Tata Memorial Hospital Annual Report 2021-2022





80 years on: Radon to Proton



Sporting doctors: The hospital medical faculty on the ground for the Annual Sports Day in October, 2021.



The new Day-care on the 12th floor of the Annex Building was inaugurated by Dr. RA Badwe, Director TMC in March 2021. From left: Dr Manju Sengar, Professor of Medical Oncology; Mr Raj Wankawalla, Past President of the Lions Club of Juhu; and Mr Harsh Kilachand of Ambashree Trust.



ANNUAL REPORT 2021 - 2022



Tata Memorial Hospital

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The Governing Council of Tata Memorial Centre

Chairman			
Chairman, Atomic E Secretary, Departmo	Nilkanth Vyas Inergy Commission & ent of Atomic Energy, of India (GOI).		
	s, Ex-Officio		
Mr Sanjay Kumar Joint Secretary (Admin & Accounts), Department of Atomic Energy, GOI.	Dr. RA Badwe Director, Tata Memorial Centre (TMC), Mumbai.		
Co-opted	Members		
Mrs Richa Bagla Joint Secretary (Finance), Department of Atomic Energy, GOI.	Dr Snehalata Deshmukh Ex-Vice Chancellor, University of Mumbai.		
Mer	nbers		
Dr. NK Ganguly Former Director General, Indian Council of Medical Research (ICMR), New Delhi.	Shri Jayant Kumar Banthia Ex-Chief Secretary, Government of Maharashtra.		
Mr Lakshman Sethuraman (till 13.10.2021) Head of Support Services, Sir Dorabji Tata Trust, Mumbai.	Mr Vijay Singh Vice Chairman, Sir Dorabji Tata Trust, Mumbai.		
Mr. RA Mashelkar , (from 13.10.2021) Sir Dorabji Tata Trust, Mumbai.	Mr. N Srinath (from 13.10.2021) Sir Dorabji Tata Trust, Mumbai		

Permanent Invitees

Shri AR Sule (from 13.10.2021) Joint Secretary (I&M), Department of Atomic Energy.

Mr Sanjeev Sood (till 28.02.2021) Director Admin. (Projects), Tata Memorial Centre (TMC), Mumbai.

Dr. SD Banavali Director of Academics, Tata Memorial Centre (TMC), Mumbai.

Dr. CS Pramesh Director, Tata Memorial Hospital (TMH), Mumbai.

Dr Sudeep Gupta Director, Advanced Centre for Treatment Research & Education in Cancer (ACTREC), Navi Mumbai.

Dr Rajesh Dikshit Director, Centre for Cancer Epidemiology (CCE), Navi Mumbai.

Dr Satyajit Pradhan

Director, Mahamana Pandit Madan Mohan Malaviya Cancer Centre (MPMMCC) & Homi Bhabha Cancer Hospital (HBCH), Varanasi.

Dr. Amal Ch. Kataki

Director, Dr. B. Borooah Cancer Institute (BBCI), Guwahati.

Dr. Umesh M. Mahantshetty

Director, Homi Bhabha Cancer Hospital & Research Centre (HBCHRC), Visakhapatnam.

Dr Rakesh Kapoor (till 31.01.2022)

Director, Homi Bhabha Cancer Hospital & Research Centre (HBCHRC), Mullanpur.

Secretary

Mr. AN Sathe

Chief Administrative Officer, Tata Memorial Centre (TMC), Mumbai.

Faculty

Tata Memorial Centre (TMC)

Dr. RA Badwe (Surgeon), **Director** Dr. SD Banavali (Medical Oncologist), **Director Academics** Dr. SS Laskar (Radiation Oncologist),

Deputy Director Academics Mr Sanjeev Sood (till 28.02.2021), Director Admin. Projects.

Tata Memorial Hospital (TMH)

Dr. CS Pramesh (Surgeon), **Director** Dr. SV Shrikhande (Surgeon), **Deputy Director**.

Departmental Heads

Dr. JV Divatia, Anesthesiology, Critical Care & Pain Dr Tanuja Shet, Biochemistry Dr. KP Dholam (till 31.03.2021), Dental & **Prosthetic Surgery** Dr. Shaesta Mehta, Digestive Diseases & **Clinical Nutrition** Ms. DV Kuberkar, Library Sciences Dr. SP Sawant, General Medicine Mr. VN Marathe, Information Technology, TMC Dr Kumar Prabhash, Medical Oncology & In-charge, Medical Oncology Molecular Laboratory Dr. RA Kinhikar, Medical Physics Dr Sanjay K. Biswas, Microbiology Dr. V. Rangarajan, Nuclear Medicine & Molecular Imaging Ms Sindhu Nair, Nursing (Deputy Superintendent) Dr. SB Desai, Pathology Dr Sharmila Pimple, Preventive Oncology Dr. SP Tandon; Pulmonary Medicine, & Staff Physician Dr. JP Agarwal, Radiation Oncology Dr. SS Kulkarni, Radiodiagnosis Dr. A Puri, Surgery (Admin.) Dr. SB Rajadhyaksha, Transfusion Medicine.

Disease Management Group (DMG) Leaders

(Term of all posts end on 11.07.2021; Secretaries became Convenors from 12.07.2021 to 11.07.2024, and New Secretarial posts from 12.07.2021 to 11.07.2024.)

Adult Hematolymphoid

Convener, Dr Sumeet Gujral (Pathologist); Secretary & Convener, Dr Manju Sengar (Medical Oncologist); New Secretary; Dr Tanuja Shet (Pathologist), Head of Biochemistry.

Breast Oncology

Convener & OIC Cancer Genetics Unit, Dr Rajiv Sarin (Radiation Oncologist); Secretary & Convener, Dr. NS Nair (Surgeon); New Secretary, Dr Jyoti Bajpai (Medical Oncologist).

Bone & Soft Tissue

Convener, Dr Ashish Gulia (Surgeon); Secretary & Convener, Dr Amit Janu (Radiologist); New Secretary, Dr Nehal Khanna (Radiation Oncologist).

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Gastrointestinal

Convener (till 11.07.2021), Dr. RZ Engineer (Radiation Oncologist); Secretary (till 11.07.2021), Dr Mahesh Goel (Surgeon). Convener (from 12.07.2021), Dr Avinash Saklani (Surgeon); Secretary (from 12.07.2021), Dr Vikas Ostwal (Medical Oncologist).

Gynecology

Convener, Dr. SS Chopra (Radiation Oncologist); Secretary & Convener, & OIC Cytopathology, Dr. KK Deodhar (Pathologist); New Secretary (till 31.10.2021), Dr. ST Surappa (Surgeon); Secretary (from 01.11.2021), Dr Jaya Ghosh (Medical Oncologist)

Head & Neck

Convener (from 12.07.2021), Dr Sarbani Ghosh-Laskar (Radiation Oncologist) & OIC BBCI-Guwahati; Secretary (from 12.07.2021), Dr Asawari Patil (Pathologist).

Neuro-Oncology

Convener (till 11.07.2021) & OIC Molecular Pathology, Dr Epari Sridhar (Pathologist); Secretary (till 11.07.2021), Dr. GJ Sastri (Radiation Oncologist). Convener (from 12.07.2021), Dr Prakash Shetty (Surgeon); Secretary (from 12.07.2021), Dr Girish Chinnaswamy (Medical Oncologist).

Pediatric Hematolymphoid

Convener & OIC Hematology, Dr Papagudi Subramanian (Pathologist); Secretary & Convener Dr. CA Dhamne (Medical Oncologist); New Secretary, Dr Prashant Tembhare (Pathologist).

Pediatric Solid Tumor

Convener (from 12.07.2021) & Secretary (Data Safety Monitoring Unit), Dr Maya Prasad (Medical Oncologist); New Secretary (from 12.07.2021), Dr Mukta Ramadwar (Pathologist).

Thoracic

Convener, Dr. NC Purandare (Radiologist); Secretary & Convener Dr. SS Jiwnani (Surgeon); New Secretary, Dr Naveen Mumudi (Radiation Oncologist)

Uro-Oncology

Convener, Dr. Amit Joshi (Medical Oncologist); Secretary & Convener Dr Vedang Murthy (Radiation Oncologist); New Secretary, Dr Santosh Menon (Pathologist).

Section Chiefs & Officers in Charge (OIC)

Mr Sreenivas Sunkarapalli, Central Registration Office Dr Aliasgar Moiyadi (Surgeon), Clinical Research Secretariat & DAE-CTC (till 11.07.2020) Dr Prachi Patil (Physician), Clinical Research Secretariat & DAE-CTC (from 12.07.2020) Dr. VP Patil, Clinical Anesthesia Dr. AP Kulkarni, Critical Care Medicine Mr Rajesh More, CSSD Mr. Rajendra A. Patil (till 30.11.2021), Deputy Administrative Officer (Food Services) Dr Amita Maheshwari (Surgeon), Gynecological Oncology Ms. Rajlaxmi K. Naik, House Keeping Mrs Rashmi Chhabria, Deputy Administrative Officer (Linen & laundry) Mr Nilesh Ganthade, Medical Graphics Mr Chandu Parab, Medical Social Service Dr Manjusha Vagal, Occupational Therapy Dr Parmanand Jain (till 30.06.2021), Pain (Anesthesia) Dr. JK Deodhar, Palliative Medicine & Psychiatry

Mrs Manisha Kulkarni, Pathology Academic Program

Mr Machindra Ghodake, Personnel Dr. AA Daptarkar, Physiotherapy Ms Chitra Hingnekar, Quality Manager Mr Arun Balaji KD, Speech & Swallowing Therapy Mr. AL Kuvalekar, Stores Dr. PS Dai (Surgeon), HPCHPC, Mullappu

Dr. PS Pai (Surgeon), HBCHRC–Mullanpur Dr. DA Chaukar (Surgeon), Head & Neck Oncology, HBCHRC– Visakhapatnam & NCG Coordinator.

Research Staff

Dr. GH Pantvaidya (Surgeon), Secretary Institutional Ethics Committee–I Dr Priya Ranganathan (Anesthetist), Secretary Institutional Ethics Committee–II

General Administrative Staff

Mr. Anil N. Sathe, Chief Administrative Officer, TMC Mr. GA Dhanoa, Chief Engineer, TMC Mr Johnson Lukose, Chief Security Officer, TMC Mr Suryakant Mohapatra, Joint Controller (Finance & Accounts), TMC Wg Cdr (Retd.) Anand K. Tiwari, Senior Administrative Officer (SAO) Mr. Syed H. Jafri, Senior Public Relations Officer (till 04.03.2021) Mr Benny George, Human Resource Development Officer Mr. RR Rodrigues, Incharge, Maintenance, Verification & Disposal Mr. UV Mote, SAO, (Personnel) Mr. MH Raut, Incharge Biomedical Engineer Mr. VS Tiwari, Deputy Controller of Accounts Mr. Harshad C. Waghmare, Purchase Officer Mrs. Vaijayanti D. Kashikar, Academics.

Medical Administration

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Dr. Sarita V. Khobrekar, Medical Superintendent Dr. Vinit B. Samant, Assistant Medical Superintendent (AMS) Dr. Sumedha A. Patankar, AMS Dr. Sandeep S. Sawakare, AMS.

Nursing Staff

Mrs. Anita R. D'Souza, Principal Mrs Prathepa Jagdish, Associate Professor Dr. Manisha N. Pawar, Vice Principal Mrs. SS Raut, Infection control in-charge Mrs. RM More, Operation Theatre in-charge.

Scientific Officers

Mr. PP Bagwe, Accounts Mr. TJ Matale, Biochemistry Dr Geeta Rathnakumar (till 31.10.2021), **Biochemistry** Dr Pranab Sadhukhan, Biochemistry Mr. ND Kamble, Biochemistry Mr. TJ Matale, Biochemistry Mrs. VV Prabhu, CSSD Mr. MS Kadam, CSSD Mr Saleem Pathuthara, Cytopathology Laboratory Manager; 5, 11 Mrs. Maya Uke, Cytopathology Ms. Swati Dighe, Cytopathology, 5 Mrs. DD Prabhu, Dispensary & Pharmacy Mr. AS Pawar, General Medicine Mr. DP Birwatkar, Hematopathology Mr. SG Mahadik, Hematopathology Mrs. MR Joshi (till 31.03.2021), Hematopathology Dr. Pratik HC, Medical Oncology Molecular Laboratory Dr. AB Chougule, Medical Oncology Molecular Laboratory Mr. VB Jaiswar, Microbiology Mrs. PH Dixit, Microbiology Dr Omshree Shetty, Molecular Pathology Ms Bhakti Shetye, Nuclear Medicine & Molecular Imaging Ms. PV Monteiro, Nuclear Medicine & Molecular Imaging Mrs. S. Mithun, Nuclear Medicine & Molecular Imaging Mr. AK Jha, Nuclear Medicine & Molecular Imaging Mrs. MAM Pathan, Nuclear Medicine & Molecular Imaging Mr Nitin Shinde (till 31.08.2021), Pathology Mrs Neelam Prabhudesai, Pathology Mrs. JJ Chowalloor, Pathology Mrs. Chitra V. Hingnekar, Quality Manager

Mrs. RH Bapat, Radiation Oncology Mr Trilokinath Mishra, Radiodiagnosis Dr Venkata Gorantla, Translation Research Laboratory.

Technical Officers

Mrs. MS Kadam, Anesthesiology Mr. ND Kamble, Biochemistry Mr. PS Sawant, CSSD Mrs. KP Sawant, General Medicine Mrs. KK Patil, Medical Physics Mr. CM Tambe, Medical Physics Ms. RV Thorat, Pathology Mr. SS Iyer, Radiation Oncology Ms. Shibu James, Radiation Oncology Mrs. MS Bagalkar, Radiation Oncology Mr. R Chauhan (till 31.08.2021), Radiation Oncology Mr Glentin Louis, Radiation Oncology Mr. GB Varghese, Radiation Oncology Mr. WM Kulkarni (till 31.10.2021), Radiodiagnosis Mr. MV Salunke (till 30.09.2021), Radiodiagnosis Mr. AC Girdhar, Radiodiagnosis Mrs. LS Mantrala, Transfusion Medicine Mr. RY Keniale, Transfusion Medicine Mr. RN Thakkar, Transfusion Medicine.

