as can be seen from previous annual reports. Students after their completion of PhDs are generally selected for employment (including as INSPIRE faculty) in national laboratories, universities or industry in India or abroad.

47. Highlight the participation of students and faculty in extension

**activities.**

Residents and students doing fellowship look after patient care and research at TMC's outreach programs at Barshi and Dervan. The primary aim is to run public health research in these rural outposts, offer patient care to patients and train local human resource to take care of these responsibilities so that TMC's presence is irrelevant after 10 years.

The students and faculty give lectures very frequently in various fora like national and international symposia, workshops, awareness programmes and colloquia. They interact on a regular basis with scientist and technologists of repute from the country and from abroad.

At ACTREC - Students also organize Graduate Students Meet each year wherein students from other institutes also present their work fostering interaction among students from different institutes

Please also see para 3.5 of the 'Criteria-wise Inputs'.

48. Give details of “beyond syllabus scholarly activities”.

The faculty is continuously engaged in research necessary for meeting the mandate of the DAE. A significant percentage of this engagement is scholarly and results in good publications in peer reviewed journals. The students and faculty give lectures very frequently in various fora like national and international symposia, workshops, awareness programmes and colloquia. They interact on a regular basis with scientist and technologists of repute from the country and from abroad. They organise high level knowledge dissemination activities like organization of advanced schools under the aegis of BRNS/ DST and other similar bodies.

49. State whether the programme/ CI is accredited/ graded by other agencies? If yes, give details.

Yes, by MCI, UGC and Nursing Council.

50. Briefly highlight the contributions of TMC in generating new knowledge, basic or applied.

Clinical cancer research has been a major activity at TMC. This has led to two major practice changing research outputs. The first is breast cancer research that has capability of saving thousands of lives by single injection of



progesterone given few days prior to surgery. The second is Visual Inspection after application of Acetic Acid (VIA), a public health intervention, which has shown capability of saving over 22000 lives in India and has been adopted by 11 states across our country and has been lauded for its ease of implementation throughout the world.

Futility of expensive and exhaustive follow up investigations was investigated for bone and soft tissue tumours and has been a landmark paper in orthopaedic oncology.

Advanced Centre for Treatment, Research and Education in Cancer has been making rapid strides forward particularly in its patient care and research programs. The neurosurgery unit initiated the use of intra operative image guided surgery especially the navigable 3D ultrasound based surgery and fluorescence guided resection of malignant gliomas. The bone marrow transplant unit of ACTREC continues to undertake allogenic and autologous bone marrow transplants and unrelated donor and cord transplants with improved outcomes. ACTREC participated in the International Cancer Genome Consortium project on the Next Gen Sequencing of oral cancer tissue DNAs from the Indian tobacco chewers. This study on the mutational landscape of the oral cancer and molecular classification based on the mutational spectrum was published in 'Nature Communications' and is expected to make a significant impact on patient management. An assay was developed for molecular classification of Medulloblastoma, a common pediatric malignant brain tumor using microRNAs as markers for classification and prognostication. ACTREC has also developed software for image analysis of immuno-stained tumor sections. ACTREC played a pivotal role in co-developing and testing indigenously developed and cost effective "Bhabhatron" radiotherapy unit.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of TMC.

Strengths

1. The quality of students is very good because of very rigorous selection process adopted.
2. After a tough selection, the initial training imparted to the students is of very high standard.
3. The quality of research and infrastructural facilities available is very good.
4. The funding is very generous.



5. Besides the students, the faculty is also very strong, nationally and internationally known and there is very strong peer pressure on both the sides to do better.

Weaknesses:

1. Since TMH provides service to a large number of patients, faculty is always under stress.
2. Manpower shortage to look after the patient burden.
3. Lack of platform for crosstalk between other pure sciences like physics, chemistry and statistics.

Opportunities

1. Opportunity to do high level research having immediate application in the field.
2. Opportunity to interact with scientists and medical specialists at national level and international level.
3. Opportunity to get various forms of national and international recognitions in the form of fellowships and awards.
4. Opportunity to develop various types of skills.
5. Opportunity to do interdisciplinary research.

Challenges

1. To balance various types of responsibilities for the faculty.
2. Evolve physician scientists as a role model
3. Low cost research and technology for diagnostics and treatment.
4. Adopting hi-tech instrumentation due to peer pressure and market forces.

52. Future plans of the TMC.

- (i) To start M.Sc (Clinical Research).
- (ii) To start a Diploma Programme in Fusion Imaging Technology.
- (iii) To take a longer term view, TMC is setting up new campuses at Vizag in Andhra Pradesh, and Mullanpur, SAS District, Punjab, near Chandigarh.
- (iv) Successfully launch National Cancer Grid

List of appendices (to be made available to the assessment team during their visit)

1. TMC: Appendix 1: Faculty profile referred to at para 11



2. TMC: Appendix 2: Ongoing projects referred to at para 17
3. TMC: Appendix 3: List of patents referred to at para 23
4. TMC: Appendix 4: Visits of faculties to International Laboratories/
Institutions referred to at para 25
5. TMC: Appendix 5: Seminar/ Meetings/ Conferences/ Colloquia referred to
at para 30
6. TMC: Appendix 6: List of doctoral students referred to at para 39