Other Senior Staff

Anesthesiology, Critical Care & Pain

Dr. SN Myatra Dr. AS Chatterjee Dr. MG Shetmahajan, 10 Dr. NS Amin, 9 Dr Vandana Agarwal Dr. SG Bakshi Dr. MD Desai, 9 Dr. SJ Bhosale, 9 Dr. JR Doctor, 9 Dr. SY Parab, 10 Dr. SL Solanki Dr. SS Sharma Dr Sheetal Gaikwad Dr. SD Savarkar Dr. DP Lahiri Dr. BG Salunke

Dr Gauri Gangakhedkar Dr Shruti Gairola (from 22.09.2021)

Biochemistry

Dr. KK Ghosh Dr. SC Raut.

Dental & Prosthetic Surgery

Dr. SV Gurav, 6.

Digestive Diseases & Clinical Nutrition Dr Shridhar Sundaram (from 28.01.2021), 4.

Engineering

Mr. RR Rodrigues Mr Sandeep Kalwaghe Mr. RS Sharma Mr. RB Kapse Mr. KK Karle Mr. BD Patil Mr. VP Mote Mr. JG Indulkar.

General Medicine

Dr. AD Daddi, 5 Dr Geetanshu Goel.

Hematopathology

Dr Sumeet Gujral, 8

Information Technology

Mr. Sanjaykumar Sinha Ms. Charulata R. Nimie Mr. Pravin M. Kalsekar Ms. Sandhya R. Joshi Mr. Manoj S. Chavan.

Medical Oncology

Dr. VM Noronha; 6, 10, 11 Dr. BP Bagal, 1 Dr Gaurav Narula, 8 Dr Seema Gulia; 3, 5 Dr. VM Patil; 6, 7, 10 Dr. AG Gokarn, 1 Dr. AT Ramaswamy, 4 Dr. SB Punatar, 1 Dr. VN Bonda, 1 Dr. NR Moulik, 8

Dr Sushmita Rath; 3, 5 Dr. LR Nayak, 1 Dr Nandini Menon; 6, 7, 11 Dr Prabhat Bhargava; 2, 3, 4 Dr Badira Parambil, 8 Dr Sujay Srinivas; 2, 3, 4. Dr. JB Thorat (from 14.07.2021), 1 Dr. Ajaykumar S. (from 04.08.2021)

Medical Physics

Dr Rituraj Upreti Mr. YG Ghadi Mr. SN Kale Mr. RB Mhatre.

Microbiology

Dr. GV Salunke.

Nuclear Medicine & Molecular Imaging

Dr. SA Shah; 3, 5, 6, 8, 9 Dr. AR Agrawal; 1, 4, 6, 11 Dr. AD Puranik; 4, 7.

Nursing, Assistant Nursing Superintendents

Ms Shweta Ghag Mrs Bharati Veer Ms Chhaya Dhanve Ms Reena Nair Ms Rashmi Methry Ms Archana Bandekar.

Nursing, Sisters-in-charge

Ms Irene Sunder Mrs Sherly Jacob Mrs Leelamma James Mrs Gracy George Mrs. SS Chandorkar Mrs. AA Kharade Mrs. PM Gole Mrs. SK Parkar Mrs. AS Rane Mrs Philomina Renji Ms. AS Kaithwas.

Occupational Therapy

8

Dr. Rebeka M. Marri; 2, 5, 6 Dr. Shruti M. Velaskar; 3, 5, 9 Dr Jagmohan Lal Meena, 9.

Palliative Medicine

Dr. AD Damani (till 15.10.2021) Dr Arunangshu Ghoshal (till 30.06.2021); 9, 10 Dr Raghu Thota (from 01.08.2021)

Pathology

Dr Bharat Rekhi, 2, 5 Dr. MM Bal; 4, 6 Dr Rajiv Kumar, 4 Dr Ayushi Sahay; 3, 7 Dr Nehal Mittal; 5, 6 Dr. SC Yadav, 4 Dr. UM Sakhdeo, 1 Dr. KN Rabade Dr. Aekta Shah Dr. TD Pai Dr. PK Panjwani; 2, 9 Dr Gauri Deshpande.

Physicians

Dr. PP Rajput Dr. Anisha Navkudkar.

Physiotherapy

Dr Vincent Singh Paramanandam; 2, 3, 6, 10 Dr Ajeeta Mohan Kulkarni; 2, 9 Dr Manali Viraj Kamat, 6 Dr Sarika Gautam Mahajan, 9.

Plastic Surgery

Dr Dushyant Jaiswal; 3, 6 Dr Saumya Mathews; 3, Dr. MR Mantri; 3, Dr Ameya Bindu, 6.

Preventive Oncology

Dr. GA Mishra, 5 Dr. SP Patil, 5

Psychiatry Mrs. Savita S. Goswami, 7, 9.

Radiation Oncology

Dr. AN Budrukkar, 6 Dr Rahul Krishnatry; 4, Dr. Lavanya G., 5 Dr. RS Pathak, 3 Dr Monali Swain, 6 Dr. AR Tibdewal, 10, Dr Abhishek Chatterjee, 7 Dr. NB Mummudi, 10 Dr Prachi Mittal (from 23.08.2021), 5 Dr Shivakumar Gudi (from 14.10.2021), 4

Radiodiagnosis

Dr. MH Thakur; 3, 5, Dr. NS Shetty; 1, 2, 4, 5, 7, 8, 9 Dr Abhishek Mahajan; 1, 6 Dr. NP Sable,5, 11 Dr. PB Thakkar; 3, 5, 11 Dr. Amrita Guha, 7 Dr. AD Baheti; 1, 4, 5, 8, 9 Dr. KB Gala; 2, 3, 4, 9 Dr. SK Ankathi; 4, 6 Dr. AA Sahu, 6, 7 Dr. AJ Choudhari; 4, 7 Dr Aparna Katdare; 3, 4, 11 Dr Vasundhara Patil; 1, 6, 8, 9 Dr. Daksh Deepak Chandra; 1, 5

Surgery

Dr. GK Bakshi (till 27.12.2021), 11 Dr George Karimundackal, 10 Dr. AD Deshmukh, 6 Dr. PR Nayak, 2 Dr Mahendra Pal, 11 Dr Gagan Prakash, 11 Dr. AL Desouza, 4 Dr. SP Joshi, 3 Dr Shivakumar Thiagarajan, 6 Dr. MS Bhandare, 4 Dr. VA Chaudhari, 4 Dr.Garvit Chitkara (till 22.09.2021), 3 Dr. PJ Thakkar, 3 Dr Richa Vaish, 6 Dr. VJ Singh, 7 Dr Poonam Joshi, 6

Dr Vidisha Tuljapurkar, 6 Dr Biswajit Dash, 5 Dr Shraddha Patkar, 4 Dr Virendra Kumar Dr. MN Devyani, 10 Dr Sujay Srinivas, 9 Dr Pabashi Poddar, 5.

Transfusion Medicine

Dr. PD Desai Dr. Anisha A. Navkudkar.

Disease Management Group (DMG) Member:

Adult Hematolymphoid
 Bone & Soft Tissue
 Breast Oncology
 Gastrointestinal
 Gynecology
 Head & Neck
 Neuro-Oncology
 Pediatric Hematolymphoid
 Pediatric Solid Tumors
 Thoracic
 Uro-Oncology

BBCI, Dr. B. Borooah Cancer Institute, Guwahati;
CSSD, Central Sterile Supplies Department;
DAE-CTC, Department of Atomic Energy-Clinical Trials Centre;
HBCHRC, Homi Bhabha Cancer Hospital & Research Centre;
NCG, National Cancer Grid.

**Other than those mentioned above, only the permanent medical faculties of TMH, ACTREC & CCE are directly affiliated to TMC.





Mission

The Tata Memorial Centre's mission is to provide comprehensive cancer care to one and all, through its motto of excellence in service, education, and research.

Vision

As the premier cancer centre in the country, we will provide leadership in guiding the national policy and strategy for cancer care by:

- Promoting outstanding services through evidence-based practice of oncology.
- Commitment of imparting education in cancer to students, trainees, professionals, employees, and the public.

Emphasizing on research that is affordable, innovative, and relevant to the needs of the country.

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Epitome

The 80 year old Tata Memorial Hospital (TMH) was an established centre for cancer treatment in India. The hospital offered the then best form of Radiation Therapy to cancer patients from its inception in 1941, the use of Radium seeds; now in 2021, it was ready to offer the latest radiation in the form of Proton Beam Therapy.

The demise of Dr Srikumar Banerjee (25.04.1946–19.05.2021) following a heart attack was another great loss to the Department of Atomic Energy, after that of Dr Sekhar Basu last year. He was known as a great physical metallurgist and, was the Chairman, Atomic Energy Commission & Secretary Department of Atomic Energy (30.11.2009–30.04.2012) and the Director, Bhabha Atomic Research Centre, Mumbai (30.04.2004–19.05.2010). He was awarded the Padma Shri in 2005 in the Science & Engineering category.

The beginning of the year also witnessed the demise of one of the most distinguished and oldest lady oncologist in the country, Dr Viswanathan Shanta (11.03.1927–19.01.2021) in Chennai. She was the Chairperson of the Adyar Cancer Institute in Chennai. She was awarded the Padma Shri (1986), the Padma Bhushan (2006), and the Padma Vibhushan (2016). In 2005, she was received the Ramon Magsayay for making quality & affordable cancer treatment accessible to all Indians.

The year saw the superannuation of Mr Sanjeev Sood, Director Admin. (Projects), Tata Memorial Centre on February 28.

The year 2021 began with the fear of the second and the third covid wave. The covidrestrictions were yet in place in the country. The hospital continued to be fully functional and uninterrupted services were offered to the patients. There was no relaxation in the covid preventive protocols that were in place for the staff and patients. Dr CS Pramesh, Director of TMH acknowledged and lauded the efforts of the staff members for their commitment towards patients' service during the covid pandemic.

Covid-vaccination for the hospital staff with prior appointments were started at the nearby KEM hospital from January 2021. From the month of March onwards, the hospital initiated the process of vaccinating the staff & their families in the adjoining St. Xavier's' ground. As part of social service, the vaccination was extended to the general public from the month of April.

There was donation to TMH of large quantities of oxygen concentrators, N95 masks, and other medical supplies for the pandemic, by Community Partners International (USA), the Navya, and

the New York Presbyterian/Weill Cornell Medicine. The cost of the entire donation was over US\$ 3 million. All these medical supplies were distributed to the needy cancer centres within the country.

The year also saw the donation of 100 residential flats in the local Parel area, belonging to the Maharashtra Housing and Area Development Authority (MHADA) by the President of the Nationalist Congress Party (NCP), Shri Sharad Pawar.

In another philanthropic gesture, Ms Deepika Mundle donated her ancestral land in Parel area of ~30,000 square feet to the hospital.

Many hospital facilities were augmented in the year 2021. The new Day-Care area in the Annex building of the hospital was refurbished by the Lions Club of Juhu & Ambashree Trust. It was inaugurated on March 21 by Mr Raj Wankawalla, past-President of Lions Club of Juhu and Mr Harsh Khilachand of Ambashree Trust. The other members of this Daycare project were Mr Preyash Nanavati and Mr Pritish Desai. The Digital Radiography machine was inaugurated by Dr RA Badwe, Director TMC in January. The Contrast Enhanced Spectral Mammography with Digital Tomosynthesis was inaugurated by IPS Shrimati N. Ambika, Deputy Commissioner of Police, HQ 1, Mumbai on International Women's Day (March 8). A Vacuum Assisted Biopsy machine for mammography was commissioned on March 24. A new high-end Ultrasonograophy machine with Fusion & Navigation was donated by the Suman Ramesh Tulsiani Charitabkle Trust and inaugurated by Shri Ramesh Tulsiani on October 22. The Pulmonary Simulation Laboratory for the department of Pulmonary Medicine was inaugurated in February by Dr Anand Bang of Tata Trusts (Health Advisor).

More than 31,000 tests for Covid-19 were performed in the year that saw almost 2400 and 1500 covid positive patients and staff respectively; 109 patients succumbed to the infection and there was no staff mortality.

The TMC set up many cancer centres across India to help the local population with cancer (eight, in six different States); yet patients from various parts of India flocked to TMH. The hospital trained most of the cancer specialists practising across India, and many abroad, under the Homi Bhabha National Institute (HBNI) formed by the Department of Atomic Energy, Government of India in 2008.

The new patient registration rose to 37,698, an increase by 58% over the previous year. A total of 591 foreign nationals sought treatment in the hospital. The total patients registration increased by only 34% as the demand for investigations & opinions fell due to re-opening of other medical services in the city. The number of admissions increased by 21% to over 26,600.

Of the total new patient registrations, more than 55% were from outside the State of Maharashtra; from those out of Maharashtra, 11% were from Uttar Pradesh & 13% from West Bengal.

More than 3300 patients sought teleconsultation for varying reasons.

The Ayushman Bharat scheme was availed of by more than 450 patients and of the Pradhan Mantri Jan Aarogya Yojana by over 4200 patients. Besides the Central and State government subsidies, more than 5000 patients were provided free treatment and, concessions to the tune of over INR1.25 crore was availed of by almost 13,000 patients. Almost 1000 patients were provided with subsidized accommodations during the course of their cancer treatment. Encouraging their normal lives, more than 60 children & youngsters with cancer were provided with scholarships worth over INR 15 lakh to pursue their education.

The number of surgeries performed increased by more than 40% to cross 30,000. The number of patients admitted for Day-care chemotherapy reached almost 1,50,000; a rise of 44%. The number of patients treated by radiation reached nearly 28,000 (30% rise). The numbers in diagnostic services revealed marked increase; the imaging services rising by 60%, and the laboratories by 56%.

From the complete Medical Records compiled for the year 2018, the leading cancer in men include; mouth cancers, lymphomas and leukemia; and in women, of the breast, uterine cervix and the ovary.

On the academic front, 129 students successfully obtained post graduate medical degrees under the Homi Bhabha National Institute. There were 659 publications in indexed national and international journals. The contribution also included 26 book-chapters and 11 books.

The TMH had the highest number of academic publications related to the covid pandemic in the State of Maharashtra. Over 200 new research projects were initiated in the year 2021.

There were 232 medical observers from within the country and broad, who visited the hospital.

About 30 conferences were conducted that had physical attendance; many were conducted virtually, or were hybrid in nature.

The XIX Annual Evidence Based Medicine (EBM) conference of TMC was spread over 6 days from February 26 to March 7. The focus was on Technology and Cancer Care – The Promise and Reality of the Brave New World.

The three Pre-conference parallel Workshops included: Radiology, NGS data analysis and live Molecular Tumor Board, and Beyond Microscopy-the Pathology informatics.

The six main conference modules included: Surgical Oncology, Precision Oncology, Radiation Oncology, Theranostics (Nuclear Medicine), Radiology, and Pathology.

The Hospital Day Oration was given by Prof. David Jaffray (Vice President & Chief Technology and Digital Officer, Professor of Radiation Physics and Imaging Physics, University of Texas MD Anderson Cancer Centre, USA) on "Cancer and Technology – from bridging gaps to connecting for value".

Six e-books and e-leaflets were published in the course of this conference.

The 80th TMH Annual Day (February 28) was not celebrated; instead, staff members who completed 30 years or more in TMH (17 of them) were felicitated at a later date.

Dr. CS Pramesh, Director TMH, unfurled the National Flag on the 72th Republic Day.

The Public Relations office released the 16th issue of the in-house SPANDAN e-magazine for the period April 2020–March 2021.

A Special Cover to commemorate the World Cancer Day on February 4 was released by the India Post-Mumbai Region in collaboration with Tata Memorial Centre. The Special Cover was launched by Director TMC, Dr RA Badwe, Chief Postmaster General-Maharashtra & Goa Circle, Shri HC Agrawal, and Postmaster General India Post-Mumbai Region, Ms Swati Pandey. The aim was to spread awareness about cancer and its preventive measures in life.

To mark the International Yoga Day, a one week virtual 45-minute program called Kaivalyadhana Yoga was inaugurated on June 21. The theme for the year was "Yoga for well-being" and the sessions were named "Yoga se Hoga".

On the occasion of the 75th Independence Day, Dr. RA Badwe, Director TMC hoisted the National flag.

The theme of the Vigilance Awareness week (26.10 – 01.11 2021) was "Independent India@75: Self-reliance with Integrity". The pledge was delivered by the Chief Guest, IPS Vishwas Nangare Patil, Joint Commissioner of Police (Law & Order), Greater Mumbai.

The year ended with impending resurgence of another Covid wave that again delayed reversion of normal public activities and movements.

The Notables during the year included the recognition by the Ministry of Science & Technology, GOI of TMC, Mumbai as a Scientific and Industrial Research Organization (SIRO) under the Scheme of Recognition of Scientific and Industrial Research Organizations (SIROs) - 1988, from 27.09.2021–31.03.2024.

The first 20-year Clinical Study was a landmark study that proved "Clinical Breast Examination as the preferred screening method for breast cancer". This was published in the British Medical Journal by Drs Indraneel Mitra, Badwe RA, et al.

According to the Times of India publication, the Tata Memorial Hospital was the 4th highest contributor about Covid-19 infection in India (~100 publications).

On an individualistic note, Dr. RA Badwe, Director TMC was conferred the Pune Bhushan Puraskar by the Indian Medical Association, Pune. He was the recipient of the Nelson Mandela Nobel Peace award 2021, and was bestowed the Honorary Doctorate of Philosophy for Humanitarian services.

The TMH & Dr Abhishek Mahajan were recipients of the Radiology & Imaging Excellence award, 2021 by eHealthcare & Elets Technomedia Ltd.

The Senior Public Relations Officer, Mr. SH Jafri was appointed as Chairman of Mumbai Chapter of the Public Relations Council of India (PRCI). He was also conferred with the Honorary Doctorate in Humanities by UN affiliated, Baptista Peace University.

The Deputy Administrative Officer, Mr. Rajendra A. Patil & his family were felicitated for exemplary work at TMH by Smt. Hema Malini & the Mumbai Suburban Collector, Smt. Nidhi Choudhary at the Diwali Sneh Sammelan of Parmarth Ratna Awards 2021.

For the financial year 2021-22, the approximate hospital's (TMH) income including the DAE Grant was INR 953.94 crore against the expenditure of about INR 1035.56 crore; the details are mentioned in the Financial Audit section of the Tata Memorial Centre's Annual Report 2021-2022.

Facts

тмн	2020	2021	% Difference
Covid-19 data			
Number of tests performed for Covid-19	21,266	31,176	46.60
Number of Covid-19 Positive cases	4237	2379	-43.85
Number of cancer Patients with Covid infection	1089	1926	76.85
Number of Staff with Covid infection	1860	1920	-20.96
	1000	14/0	20.50
Cancer Data			
General New Patient Registrations – (1)	16,897	29,657	75.52
Private New Patient Registrations – (2)	6950	14,406	107.28
Total New Patients – Total (1+2) – (3)	23,847	37,698	58.08
Patient Referrals for Investigations – (4)	22,324	10,998	-50.73
Patients Referred for Consultation (Expert Opinion) – (5)	3946	4677	18.53
Total patients Referred – (4+5)	26,270	15,675	-40.33
Preventive Oncology Patients – (6)	2315	7171	209.76
Teleconsultation – (7)	944	3319	251.59
Total Patient Registrations (3+4+5+6+7)	53,376	63,863	19.64
In-Patient's Services			
Bed Strength	639	639	
No. of Admissions	21,941	26,670	21.55
Average Length of Stay (Days)	5.94	5.57	-6.23
Bed Occupancy %	79	79.26	0.33
Surgical Oncology			
Major Operative Procedures	6002	8599	43.27
Minor Operative Procedures	23,080	21,238	-7.98
Robotic Surgery	136	237	74.26
Total Surgeries Performed	29,082	30,074	3.41

ТМН	2020	2021	% Difference
Medical Oncology			
Day Care: General	80,294	120,540	50.12
Day Care: Private	23,326	29,407	26.07
Total Day-care patients	103,620	149,947	44.71
Digestive Diseases & Clinical Nutrition			
Endoscopies	3502	6059	73.02
Nutrition Clinic	21,113	19,080	-9.63
Anaesthesiology, Critical Care, & Pain			
Number of ICU Admissions	1610	2016	25.22
Patients in Recovery Ward	8071	7727	-4.26
Pain Clinic	8693	7766	-10.66
Radiation Oncology			
External Beam Therapy	6083	6711	10.32
Brachytherapy	1951	2308	18.30
Treatment Planning / Beam Modification	13,578	18,930	39.42
Total Radiation Therapy patients	21612	27,949	29.32
Imaging Services			
Conventional Radiography	45,953	56,117	22.12
Ultrasound / Color Doppler	33,444	44,809	33.98
Mammography	7531	13,094	73.87
C.T. Scan (Diagnostic)	22,228	64,423	189.83
M.R.I Scan	6912	19,134	176.82
Interventional Radiology	4428	5171	16.78
Total Diagnostic Investigations	120,496	202,748	68.26
Nuclear Medicine			
PET-CT Scan	11,751	18,066	53.74

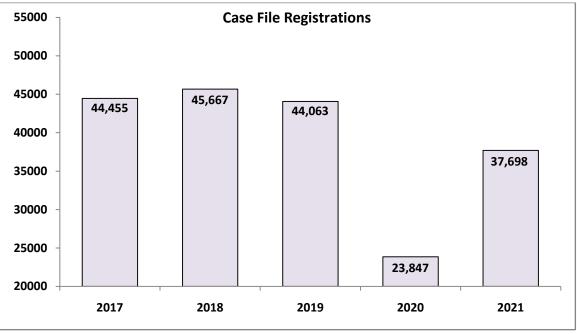
ТМН	2020	2021	% Difference
SPECT-CT Scan	3431	6368	85.60
Isotope Therapy	74	203	174
Total Nuclear Medicine tests	15,256	24,637	313.34
General Medicine			
ECG	21,932	36,484	66.35
Echo Cardiography	7429	9849	32.58
Pulmonary Function Tests	1662	2510	51.02
Laboratory Diagnostics			
Pathology - Histopathology + IHC + Frozen Section	112,502	121,213	7.74
Biochemistry	24,31,917	40,28,140	65.64
Cytopathology	10,886	16,308	49.81
Molecular Pathology	28,495	7964	-72.05
Microbiology	128,410	208,375	62.27
Hematopathology	357,457	436,161	22.02
Total Laboratory Investigations	30,69,667	48,18,161	56.96
Transfusion Medicine			
Blood Components Prepared [Whole Blood + packed Red Cells + Platelets (RDP) + Fresh Frozen Plasma + Cryoprecipitate + Factor VIII Deficient Plasma]	39,589	50,406	27.32
Single Donor Platelets (SDP) prepared	4195	4935	10.49
Specialized Procedures (Irradiation of blood Products + Granulocyte Harvest + Therapeutic Leukapheresis + Therapeutic Plasma Exchange)	26,468	32,895	24.28
Laboratory Investigations (Blood Grouping + Cross matching + Antibody Detection)	68,022	90,619	33.22
Blood Units Collected	13,441	16,944	26.06

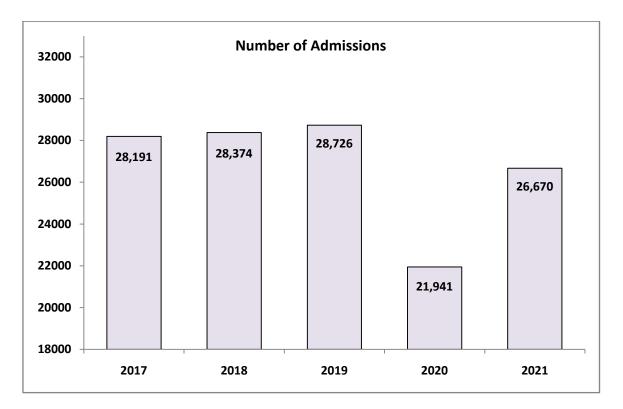
ТМН	2020	2021	% Difference
Platelet Pheresis	3743	4369	16.72
Other Clinical Services			
Central Venous Access Devices (CVAD) Clinic	1324	2253	70.17
Stoma Clinic	6547	9240	41.13
Occupational Therapy	10,502	19,102	81.89
Physiotherapy	15,447	23,533	52.35
Speech Therapy	10,129	15,871	56.69
Psychiatry and Clinical Psychology	2198	4206	91.36
Dental Services			
General Dentistry	8985	16,970	88.87
Prosthetic Services	1403	1289	-8.13
Tissue Bank			
Allografts Produced	6463	11,730	81.49
Palliative Medicine			
Numbers of Patients	17,763	36,388	104.85
Home Care Visits	3014	8884	194.76
Medical Social Service			
Numbers of Beneficiaries for Accommodation	2616	2067	-20.99
Numbers of Beneficiaries for Financial Support	6401	8367	30.71
Total Beneficiaries	9017	10,434	15.71
Education			
PG Students admitted	211	0	-100.00
PG Degrees obtained	182	189	3.85
Residents & Others	382	355	-7.07
Fellows	43	26	-39.53
Medical Observers	152	232	52.63
Paramedical Students	23	50	117.39

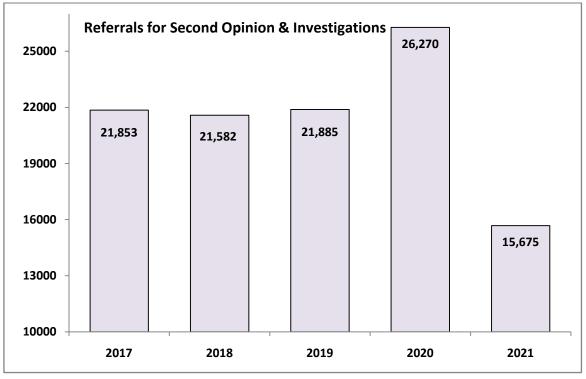
ТМН	2020	2021	% Difference
Medical Physicists' trainees	8	8	0.00
Medical Laboratory Trainees	19	21	10.53
Kevat course	26	0	-100.00
Research Profile			
Extramural Projects	11	18	63.64
Pharmaceutical Company Sponsored	16	21	31.25
Intramural + Extramural Projects	31	14	-54.84
Institutional Intramural Projects	43	31	-27.91
Nil Funding	95	90	-5.26
Postgraduate Student Thesis (Dissertation)	40	43	7.50
Total Research Projects	236	217	-8.05
Publications			
International	448	426	-4.91
National	294	196	-33.33
Book Chapters	33	26	-21.21
Books	11	11	0.00
Total Publications	786	659	-16.16
Conferences / Workshops / Seminars	19	32	68.42
Value of medicines dispensed (in INR lakh)	31.189	24.993	-19.87

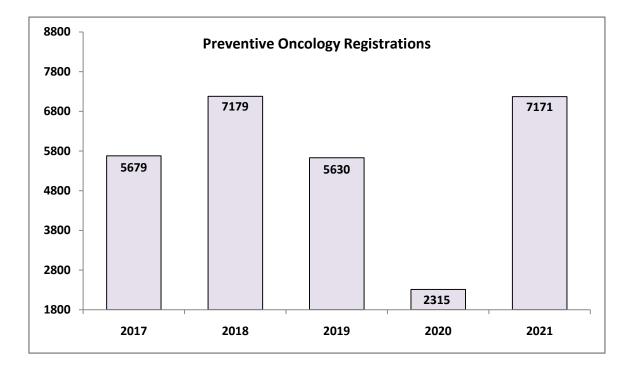
Trends











Oncology Groups (DMGs)



Adult Hematolymphoid

Till 11.07.2021 **Convener**, Dr Sumeet Gujral (Pathologist); **Secretary**, Dr Manju Sengar (Medical Oncologist). From 12.07.2021 Convener, Dr Manju Sengar; Secretary, Dr Tanuja Shet (Pathologist).

The Adult Hematolymphoid Disease Management Group (AHL-DMG) multidisciplinary group catered to the management of a variety of hematological malignancies in a comprehensive manner.

All decisions, including that of treatment, were taken in the Joint Clinics for all malignancies.

The initial work up of all patients was done based on a structured proforma and checklist that ensured timeliness and efficiency. After the completion of work-up, the management was planned in the Joint Clinics (JC). The purpose of these JCs was not only to advice the best treatment options available to the patient but also to assess the feasibility of treatment and address the issues regarding affordability, nutrition, supportive care and palliative care needs. In order to make treatment less disruptive to the patients and families, possible option for treatment in centres closer to their home was explored, as and when needed.

Apart from the treatment planning, the JCs familiarized the patients with the working & offerings of the Medical Social Workers and the notified volunteers. The Medical Social Worker and the volunteers further counseled the patients in depth regarding the financial requirements, the duration of hospital stay, and other logistics to start or sustain therapy. They also assisted the treating consultants in taking decision, for adopting (fully/ partially) those patients, with curable malignancy who were unable to start or continue therapy due to financial/ psychosocial constraints. These support plans were revisited at frequent intervals to smoothen out any overlooked/unaddressed issues.

To consolidate the efforts that the hospital had made towards catering to lymphoma/ leukemia patients and their families, this DMG established a Lymphoma-Leukemia Foundation wherein donors had a platform to contribute in the form of financial assistance. The corpus generated was used in assisting in the initial treatment, and as emergency funds.

Stable patients were followed up in the OPD till the diagnosis and staging workup was completed. Sick patients and those with oncological emergencies (such as tumor lysis

syndrome, superior vena cava syndrome, and impending paralysis) were admitted in the ward or followed in casualty for emergency management.

Treatment for all stable lymphoma, myeloma and certain leukemia patients was started in the Day-Care. Patients with advanced disease, not amenable to treatment and those multiply treated outside, were considered for palliative care and referred for the same.

Patients requiring high dose chemotherapy and rescue with autologous hematopoietic stem cell transplantation (HSCT) or allogenic HSCT were referred to ACTREC for these procedures.

Quality improvement measures:

The DMG maintained ongoing quality improvement measures with continuous audits of the protocols, chemotherapy regimens, their morbidity and mortality, treatment compliance in long-term therapy and implementation of modifications derived from such audits.

In 2021, all earlier protocols were reviewed and modified. The checklists for all the medical emergencies and different disease managements were created with stickers for all the protocols, to reduce the chances of errors.

Unique aspects and strength of the DMG:

- This is the group dedicated to treating largest number of hemato-lymphoid malignancies in the adolescent and adults in the country
- Management of hematological malignancies with evidence-based guidelines and protocols
- Rapid turn-around time for diagnosis and initiation of therapy immediately alleviate symptoms and life-threatening problems at presentation.
- Customization of treatment based on the disease characteristics, cytogenetic/ molecular profile and host characteristics
- Ensuring continuum of care through prioritization, triage, financial assistance, patient education, supportive care, nutritional support, accommodation assistance, survivorship support and palliative care
- Emphasis on efficient comprehensive diagnosis through a dedicated pathology, hematopathology and molecular hematology laboratory facility
- Education of fellows and residents through a structured teaching program and practical experience
- Addressing the key questions through clinical and translational research.

Additional services / innovations introduced in 2021:

Low dose whole body CT Myeloma protocol was formulated by the radiodiagnostic team members.

Volume Indicators

The AHL group registered **3870** patients in the year 2021. Out of 3870 patients, 117 patients were diagnosed to have other cancers (referred to other DMGs), and 71 patients had no malignancy.

The outpatient service conducted separate OPDs for General and Private patients on all weekdays. The OPDs for Leukemia, Lymphomas and Myeloma patients were run separately. All the new and on-treatment patients' were seen between 9.30 am to 5.30 pm, while the follow-up patients were seen between 2.30 pm to 5.30 pm.

	General	Private	Total
New Case	2400	813	3213
Second Opinion			657
Total			3870
Tele-Consultations (new patients)			521
OPD Follow-up	56,922	5992	62,914
Tele-Consulting for follow-up	432	405	837

Disease-wise patient distribution

Diagnosis	Number
Acute Lymphocytic Leukemia ALL	311
Acute Myelogenous Leukemia AML	355
Acute Myelogenous Leukemia AML	56
Plasma Cell Dyscrasia	255

Character Marslander and Andrews Character Character	202
Chronic Myelogenous Leukemia CML	302
Chronic Myeloproliferative Disorders CMPD	16
Non Hodgkins Lymphoma NHL	908
Hodgkins Lymphoma HL	212
Myelodysplastic Syndromes MDS	22
Acute Leukemia	33
No diagnostic tests done at TMH (prior therapy and with no prospects for further treatment)	494
Second Opinion	657
Other Hematological Malignancy	57
Suspected Lymphoma	04
Other Cancers & referred to appropriate DMG	117
No Malignancy	71
Total	3870

Disease-wise Patient management

Diagnosis	Treated in TMH	Palliative	No treatment	Under observation only	For opinion only	Referred back to local place	Total
ALL	267	13	24	-	-	07	311
AML	158	51	08	-	01	137	355
APML	47	01	04	01	-	03	56
Plasma Cell Dyscrasia	213	05	27	06	-	04	255
CML	279	06	06	02	-	09	302
CMPD	05	01	01	-	-	-	07
NHL	645	33	101	112	-	17	908
HL	193	02	12	05	-	-	212

MDS	11	03	03	-	-	05	22
Acute Leukemia	14	8	09	-	-	02	33
No Diagnosis at TMH	-	10	323	-	-	161	494
Other Hematological Malignancy	33	02	11	06	-	05	57
Suspected Lymphoma	-	01	01	-	-	02	04
CMML*	04	01	02	-	-	02	09
Total	1869	137	532	132	01	354	3025

*CMML, Chronic Myelomonocytic Leukemia.

Outcome indicators

Mortality was taken as that which occurred at: <30 days, between 30-200 days, and >200 days.

Diagnosis	<30 days	30–200 days	>200 days	Total
ALL	26	12	11	49
AML	16	12	05	33
APML	09	01	01	11
CML	02	02	04	08
HL	03	02	-	05
MDS	-	-	01	01
MM*	11	04	09	24
NHL	19	25	19	63
Total	86	58	50	194

*MM, Multiple Myeloma.

Diagnosis	Under evaluation	Supportive care	Relapsed	Follow- up	On observation	On treatment	Total
ALL	05	07	10	-	-	27	49
AML	03	02	07	-	-	19	33
APML	02	-	-	-	-	09	11
CML	01	01	04	-	-	02	08
HD	01	02	-	-	-	02	05
MDS	-	-	-	-	-	01	01
MM	-	03	07	-	-	13	24
NHL	08	05	20	01	01	28	63
Total	20	20	48	01	01	101	194

Mortality and time-frame of management

Research

Investigator Initiated / Thesis Trials	Pharma Sponsored Trial
31	04

There were 12 publications from the DMG members that included 11 in International and one in National indexed journals.

Bone & Soft Tissue

Till 11.07.2021 **Convener**, Dr Ashish Gulia (Surgeon); **Secretary**, Dr Amit Janu (Radiologist). *From 12.07.2021* Convener, Dr Amit Janu; Secretary, Dr Nehal Khanna (Radiation Oncologist).

The Bone & Soft Tissue Disease Management Group added newer initiatives in the year 2021. There was unprecedented coordination between the different disciplines in the DMG that enhanced patient care seamlessly. Teleconsultation proved to be a boon for the patients and almost 400 patients availed of this facility.

The department of surgery implemented Navigation-assisted surgeries of pelvic and sacral resections. This immensely helped the team in the resection of complex cases with difficult anatomy with precise resections and better constructions.

The Medical oncology services streamlined the Melanoma Clinic with multiple patients benefitting from free immunotherapy through the phase IV MSD trial. The new AYA (Adolescent and Young Adults) clinic started in 2021 addressed survivorship issues.

The radiodiagnostic services worked 24 x 7 that increased patient throughput. Newer MRI imaging protocols were introduced that enhanced the image quality and decreased the scanning time. The prerequisite need for serum creatinine values were omitted in MR scanning with the introduction of safer MR contrast. There was new addition of Cryo-ablation and Irreversible Electroporation for the treatment of extra-abdominal desmoid tumors.

The Nuclear Medicine and Molecular Imaging introduced the Gallium 68 FAPI PET for Fibromatoses.

A new MDM2 gene amplification test was introduced by the Pathology department for welland de-differentiated liposarcomas.

A large majority of research conducted within the DMG was investigator-initiated, including prospective and retrospective studies. The primary focus of the research was aimed at identifying novel immune histochemical and molecular diagnostic markers; new imaging methods and modalities; ablative and interventional procedures; looking at treatment outcomes, in terms of disease control; usage of newer, non-invasive treatment options and

towards lesser morbidity and improved survival outcomes; and, to reduced treatment-related complications and with improved functional outcomes.

Volume Indicators

Total Registrations = 3039.

Radiodiagnosis	Pathology (TMH+ACTREC)	Surgery & General Medicine	Radiation Oncology (TMH+ACTREC)	Medical Oncology (Pediatric & Adult)	Occupational & Physio- Therapy
 Total: 18038. Radiography: 10936. Ultrasound: 2668. MRI Scan: 2310. CT Scan: 1849. Interventional Radiology: Bx, 172; A/E, 42; RFA, 38; Sclerotherapy, 17. 	 Total: 3063. Biopsies: 1311. Specimens: 654. Outside material: 1036. Other TMC units: 62. Cytopathology, 429. Molecular Pathology, 165. 	 Total: 1526 Major surgeries: 585. Minor surgeries: 941. General Medicine: ECG: 155 PFT: 71 2D-Echo: 749. General Medicine Consults: 48. Cancer thromb- osis: New,18; Follow- up, 55. RVD: 09. Cardio- oncology clinic: 32. 	 Total: 396 Palliative: 147. Radical Therapy: 249. Brachy- therapy: 22. Conven- tional: 130. 3D-CRT: 13. IMRT: 205. SRS/SRT: 03. ECRT: 02. 	Pediatrics Total: 84 On treatment: 73 Treatment Completed: 07 Expired: 02 Abandoned: 02 Second opinion: 03 Outside referral: <u>Adult</u> Chemotherapies s planned per patient: 569. • Curative: 374. • Palliative: 195. Total Day- Care Chemotherapi ies: 10,667. • Private: 2246 • General: 8421.	Occupational Therapy Total: 2668 • IPD (New): 350. • IPD (FU): 834. • OPD (New): 220. • OPD (FU): 1264. Physio- therapy Total: 899 • OPD: 252 • IPD: 597 • ICU: 50.

3DCRT, Three Dimensional Conformal Radiation Therapy **A/E,** Angioembolization;

ACTREC, Advanced Centre for Treatment, Research & Education in Cancer; **Bx**, Biopsy;

CT, Computed Tomography; ECG, Electrocardiography; ECRT, Extracorporeal Radiation Therapy;

FU, Follow-up; **ICU,** Intensive Care Unit; **IMRT,** Intensity Modulated Radiotherapy; **IPD,** Inpatients;

MRI, Magnetic Resonance Imaging; OPD, Out-patients; PFT, Pulmonary Function tests;

RFA, Radiofrequency Ablation; RVD, Renovascular Disease;

SRS/SRT, Stereotactic Radiosurgery & Stereotactic Radiotherapy; *TMH*, *Tata Memorial Hospital; USG*, *Ultrasonography; VMAT*, Volumetric Modulated Arc Therapy.

Surgical Oncology	Radiation Oncology	Medical Oncology (Pediatrics & Adult)
Mortality (30 days) - 01	Mortality (30 days) - Nil	Pediatrics
Morbidity:	Toxicity: 249.	Mortality (30 days) - Nil
 Neurological: 07. 	Grade 0, 91;	Chemotherapies planned: 89
Bone, 06;	Grade I, 114;	Palliative chemotherapy: 11.
Soft tissue, 01.	Grade II, 38;	
	Grade III, 05;	Morbidity:
• Vascular: 03.	Grade IV, 01.	Mucositis, 03;
Bone, 01;		Febrile Neutropenia, 08;
Soft Tissue, 02.		Ototoxicity, 03;
		Cardiomyopathy, 02.
 Wound complications: 33. 		
 Infection: 24. 		<u>Adults</u>
Bone, 19;		Complication rates of patients
Soft tissue, 05.		undergoing chemotherapy:
 Miscellaneous: 03. 		Non Hematological G3/ G4: 150.
		Hematological G3/G4: 207.
		Chemo toxicity related deaths: 06.
		Deaths due to Covid-ARDS*: 03.

Outcome Indicators

*ARDS, Acute Respiratory Distress Syndrome.

Survival Rates

The 738 operated extremity and pelvic non metastatic high-grade Osteosarcoma patients had an Overall Survival (OS) of 53% and an Event Free Survival (EFS) of 47% at 5 years.

For patients treated with "OGS 2012" chemotherapy protocol (n = 173), the OS was 64% and 58% at 3 and 5 years respectively.

For Ewing's sarcoma, the 3-year OS was 70% and disease-free Survival (DFS) of 66%.

For Chondrosarcoma, the overall survival for 5 years was 75%. The 5 years overall survival for nonmetastatic cases of grade II chondrosarcoma was 81% compared to 59% for grade III and 93% for grade I chondrosarcoma.

Compliance to Treatment (January-March 2020)

Compliance was specifically defined as to what percentage the patients undertook the recommended treatment. This was not related to compliance in time, for example, exact duration or time for number of cycles of chemotherapy taken, etc.

Overall compliance referred to the percentage of patients who were recommended treatment and took the same. This included patients who were lost to follow-up, as non-compliant.

The analyses were performed on 282 out of a total of 544 patients' data. The exclusions were; 120 with benign tumors, and another 142 who were either lost to follow-up or who did not require treatment by the BST DMG.

Compliance percentage (Total, 389)	Yes	Osteosarcoma 75/86 87.2%	Ewing's sarcoma 43/51, 84.31%	Soft tissue sarcoma 93/107, 86.91%	Chondro- sarcoma 9/9, 100%	Others 119/136, 87.5%
(10(a), 365)	No (LFU)	11/86, 19.64%	8/51, 15.68%	4/107, 13.08%	0/9, 0%	17/136, 12.5%

Research

Total n of Clinica		Completed Trials		Ongoing Trials		Overall patients accrued
Investigator Initiated / Thesis	Sponsored trials	Investigator Initiated / Thesis	Sponsored trials	Investigator Initiated / Thesis	Sponsored trials	Investigator Initiated
21	05	11	02	10	03	1500+

Achievements

Dr Amit Janu:

- NATCON oncologix best case presentation prize in NATCON 2021, New Delhi First Prize
- Certificate of Merit award for an education exhibit at 107th Scientific assembly and annual meeting of RSNA 2021, Chicago, USA
- Guest Speaker in Hindi Vigyan Sahitya Parishad organized by AERB in BARC campus on 18/12/2021 to Promote Hindi at the scientific and community level on early detection of cancer
- Reviewer at Indian Journal of orthopedics, Indian Journal of Radiology and Imaging, Section editor in Frontiers of Onco-Imaging and Frontiers of Onco-Surgery.

Dr Ashish Gulia:

- Obtained a new degree FACS Fellow of the American College of Surgeons
- Appointed as Deputy Director Homi Bhabha Cancer Hospital and Research Centre, Mullanpur and Homi Bhabha Cancer Hospital, Sangrur, Punjab
- Appointed as Project coordinator for Bharat ka Amritotsav activities to be done by all TMC centers.
- Editor at International Journal of Molecular and Immuno Oncology
- Reviewer at Lancet oncology, BMC surgery.

Dr Jyoti Bajpai:

• European Society for Medical Oncology (ESMO) **faculty** member for Immuno-oncology (for 2021-2024) Experimental Immunotherapy track.

Dr Nehal Khanna:

- Chairperson of the DDT (Due Diligence Team) of the Cancer Cure Fund at Indian Cancer Society
- Clinical outcomes of Ewing Sarcoma with limited metastases treated with curative intent Second prize. (Oral presentation) SIOP- Asia conference 2021.

Breast Oncology

Till 11.07.2021 **Convener**, Dr Rajiv Sarin (Radiation Oncologist); **Secretary**, Dr. NS Nair (Surgeon). From 12.07.2021 Convener, Dr. NS Nair; Secretary, Dr Jyoti Bajpai (Medical Oncologist).



The Breast Oncology Disease Management Group had the second highest workload in Tata Memorial Hospital. The breast cancer working group was in the forefront of starting several of patient friendly management systems, innovations, and assistance. The DMG worked with Non-Governmental Organizations (NGOs), and the trial coordinators, breast nurses, counselors who offered financial assistance & psychosocial counseling, and conducted the survivor's and lymphedema-care clinic.

Some of the ongoing clinical trials in different types of breast cancer seek to impact patient survival in long term and improve their quality of life.

Volume Indicators

Hospital Registrations

	ТМІ	тмн		ACTREC	
	2020	2021	2020	2021	2021
Private	895	1202	69	131	1333
General	1610	2386	455	613	2999
Total	2505	3588	526	744	4332

Referral Registrations

	т	МН	ACTR	EC
Year	2020	2021	2020	2021
	658	1578	78	85

Teleconsultation: In year 2020, 627; 2021, 1890.

Patients referred from other TMC hospitals across India: 33 (General 22, Private 11) compared to 14 in the year 2020 (seven each of general & private category).

Surgical Oncology:

	ТМН		ACTREC		Total	
	2020	2021	2020	2021	2020	2021
Major Surgery						
Breast conserving surgery: BCT/ BCT + LD/BCT + Oncoplasty / BCT with HDR + Axilla alone surgery	403	610	160	180	563	790
Mastectomy: MRM/SMAC/SMAC +LD/SM/Completion	418	820	384	284	802	1104

mastectomy/Revision mastectomy						
Others	32	32	05	31	37	63
Total	853	1462	549	495	1402	1957
Additional Procedures: (Ovarian ablation, Oncoplasty, Pedicled flaps, Reduction Mammoplasty, Whole breast reconstruction, Implant/ Expander, Supraclavicular fossa clearance, Port corrected, HDR, Internal mammary node clearance)	242	373	104	105	346	478
Microdochectomy/wire guided localization, Margin Revision, Excision biopsy, etc.	123	350	02	16	125	352

BCT, Breast Conservative Therapy; **HDR**, High Dose Radiotherapy; **LD**, Latissimus Dorsi Flap; **MRM**, Modified Radical Mastectomy; **SM**, Simple Mastectomy;

SMAC, Simple Mastectomy with Axillary Clearance.

Surgical 30-day mortality & Complication Rates

- Surgical mortality: nil
- Surgical morbidity: 18.88% Surgical Site Infection (grade 1-3)
- Positive margin and re-excision rates: 3.5%
- Average hospital stay: 2.5 days
- Nodal dissection: LAS Median number of nodes 7 (3-15).

Radiation Oncology:

	тмн	ACTREC	Total	
	Adjuvant Therapy			
Telecobalt	6	0	06	
Linear accelerator	710	160	870	
Tomotherapy	1	18	19	
Total Adjuvant Therapy	717	178	895	
	I	Palliative Thera	ру	
Telecobalt	189	03	192	
Linear accelerator	419	79	498	
Total Palliative Therapy	608	82	690	
Total EBRT	1325	260	1585	
Brachytherapy	05	03	08	

*EBRT, External Beam Radiation Therapy.

Medical Oncology:

Chemotherapy Type	2020	2021
NACT* and Adjuvant	1000	1996
Palliative Chemotherapy	1100	1000
Total	2100	2996
Referred outside	1500	300

*NACT, Neoadjuvant Chemotherapy.

Rehabilitation:

	2020	2021
In-patients	309	398
Out-patients	2530	2352
Post-Surgery Breast Care Class	812	1454
Lymphedema	723	557
Teleconsultation	-	04
Total	4850	4765

Staging (audit January–November 2021)

Total hospital registrations, 3785	
Total hospital registrations, 3785 Patients lost at various time points for those 449/3785 = 11.86% Lost after Registration: 78 Initial visit: 223 Lost after plan: 105	 Disease Staging (3233 patients) Operable Breast Cancer = 876 Locally Advanced BC = 1116 Local recurrence = 27 Denovo MBC = 346 Metastatic BC = 310 Operated Outside (OBC) = 170 Operated Outside (LABC) = 83 Oligo-metastatic BC = 129 Phyllodes = 53
	• Benign = 123

Compliance (audit of January & February 2020)

- Surgical compliance (Planned and completed surgery): 90 %
- Radiation Therapy (RT) to all BCT patients: 95 %
- RT to all post mastectomy patients with nodes > 3 and/or pT > 5 cm: 95 %
- Adjuvant chemo planned for node positive patients: 93 %
- Appropriate hormonal adjuvant tamoxifen /AI* to all HR+* pts: 100%.

*AI, Aromatase Inhibitors; HR+, Hormone Receptor Positive.

Research

Total numbe tria		Complet	ed trials	Ongoin	g trials	Overall patients accrued
Investigator Initiated	Sponsored trials	Investigator Initiated	Sponsored trials	Investigator Initiated	Sponsored trials	352
100	35	08	06	94	29	

Total number of patients (unique numbers) registered in 2021 accrued on prospective interventional studies was 268/4332 (6.18%).

Achievements

- Dr. RA Badwe was conferred the Nelson Mandela peace award 2021 and honorary Doctor of Philosophy
- Dr Mittra and Dr. RA Badwe published the landmark results of the clinical trial on screening with clinical breast examination in BMJ, 2021
- Dr Sudeep Gupta and Dr. Nita S. Nair were assigned the role of "Guest Editor" for especial issue on "Women Cancers" for the Indian Journal Medical Research
- Dr. Nita S. Nair, Dr Jyoti Bajpai and Dr Rima Pathak were organizing secretaries for the 19th WCI TMH Conference. This conference was unique in that it was the first-time data was pooled together on a national level and presented on a single platform, showcasing Indian data and outcomes

- Dr Shalaka Joshi, was part of the organizing committee for the 1st BREAST-Global conference. The conference provided a global platform for like-minded individuals and thought leaders to come together on an online platform to access and share a plethora of global learning and training opportunities
- BRIT 2021, a conference on breast imagining and interventions was organized in October 2021 by the radiology department
- An online CME on contrast enhanced mammography was conducted in March 2021
- Dr Vani Parmar as PI of the 3D printing lab at ACTREC has expanded the scope of work to other DMG for collaborative work and development of various protypes and novel research projects
- Dr Rima Pathak and Dr. Nita S. Nair, led the breast cancer awareness program in October 2021
- Dr Tabassum Wadasadawala organized a breast cancer awareness program in ACTREC with the student council
- Dr Vani Parmar carried out breast awareness activity in the motor sports community at special girls karting race held in Mumbai and at super cars drive in collaboration with V care and BMW in October.

Gastrointestinal

Till 11.07.2021 Convener, Dr. RZ Engineer (Radiation Oncologist); Secretary, Dr Mahesh Goel (Surgeon). From 12.07.2021 Convener, Dr Avinash Saklani (Surgeon); Secretary, Dr Vikas Ostwal (Medical Oncologist).

The Gastrointestinal (GI) Disease Management Group (DMG) delivered comprehensive care to patients with gastrointestinal cancers in a multi-disciplinary approach. Ten (10) Joint Clinics in a week were in place for patients with cancers are different sub sites. The scope of robotic services were extended in hepatobiliary surgeries i.e. the left lateral hepatectomy and radical cholecystectomy, distal pancreatectomy and whipple resections. The cytoreductive surgeries and intraperitoneal chemotherapy for colorectal and gastric cancers were further standardized.

Volume Indicators

The total number of patient registrations for GI services, 10790.

Surgical Oncology:

Total surgeries: 2214; Elective: Emergency: 1785:429.

Trends in Surgical services

Year	Patient	Number of	Surgery at TMH		1	Surgery	Mortality
	numbers	Admissions	Elective	Emergency	Total	at ACTREC	
2018	8410	2051	1104	305	1409	329	31
2019	10606	2112	1603	287	1890	608	31
2020	5958	1844	1364	250	1614	603	37
2021	9025	2442	1785	429	2214	747	66

	Name of the procedure	2020	2021
1	Pancreatoduodenectomy/Whipple procedures.	137	201
	Vascular Resections.	17	16
	Multivisceral resections.	07	06
	Distal/Subtotal Pancreatectomy.	23	22
	Median Pancreatectomy.	01	-
	Enucleation.	01	01
	Ampullectomy.	04	04
	Robotic resections/reconstruction.	14	22
	Laparoscopic resections/reconstruction.	02	06
	Total Resections	190	236
2	Liver resections:		
	≥ 3 segments	39	70
	< 3 segments	31	41
	Robotic.	03	03
	Total Resections	70	111
3	Radical cholecystectomies.	29	42
	Revision cholecystectomies.	43	50
	Simple Cholecystectomies.	33	41
	Extended resections for Ca GB.	01	02
	Radical cholecystectomy + EHBTE.	01	05
	Excision of bile duct (EHBTE).	10	08
	Robotic cholecystectomies.	06	04
	Port site excision.	00	02
	Total Resections	117	154
4	Open Gastrectomies.	144	174
	Laparoscopic/Robotic assisted gastrectomy.	12	26
	Distal Radical Gastrectomy.	85	86
	Total Gastrectomy.	36	57
	Left Thoracoabdominal Total/Proximal Gastrectomy.	18	15
	Multi Visceral Resection.	03	09
	Wedge Resection.	07	09
	CRS+HIPEC.	07	14
	Others (adnexectomy/D1excision/antrectomy).	00	10
	Total Resections	156	200

	Name of the procedure	2020	2021
5	Colonic resections – Total Colectomy / TPC.	143	191
	Colon – Multivisceral resection.	16	25
	AR/LAR/Hartmann.	162	214
	Intersphincteric Resections.	31	52
	Abdominoperineal resections.	58	81
	Cytoreductive Surgery± HIPEC.	39	69
	Stoma closures.	92	108
	APR+BeyondTME(Pelvic exenteration, ELAPER, VY Plasty,		
	sacrectomy)	70	73
	LAR/ISR+ BeyondTME (Supralevatorexenteration, Seminal		
	vesicle, Denonviliers, lateral pelvic node)	28	32
	TEMS/Transanal excision.	08	13
	PIPAC.	03	-
	Laparoscopic.	271	547
	Robotic.	22	41
	MIS (Elective-excluding CRS/Transanal).	66.4%	88.02%
	Total Resections	555	750
6	Retroperitoneal tumor and abdominal wall sarcoma excisions		
	(Total)	48	66
	Vascular.	02	04
	Multi Visceral.	25	36
7	Miscellaneous (stomas, bypass procedures, staging lap, small		
	bowel resection anastomosis, scar excisions, emergency		
	explorations).	389	697

AR, Anterior Resection; APR, Abdominopelvic Resection; Ca GB, Cancer of Gall Bladder;

CRS, Cytoreductive Surgery; D1, first part of duodenum;

EHBTE, Extra Biliary Hepatic Tree Excision;

ELAPER, Extralevator Abdominoperineal Excisional Resection;

HIPEC, Hyperthermic Intra Peritoneal Chemotherapy;

ISR, Intersphincteric Resection; LAR, Low Anterior Resection; MIS, Minimally Invasive Surgery;

PIPAC, Pressurized Intraperitoneal Aerosol Chemotherapy;

TEMS, Transanal Endoscopic Microsurgery; TME, Total Mesorectal Excision;

TPC, Total Proctocolectomy.

Surgical Overall Mortality (N): 66 (2.98%) Mortalities in Elective Surgeries: 32 (1.79%) Mortalities in Emergency surgery: 34 (7.92%) Surgical Morbidity (CD grade III and IV): 14.08%.

Medical Oncology:

A total of 7006 patients were treated with chemotherapy. Complication rates of patients undergoing chemotherapy were: Grade 1 toxicities: 53.67% Grade 2 toxicities: 9.26 % Grade 3 toxicities: 7.63% Grade 4 toxicities: 2.62%.

Radiation Oncology:

The number of patients who received for Radiotherapy (RT) was 738; radical, 381 and palliative, 357.

Acute RT Complication rates of patients undergoing radical treatments (n, 381):

Grade 0/1: 356 (93.4%) Grade 2: 21 (5.5%) Grade 3: 04 (1%) Grade 4: 0 (0%) Grade 5: 0 (0%).

Medical Gastroenterology:

The Nutrition Clinic attended to 19080 patients.

A total of 6026 endoscopies were performed; diagnostic 4883, and therapeutic 1143.

- Complications of Diagnostic Endoscopy: 03/4883, 0.08%
- Complications of Therapeutic endoscopies alone: 30/1143, 2.06%
- Mortality associated with endoscopies: 01/6026, 0.01%.

Research

	Total Clinical Trials - 1	,	te la care o	A Tuicle - 4	c	Č			Overall Patients	
	-	1	compiler	compieted i riais = tu	2	Ougo	Ungoing = 102		accrued	
Investigator Initiated	Sponsored	Thesis	Thesis Investigator Initiated	Sponsored	Thesis	Sponsored Thesis Investigator Initiated	Sponsored Thesis	Thesis	Ongoing Trials No. of Patients to be accrued: 15172. No patients accrued: 8608 (Ongoing trials: 56.73%)	
84	19	60	03	05	02	81	14	07	Completed Trials No. of Patients to be accrued: 890. No. of Patients accrued: 887 (Completed trials: 99.66%)	I

The DMG members contributed to 142 publications (National, 14 and International, 128).

Gynaecology

Till 11.07.2021 Convener, Dr. SS Chopra (Radiation Oncologist);

From 12.07.2021 **Convener**, Dr. KK Deodhar (Pathologist) Secretary, (till 31.10.2021), Dr. ST Surappa (Surgeon); Secretary, Dr. KK Deodhar (Pathologist). Secretary (from 01.11.2021), Dr Jaya Ghosh (Medical Oncologist).

The Gynecology (Gynec) Oncology Disease Management Group (DMG) included Gynec Surgical Oncologists, Medical Oncologists, Radiation Oncologists, Pathologists, Cytologists, Radiologists, Occupational and Rehabilitation Experts and Basic Scientists. Various NGO's also constituted as an integral part of Gynec DMG. The multidisciplinary team work towards treating women with gynaecological cancers aimed at obtaining the best clinical and oncological outcomes.

Since most of the patients seen by the DMG (cervix cancer) were from low socioeconomic background there was more involvement of the social service department. With their active integration in the DMG, there was an increased treatment completion rate for cervix cancer of patients undergoing chemo-radiation and brachytherapy. Similarly, patients with ovarian cancer from low socio economic status receive financial assistance towards completion of treatment.

In 2021 support group for patients was continued over Zoom platform in collaboration with Women's Cancer Initiative (WCI), Medical Social Worker division, Gunwati Kapoor Foundation and Sanjeevani Foundation.

Volume Indicators

A total of **3249** new patients were registered under Gynaecologic Oncology DMG in the year 2021, out of which 2339 were in General category and 910 were in Private Category. Additionally, 1230 patients were referred for expert opinion. Teleconsultation facility was availed of by 965 patients.

Diagnosis	General	Private	Total
Cancer Cervix	913	226	1139
Cancer Endometrium	222	154	376
Cancer Ovary	517	282	799
Primary Peritoneal carcinoma	13	12	25
Uterine Sarcoma	35	11	46
Cancer Vagina	21	07	28
Cancer Vulva	28	11	39
Cancer Vault	41	10	51
Pre Gynaec Malignancies (CIN/VIN*)	10	03	13
Gestational Trophoblastic tumor/disease	18	03	21
Germ Cell Tumors	30	11	41
Others	167	68	235
No Malignancy	103	40	143
Unknown	142	52	194
Unknown Primary	41	16	57
Total	2301	906	3207

***CIN/VIN**, Cervical/Vulval Intraepithelial Neoplasias.

Surgery:

The DMG members performed a total of 832 major surgeries. The General patient: Private patient ratio was 1.9:1.

Major Surgeries performed

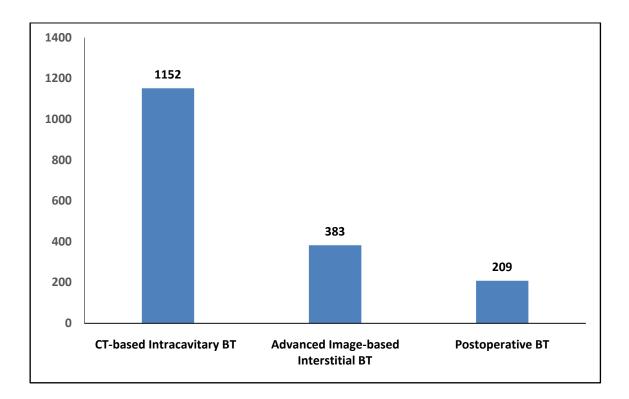
Disease sites	Tata Memorial Hospital (TMH)	Advanced Centre for Treatment, Research & Education in Cancer (ACTREC)
Cervix	36	06
Ovary	415	156
Endometrium	142	24
Uterine Sarcomas	05	03
Vulva	06	00
Vagina	02	00
GTN	01	01
Miscellaneous	27	08
Total	634	198

Radiation Oncology:

Radiation Oncology Treatment Dataset

	ТМН	ACTREC	Referred Outside	Total
Cervix Cancer	457	105	383	945
Endometrial Cancer	84	21	56	161
Vaginal Cancer	28	4	0	32
Vulva Cancer	28	0	0	28
Ovarian Cancer	42	0	2	44
Total	769	130	445	1210

Brachytherapy (BT) Procedures in TMH & ACTREC



Chemotherapy:

Chemotherapy was administered to around 1744 patients of gynecological cancers, including patients treated in frontline and recurrent setting. Frontline chemotherapy with paclitaxel-carboplatin/ Single agent carboplatin was delivered to around 536 newly diagnosed epithelial ovarian cancer patients in TMH. Definitive CTRT with weekly Cisplatin was given to around 483 patients diagnosed with ca cervix in TMH. Adjuvant chemotherapy was received by around 55 patients of Ca Endometrium in TMH. 53 patients with Germ cell tumors and 33 patients of Gestational Trophoblastic Neoplasia received chemotherapy.

Preventive Oncology:

The department examined 2022 patients, of which 1542 were new registrations.

Cervix cancer Screening & Diagnostic Tests	Patients
Papanicolaou test or Pap smears	1871
Human papillomaviruses HPV DNA	1691
Punch Biopsy	267
Endocervical Curettage	40
Total	3869

Pre-cancer lesions on Histopathology	Number
Cervical Intraepithelial Neoplasia (CIN) I	21
CIN II	3
CIN III	3
Frank Ca Cervix	21
Total	48

Occupational Therapy:

	Out-P	atients	In-Pat	ients	Tatal
	New	Follow up	New	Follow up	Total
Vaginal Dilatation	506	797	33	71	1407
Lower limb Lymphedema	57	219	34	62	372
Total	563	1016	67	133	1779

30-day mortality and complication Rates

Surgery:

The 30-day surgical mortality was 0.48% (04/832).

The major surgical morbidity was 14.30% (119/832) that included 1.68% (14/832) intraoperative and 12.62% (105/832) post-operative complications.

Chemotherapy:

Among patients who received chemotherapy any Grade III or IV hematological toxicity (including grade neutropenia, anemia, thrombocytopenia) was seen in around 22% of patients.

Grade III/ IV hypersensitivity reaction was seen in around 2% of these patients.

Among patients registered in the year 2021, there were four (04) in-patient hospital deaths due to chemotoxicity; of these, one patient also had Covid-pneumonia.

Radiotherapy:

366 patients were audited for treatment related side effects & distress as part of ongoing research thesis. 16% patients reported distress score of >4 for which psychological intervention was offered.

Toxicities reported: Grade II, was 14% and for grade III, was 3%.

Outcome Indicators (5-year survival rates)

The results from PARCER (post operative adjuvant radiotherapy in cervical cancer) Study depicting toxicity free survival in patients treated with early cervix cancer.

(Late Toxicity After Adjuvant Conventional Radiation Versus Image-Guided Intensity-Modulated Radiotherapy for Cervical Cancer(PARCER): A Randomized Controlled Trial Dr SupriyaChopra et al, J Clin Oncol. 2021 Nov 20; 39(33):3682-3692. doi: 10.1200/JCO.20.02530. Epub 2021 Sep 10.)

Outcomos	IG-II	MRT	3D-CRT	
Outcomes	3-year	5-year	3-year	5-year
Grade 2–late GI	21.1	26	42.4	45
toxicity	(14.7–29.7)	(18.3–36.2)	(33.7–52.3)	(36.1–55.1)
Grade 3–late GI	2.9	5.1	15.5	17.9
toxicity	(1.1–7.6)	(1.8–13.4)	(9.9–23.6)	(11.3–27.6)
Grade 2–late GI &	25.5	30.1	46.7	49.4
GU toxicities	(18.5–34.6)	(22–40.2)	(37.8–56.5)	(40.2–59.4)
Grade 3–late GI &	4.0	6.1	15.5	20.1
GU toxicities	(1.6–9.4)	(2.5–14.4)	(9.9–23.6)	(13.1–30.1)
Grade 2–any late	28.1	32.7	48.9	51.5
toxicity	(20.7–37.4)	(24.4–43)	(40–58.7)	(42.3–61.4)
Grade 3–any late	4.0	6.1	15.5	20.1
toxicity	(1.6–9.4)	(2.5–14.4)	(9.9–23.6)	(13.1–30.1)
Pelvic relapse free	81.8	76.5	84	77.6
survival	(73.5–87.7)	(67.4–83.3)	(76–89.5)	(68.1–84.7)
Disease-free	76.9	74.8	81.2	76.2
survival	(68.4–83.4)	(65.9–81.7)	(72.9–87.2)	(66.9–88.3)
	82.9	76.5	89.2	78.5
Overall survival	(74.6–88.6)	(67.3–83.4)	(82.1–93.6)	(68.8–85.5)

3 and 5-Year Disease and Toxicity Outcomes for Intention-to-Treat Population in the IG-IMRT & 3D-CRT Arms

3D-CRT, Three-dimensional Conformal Radiation; *GI*, gastrointestinal; *GU*, genitourinary; *IG-IMRT*, Image-guided Intensity-modulated radiotherapy.

Compliance to Radiation Treatment:

A compliance analysis of Radiation Therapy in gynaecological cancers showed that: During the lockdown period March 23–June 2020, a third of patients were referred to the vicinity of their residence; 76% completed the planned external beam radiation; and, 26% completed the full course of concurrent chemotherapy.

(Shinghal A. Supriya C et al, Advances in Radiation Oncology 2021; 6:100725.)

Chemotherapy Compliance:

Among those patients who were planned for chemotherapy 75% patients completed planned chemotherapy.

Research

Total Numbe Trials (N= submitted	29, new	Completed Trials in 2021 (N=4, including thesis)		Ongoing Trials Overall (N=33, including thesis)		Overall Patients Accrued in 2021
Investigator Initiated/ Thesis	Sponsored Trials	Investigator Initiated	Sponsored Trials	Investigator Initiated	Sponsored Trials	400 + (excluding retrospective studies and
28	01	04	-	30	03	prospective audits)

A total of 40 publications in Indexed Journals were made by Gynec DMG members in the year 2021. The members also had Grand Rounds, land-mark paper presentations and yearly review in gynaecological cancers.

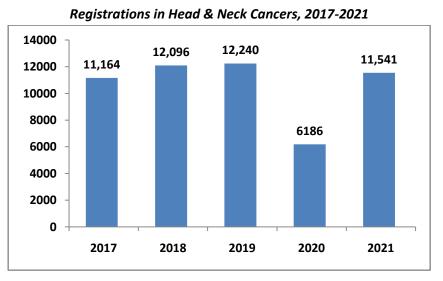
Head & Neck

Till 11.07.2021 **Convener**, Dr Kumar Prabhash (Medical Oncologist); **Secretary**, Dr Sarbani Ghosh-Laskar From 12.07.2021 Convener, Dr Sarbani Ghosh-Laskar; Secretary, Dr Asawari Patil (Pathologist). (Radiation Oncologist).

The Head & Neck (HN) Disease Management Group (DMG) provided the state of art care with a multidisciplinary approach that ensured the best possible outcomes. The HN DMG promoted scientific research, responsible medical care and dissemination of knowledge through its members. The DMG group was actively involved in raising the standards of care not only in TMH but across the country. The members were also instrumental in promoting a healthy environment through public education and anti-tobacco advocacy.

HN cancers constituted 25% of the annual registrations. The DMG comprised of major oncology specialties (surgical, radiation and medical oncology), effectively supported by diagnostic and other ancillary and rehabilitative services, providing effective, evidence based care for HN cancer.

A Multi-disciplinary Joint Clinic (JC) to formulate individual treatment plans was held daily. All newly diagnosed, evaluated patients were assessed in this clinic. The plans were evidence based and adhered to standard guidelines.



Volume Indicators

Modality	Procedures	Patients in 2020	Patients in 2021
C	Minor	1749	3861
Surgery	Major	2561	2444
Radiotherapy	Radical (Definitive + Adjuvant)	835	1071
	Palliative	80	111
	Neoadjuvant Chemotherapy Compliance	318 Three drug: 32 Two drug: 286 90%	958 Three drug: 335 Two drug: 623 80%
-	CTRT	278 Adjuvant: 82 Radical: 198	947 Adjuvant: 317 Radical: 630
Chemotherapy	Palliative (Cetuximab)	25	54
	OMCT & Intravenous (first line)	305	712
	Palliative: Second line	54	187
	Palliative: Third line	24	85
	OPD visits in year	25,522	34,114
	Histopathology	8636	12,370
	FNAC	1862	2623
Pathology	Exfoliative cytology	591	179
	Total No. samples processed	11,089	16,022
	PET-Scan	1817	3284
Nuclear	NM Scan	145	428
Medicine	ACTREC - PET	415	629
-	Total	2377	4341

Modality	Procedures	Patients in 2020	Patients in 2021
	Consultation	6631	11,665
	Prosthesis Services	857	1289
	FGA	727	407
	Extractions (Patients)	1369	4752
	Prophylaxis (Total two sitting)	230	86
/	Advanced therapeutic procedures	11	46
Dental / Prosthetic	Placement of dental implants	05	19
	Platelet-rich fibrin therapy	-	09
	Medical Ozone therapy	06	18
	General dentistry including root canal treatment & restoration	18	14
	Total	9843	18,259
	Conventional Radiography	1864	2831
	USG/Color Doppler	2807	4667
	CT Scan (Diagnostic)	4840	8260
Radiology	MRI	1378	3089
	Interventional Radiology/ CT Biopsy	133	1093
	USG Guided Biopsy/FNAC	746	847
	Number of Patients	10,129	15,871
Speech/ Rehabilitation	Fiberoptic Endoscopic Evaluation of Swallowing (FEES)	817	871

Modality	Procedures	Patients in 2020	Patients in 2021
	Video-fluoroscopy of Swallowing/Modified Barium Swallow	332	852
Speech/	Voice Evaluation (Acoustics)	109	106
Rehabilitation	Videolarygostroboscopy	21	49
	Joint Head Neck Speech Therapy Flexible Laryngoscopy	864	1819
Occupational	Out-patients (new)	385	687
Therapy	Out-patients (follow-up)	305	779
Department	Admitted patients	444	434
Physiotherapy	Admitted patients	1704	2175
Department	Out-patients	475	860

ACTREC, Advanced Centre for Treatment, Research & Education in Cancer; **CT**, Computed Tomography; **CTRT**, Chemoradiotherapy; **OMCT**, Oral Metronomic Chemotherapy; **FGA**, Fluoride Gel Application;

FNAC, Fine Needle Aspiration Biopsy; **MRI,** Magnetic Resonance Imaging; **NM,** Nuclear Medicine; **PET,** Positron Emission Tomography; **USG,** Ultrasonography.

Surgery:

Head & Neck Units;			Surgery	(year)		
A, B, C, & D.	HN (A)	HN (B)	HN (C)	HN (D)	2020	2021
Total cases	409	463	500	377	1749	2444
		Site	of Surgery			
Oral	298	289	374	252	1213	1633
Larynx/hypopharyx	22	29	32	09	92	119
Thyroid	47	67	56	19	189	313
Salivary gland	14	15	11	05	45	69
Maxilla	05	06	07	08	26	42
Skull base	08	35	10	-	53	97
Miscellaneous	13	22	10	84	129	171
		Recor	nstructions			
Yes	277	239	271	224	1011	1285
Free flaps	115	105	108	59	387	559
Pedicle	124	102	119	131	476	565
Local	31	32	44	34	141	157
Robotic Surgery	-	-	01	-	01	13
Laser resections	22	65	11	-	98	153
Wide excision	23	95	05	0-	123	172
Minor Operations	855	945	660	101	2561	3861
		Category of	patients ope	rated		
Private	92	200	122	46	460	754
General	317	263	378	331	1289	1690
Morbidity						
Major	36	38	39	20	133	215
Minor	98	68	136	42	344	343
Infection	75	87	77	91	330	280
			1	1		
Mortality	01	01	04	02	08	08

Radiotherapy:

	Procedures	Number of patients
Radiotherapy	Radical (Definitive + Adjuvant)	1074
	Palliative	111

Treatment	Number of Patients (%)
Radical: Definitive Adjuvant	384 (32.5) 638 (54)
Re Radiotherapy	49 (4)
Palliative	111 (9.5)

Chemotherapy:

Admission for chemotherapy	556
Admission for supportive care	357
Total number	913
Emergency casualty admissions	2423
Day care services (Chemotherapy visits + supportive in a year)	9695

Morbidity / Mortality

Modality	Morbidity/Mortality	Percentage of Patients
Surgery at TMH and ACTREC (n=2444)		Major, 8.79 Minor, 14.03.
(1-2-+++)	Mortality	0.32
	Completed	95
Radiotherapy	Dermatitis: (Grade 0-2) (Grade 3)	94 3.7
	Mucositis: (Grade 0-2) (Grade 3)	90 6

	NGT placement (%)	29
	Weight loss (Avg. in Kg)	3
	Hospitalization (%)	4
	Not completed (%)	5
	Mortality (%)	1
NACT* (n=958)	Compliance	80
	30 day Mortality	02 patients
CTRT (n=947)	Compliance	70.1
	30 day Mortality	01 Patient
Palliative systemic therapy: Cetuximab n=25	Compliance	75
Palliative systemic therapy: OMCT & Intravenous (first-line)n=305	Compliance	70
Palliative systemic therapy: Second line n=54	Compliance	60

*NACT, Neoadjuvant Chemotherapy.

Chemotherapy (Toxicity Details):

1. NACT

The overall grade 3-4 toxicity in accordance with CTCAE* version 4.02 was seen in 40% of patients. The any-grade toxicity after 1st cycle of chemotherapy were vomiting, diarrhea, mucositis, fatigue, Febrile Neutropenia (FN), peripheral neuropathy, hyponatremia, hypokalemia, hyperkalemia, transaminitis, seen in 41.3%, 43.9%, 44.3%, 47.2%, 7.2%, 3.0%, 33.8%, 14.4%, 4.9% and 12.3%. The any-grade toxicity after 2nd cycle of chemotherapy were vomiting, diarrhea, mucositis, fatigue, febrile neutropenia, peripheral neuropathy, hyponatremia, hypokalemia, hyperkalemia, transaminitis seen in 28.6%, 37.3%, 31.3%, 39.3%, 3.1%, 3.2%, 19.7%, 7.4%, 3.1% and 4.9%. The mortality rate with NACT was 0.398%.

(*CTCAE, Common Terminology Criteria for Adverse Events.)

2. CTRT

The significant grade 3-4 toxicities related to concurrent chemotherapy during CTRT were electrolyte imbalance in 18.25% patients, deterioration in serum creatinine in 2.66% patients, anemia in 4.63%, neutropenia in 5.55%, and thrombocytopenia in 1.85%.

3. Palliative chemotherapy

The most common side effects (all grades) resulting from metronomic chemotherapy were anemia (63.5%), weakness (57.7%) and hyponatremia (57.7%). In patients treated with intravenous chemotherapy, the major toxicities were anemia (56.6%), weakness (54.7%) and mucositis (50.9%). In patients treated with paclitaxel and cetuximab chemotherapy, the major toxicities were maculopapular skin rash in 79%, mucositis in 63% and myalgia in 50% of patients. There were no toxicity related deaths.

Outcome Indicators (5-year Survival Rate)

Surgical Oncology:

- **Oral Cavity**, 70.4%
- **Thyroid,** 98%
- Salivary gland neoplasm (Disease Free Survival), 78%
- Larynx, 60%.

For borderline resectable:

The unfavorable margin status (either positive or close margin) was seen in 5.1% of upfront operated patients while it was 3.3% in patients operated after NACT. It was interesting to note that perineural invasion was seen in quite a high proportion of the upfront operated patients (23.3%) while this was not the case in the NACT patients (7.4%) (p = 0.000).

Medical Oncology:

Oral

NACT:

The 2-year survival in patients receiving NACT in oral cancers was 42%.

Hypopharynx

The 2-year survival in patients receiving NACT in pharyngeal cancers (laryngopharynx) was 60%.

Maxilla

The 2-year survival in patients receiving NACT in maxillary cancers was 41%.

Sinonasal

The 2-year survival in patients receiving NACT in sinonasal tumors was 78.5%.

Stridor

In all patients receiving immediate chemotherapy, clinical stridor resolved within 48 hours. The radiological response rate was 62.5%. The median reduction in size of tumor was 37%.

Geriatric

In patients receiving NACT for technically unresectable disease the corresponding figures were 82.06% and 9.0 months {95% Confidence Interval (CI) 5.9–12.1 months}.

Palliative chemotherapy

• First line treatment outcomes

The median Overall Survival (**OS**) in metronomic chemotherapy was 249 days (222.48–275.52 days), in intravenous chemotherapy was 152 days (134.19–247.81 days) and in paclitxael & cetuximab was 314 days (95%CI 227.6–400.4 days).

• Second line treatment outcomes

The median estimated Progression-free Survival (**PFS**) and OS were 110 days (95%Cl 61–175 days) and 156 days (95%Cl 126–185 days) respectively.

Radiation Oncology:

1. Early stage Oral cavity treated with surface mould Brachytherapy: n=31

Median Follow-up: 52 months.

3- & 5-year Local Control (LC): 5-year Locoregional Control (LRC), skin–92%

5-year LRC intraoral -76%

3- & 5-year Disease-free Survival (DFS): 2- and 5-year DFS-69%

3- & 5-year OS: 2- and 5-year OS, 86% and 81% respectively.

2. Nasopharynx

Number of patients	201
Year	Jan 2008–July 2015
Median follow-up	37 months
Overall survival at 3 years	87.4%
Local control at 3 years	85%
Locoregional control at 3 years	71%
Distant metastasis free survival at 3 years	72%
Disease free survival at 3 years	71%

3. Oral cavity: Stage III/ IV

10 year controls	Adjuvant RT	Adjuvant CTRT	
Locoregionally controlled	57.3%	59.6%	
Overall Survival	40.7%	46.4%	

Compliance to Guidelines

Stage of treatment	Adherence (%)		
Pre-treatment	99.3		
Definitive treatment	90.9		
Adjuvant treatment	89.7		

Research

	Total number of clinical trials		Completed Trials		Ongoing Trials		Overall Patients Accrued
	Investigator Initiated	Sponsored Initiated	Investigator Initiated	Sponsored Initiated	Investigator Initiated	Sponsored Initiated	
тмн	27	3	10	-	68	05	1995
ACTREC	28	0	14	-	22	-	
Total	58		24		95		

The members of the Head & Neck DMG published 107 articles in National & International Peer Reviewed Journals, and organized three Virtual conferences.

Neuro-Oncology

Till 11.07.2021

Convener, Dr Epari Sridhar (Pathologist); Secretary, Dr. GJ Sastri (Radiation Oncologist). Secretary, Dr Girish Chinnaswamy (Medical

From 12.07.2021 **Convener**, Dr Prakash Shetty (Surgeon); Oncologist).

The Neuro Oncology DMG was a cohesive and closely-knit multidisciplinary group consisting of members from neurosurgery, radiation oncology, medical oncology, radiology, pathology, nuclear medicine, psychiatry, basic scientists and other support staff. The Neuro-oncology DMG provided comprehensive care for patients with brain and spinal tumours. This included outpatient as well as in-patient services (both elective and emergency care). The entire clinical and support team along with the DMG coordinators and other trial staff ensured smooth coordination between the different clinical specialities and supporting departments. The coordinators liaised with other members of the DMG (pathology, radiology and molecular biology) and streamlined the management processes of patients.

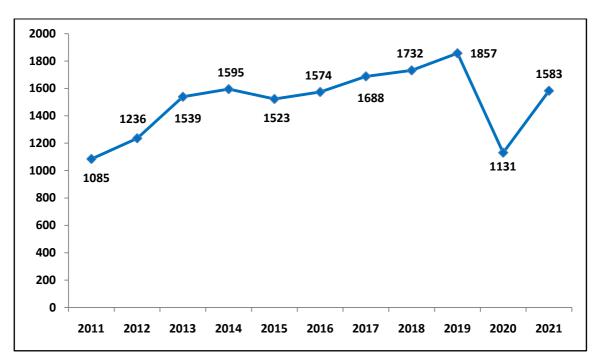
The Neurosurgical services were forefront in state-of-the-art 3D navigable ultrasound-guided and Aminolevulinic Acid (ALA) fluorescence guided resections. The DMG introduced molecular markers of diagnostic, prognostic, predictive, and therapeutic relevance for testing in clinical practice that enhanced quality of patient care. High precision radiotherapy techniques like Stereotactic Radiosurgery (SRS), Intensity Modulated Radiotherapy with Image Guidance (IG-IMRT) using cutting edge technology was offered to patients based on the evidence-based guidelines.

The DMG organised the annual 'Evidence Based Medicine' conference in February 2020- with theme: Contemporary management in Neuro-oncology.

Volume indicators

In comparison to the previous year's trend, neuro-oncology DMG at Tata Memorial Centre, Mumbai in the year 2021 registered a ~39% increase in number of patient registrations, in view of relaxation of national lockdown imposed due to COVID-19 pandemic in preceding year.

The new Patient Registrations were **1382** with an additional **201** referred for second opinion. There were 57 teleconsultation for the neuro-oncology team that took management decisions for these patients.



Figures of patients treated and referred for opinion only

Neurosurgery:

More than 350 major neurosurgical procedures were have been performed in the year that encompassed the entire spectrum of craniotomies, endoscopic procedures, spinal tumors, and stereotactic surgeries. Awake surgeries, with detailed peri-operative neuropsychological testing, Intra-axial tumors (gliomas), paediatric and skull base tumors surgeries with use of various surgical adjuncts were the areas of focus.

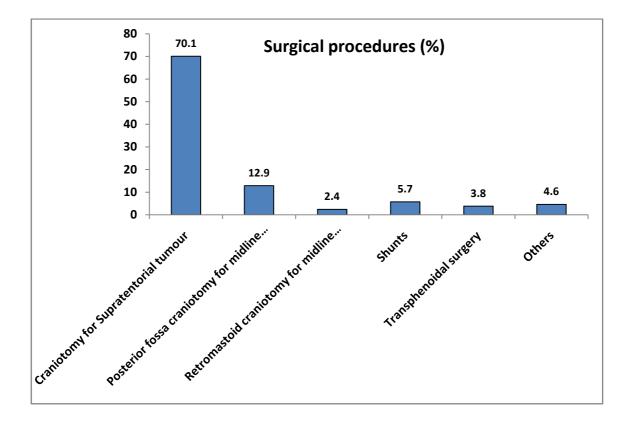
Speciality clinics:

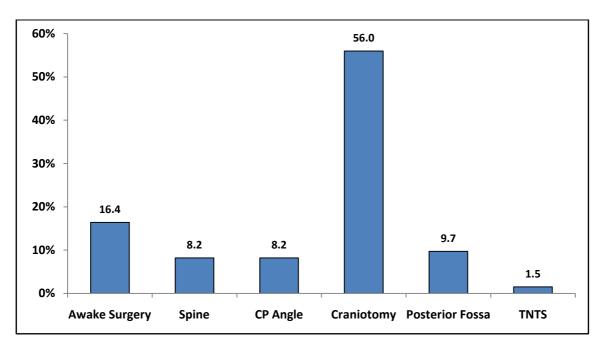
- Skull Base Clinic. Almost 100 major skull base surgeries (conventional as well as endoscopic assisted) were performed in the year
- Brain metastases clinic, a multispeciality meeting held once a week to discuss management of cases with brain metastasis.

Newer techniques/services offered:

1. ALA fluorescence guided resection for high grade gliomas

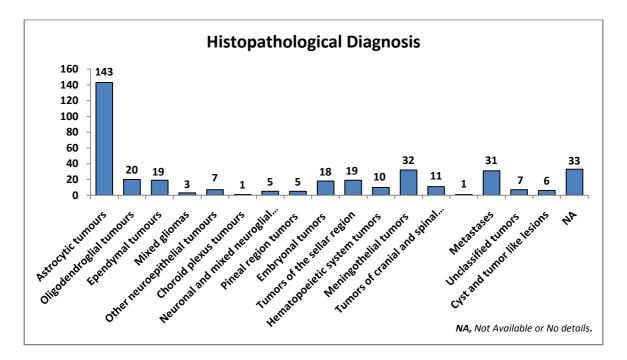
- 2. Intra-operative Neuromonitoring for safer surgeries
- 3. Intraoperative examination monitor for awake surgery (IEMAS) system for awake surgeries
- 4. Implantable carmustine wafer after glioma resection.

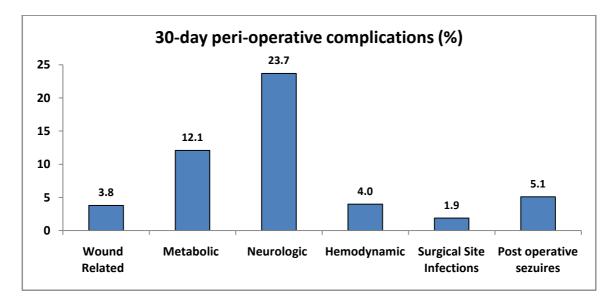




Numbers of IONM Procedures in Neurosurgery, 2021

CP, Cerebello-Pontine; *IONM*, Intraoperative neurophysiological monitoring; *TNTS*, Endoscopic Trans-Nasal Trans-Sphenoidal surgery.





Radiation Oncology:

Faculty members from the Department of Radiation Oncology served as the primary care physicians for patients registering with the Neuro-Oncology DMG and were responsible for overseeing their initial work-up, therapeutic decision-making, treatment planning (both radiation therapy and chemotherapy), referral to appropriate specialists (as necessary), post-treatment assessment, and periodic follow-up both in the OPD as well as multi-disciplinary joint clinics. Over half the patients registered annually received radiation therapy as part of their treatment. Nearly 60% were treated with radiation therapy within the institute, but 40% were referred outside (patient choice, long waiting-times, and logistics) for radiation therapy. Vast majority of them subsequently followed-up with Radiation Oncology services and completed their further adjuvant chemotherapy (if needed) at the institute.

Radiation Therapy (RT) administered						
Technique of RT TMH ACTREC Total						
Conventional RT	29	01	30			
3D-CRT	89	21	110			
IMRT/IGRT	182	101	283			
Stereotactic Radiosurgery/SRT	16	12	28			
Total	316	135	451			

3D-CRT, Three Dimensional Conformal Radiation Therapy; *IGRT, Image Guided RT; IMRT, Intensity Modulated RT; SRT, Stereotactic RT.*

Medical Oncology:

Regimen	Number of patients	Number of cycles
Temozolomide adjuvant	340	2350
Temozolomide salvage	20	86
CCNU/COMBAT/PCV	56	350
Bevacizumab based regimens	27	148
CET/ICE/CTRT	25	75
Packer	02	05
Others	46	124

Chemotherapy in Adult Brain Tumours

CCNU, (Lulostine, a nitrourea); *CET*, Cisplatin+Cyclophosphamide+Vincristine; *COMBAT*, Combined Oral Metronomic Biodifferentiating Antiangiogenic Treatment; *CTRT*, Concurrent Chemoradiotherapy; *ICE*, Fosfamide+Carboplatin+Etoposide combination; *PCV*, Procarbazine+CCNU+Vincristine.

Chemotherapy in Paediatric Brain Tumours

Patients who received chemotherapy, 44						
Embryonal CNS tumors, 52	2					
	Medulloblastoma–40, Supratentorial Primitive Neuroectodermal tumour–5, Atypical Teratoid Rhabdoid Tumour– 3, Pineoblastoma–2, and ETMR–3.					
Treatment deta	Treatment details					
Concurrent chemoradiation only (n=15)	Carboplatin, 15					
Adjuvant chemotherapy (n=35)	CEJ, 06; CET, 27; HIT protocol, 02.					
COMBAT (palliative) chemotherapy started upfront	02					
On treatment	17					
Completed treatment	16					

	• Referred outside for chemotherapy 09					
	Expired/palliative	09				
	Low Grade Glioma- 15 patients received che	motherapy				
	Weekly Vincristine and 3-weekly carboplatin: on treatment	14				
	Expired 01 (progressive disease					
Intracrania	l Germ Cell Tumour - 3 patients received chemothe	rapy, 1 abandoned treatment				
	ICE chemotherapy	03				
	Completed treatment	02				
	• Expired	01				
Others : treated with non-chemo modalities, seen by us for supportive care or second opinion only (n=45)						
Low grade glioma-14, Anaplastic ependymoma-9, Diffuse pontine brain stem glioma-2, GBM-3, Craniopharyngioma-3, ATRT-1, ETMR-3, schwannoma-1 pituitary adenoma-1, Papillary tumor pineal region-2, Medulloblastoma-6						

CEJ, Cyclophosphamide, Etoposide and Carboplatin; **ETMR**, Embryonal tumor with Multilayered Rosettes; **GBM**, Glioblastoma Multiforme; **HIT**, Highdose of Carboplatin + Etoposide.

79 children (<18 years) with CNS tumours were seen by the Paediatric Oncology services in 2021.

Outcomes

30-day neurosurgical morbidity and mortality (for elective cases):

		Mor	tality
Morbidity (Minor) Morbidity (Major)	Elective cases	Emergency cases	
45/332 (13.5%)	38/332 (11.4%)	08/332 (2.4%)	07/39 (17.9%)

Chemotherapy morbidity and mortality:

Regimen	Toxicity 3-4 CTCAE*
Adjuvant Temozolomide	19% (65 patients)
CCNU	41% (23 patients)
Bevacizumab	14.8 % (4 patients)

*CTCAE, Common Terminology Criteria for Adverse Events.

Mortality due to toxicity: 2 (<1%).

Inter-institutional collaboration

The radiation oncology faculty was involved in various collaborative basic and translational research projects with IIT, Mumbai, BARC, Manipal University, YenepoyaUniversity and IIT Jodhpur. The main thrust of these collaborations was to develop novel drugs/drug formulations involving nanotechnology to disrupt the blood brain barrier and blood tumour barrier for the efficient penetration and targeting of the chemotherapeutic drugs for enhancing the efficacy of radiation against these tumours. The radiation oncology group was also looking at certain natural plant extracts that have antiangiogenic activity and were being evaluated as potential radiosensitizers in glioma models. Moreover, one of the collaborative study was looking at the important role of inflammatory markers within the tumour and the tumour milieu.

The DMG was also involved with collaborative projects with the Indian Institute of Technology (IIT-Mumbai) for multiple projects on proteomics (gliomas and meningiomas) with 3 IIT students being mentored by the DMG members for PhD. There was also a joint project with the Department of Remote sensing and Robotics, BARC, Mumbai to develop an indigenous robotic stereotactic system, and setup an experimental OT at ACTREC for testing this robotic system on phantoms. A study to predict the use of intra-operative ultrasound (model) based on various preoperative factors was ongoing with IIT.

Research

	Investigator initiated (Prospective)	Investigator Initiated (Retrospective)	Thesis (Prospective+ Retrospective)	Retrospective Audit/ Survey	Pharma Sponsored trials
Ongoing clinical trials in 2021	19	13	22	03	01
Completed trials in 2021	02	04	03	-	-
Ongoing trials before 2021	16	09	16	02	-
Overall patients accrued in clinical trials in 2021		225 (16.	94%) of 1328 pati	ents	

The DMG contribution to reputed national and international journals included: original research, 47; and 04 Case reports.

Pediatric Hematolymphoid

Till 11.07.2021 **Convener**, Dr Papagudi Subramanian (Pathologist); **Secretary**, Dr. CA Dhamne (Medical Oncologist). From 12.07.2021 Convener, Dr. CA Dhamne; Secretary, Dr Prashant Tembhare (Pathologist).



The Pediatric Hematolymphoid (PHL) Disease Management Group (DMG) provided comprehensive medical diagnostic, counselling, management, follow-up and palliative services to children below 15 years of age suffering from hemato-lymphoid malignancies.

With the implementation of the holistic support program initiated in 2010 the abandonment rate had stabilised between 3 to 4%. This translated into better outcomes. With the abandonment rate under control, the next major challenge was in the management of patients who relapsed after treatment. With an event free survival of 30%, about 17% of patients with

B-cell acute lymphoblastic leukemia (B-ALL) would relapse. Relapsed B-ALL was one of the common paediatric malignancies.

The DMG was focussing on refining treatment protocols, academic training and investing in research activities to bring in novel therapies to Paediatric patients in India. The major initiative in this direction was the Chimeric antigen T cells receptor (CAR-T) therapy program. The first in human clinical trial for indigenously developed CAR-T cell therapy recruited patients for the HCAR19, phase I trial.

About 60 transplants for different hematolymphoid malignancies were performed in the last 3 years at different centers across the city including at ACTREC, CTC Borivali, SRCC and Wadia Children's Hospital.

For relapsed B-ALL, the indigenous CAR–T first-in-human clinical trial recruited four (04) patients in 2021.

Disease Burden in 2021						
Diagnosis	General	Private	Total	(%)		
Acute Lymphoblastic Leukemia ALL	450	59	509	57.78		
Acute Myeloid Leukemia AML	105	8	113	12.83		
Chronic Myeloid Leukemia CML	20	0	20	2.27		
Hyper Eosinophilic Syndrome HES	1	0	1	0.11		
Hodgkin's Lymphoma HL	68	12	80	9.08		
Juvenile Myelomonocytic Leukemia JMML	8	0	8	0.91		
Langerhans Cell Histiocytosis LCH	10	1	11	1.25		
Myelodysplastic Syndromes MDS	6	0	6	0.68		
Non Hodgkin Lymphoma NHL	77	7	84	9.53		
Non-Cancer	44	5	49	5.56		
Total	789	92	881	100.0		

Volume Indicators

Mortality

Mortality rose to 15.2% with about 3.8% patients expiring within 15 days or registration. This was most likely due to late presentation, with many patients reaching late to the hospital due to

travel restrictions. In addition, septicemia from Multi-Drug Resistant (MDR) gram-negative organisms continued to be the biggest challenge for children receiving intensive chemotherapy.

	Mortality in year 2021								
Diagnosis	Patients treated	Patients Expired		Treatment		Between 15–45 day of treatment		Over 45 days of treatment	
	#	#	%	#	%	#	%	#	%
ALL	360	44	12	11	3.05	19	5.3	14	3.9
AML	73	24	32.4	07	9.5	12	16.4	05	6.8
APML	11	-	-	-	-	-	-	-	-
CML	19	01	5.3	01	5.3	-	-	-	-
HES	01	-	-	-	-	-	-	-	-
HL	56	02	04	-	-	-	-	02	04
JMML	05	02	40	-	-	-	-	02	40
LCH	06	-	-	-	-	-	-	-	-
MDS	05	01	20	-	-	01	20	-	-
NHL	62	17	27	05	08	04	6.4	08	13
Total	598	91		24		36		31	

The DMG initiated a granulocyte infusion program, the effect of which would be seen in the coming years on mortality especially due to MDR sepsis.

Compliance with the Guidelines

The DMG provided guidance to many other centers by referring patients closer to their homes or work-place of parents after comprehensively working them up and making detailed treatment plans. These patients continued to be evaluated with the DMG at predetermined time-points to check their progress. The Treatment Refusal & Abandonment (TR&A) rates in 2021 have remained below 5% as seen in the last 5 years despite the pandemic.

Process Indicators

Compliance to therapy:

Patients on treatment in the DMG were more than 97% compliant with treatment due to the social support and patient tracking systems in place. The tracking software designed to flag such

patients in 2016 showed tremendous benefit by bringing down TR&A rates to 2.27% as indicated earlier, below the threshold level of 3.5%-5%, that had been thought would be difficult to breach.

Compliance to Timelines:

The bulk of patients dealt with by the DMG had acute presentations and work-up and treatment proceeded simultaneously. For Hematological malignancies, a confirmed diagnosis was usually obtained within 2–3 working days, and in Lymphoid malignancies, within 7–10 working days. Supportive care proceeded concurrently till definitive treatment was begun, usually on the same day as final diagnosis. In disease like APML, specific treatment was initiated on the day of arrival on suspicion alone, pending confirmation due to high mortality in this group in first 3-5 days of presentation. Availability of beds was a major problem with longer waiting list causing delay in chemotherapy schedule especially intensive chemotherapy regimens.

Completion of entire therapy at expected time for malignancy and stage: 90%.

Research

	otal number of Clinical Trials		Completed trials		g Trials	Overall Patients Accrued
Investigator	Sponsored	Investigator	Sponsored	Investigator	Sponsored	
initiated	trials	initiated	trials	initiated	trials	4428
54	-	20	03	15	01	

There were 46 publications by the DMG members.

Achievements

• Dr Gaurav Chatterjee (as a first author) and Dr Prashant Tembhare (as a corresponding author) received the best-published paper award in the field of flow cytometry from "The Cytometry Society (Indian Flow Cytometry Society)" year 2021 for the paper "Chatterjee G, Sriram H, ..., Tembhare PR. Immunophenotypic shift in the B-cell precursors from regenerating bone marrow samples: A critical consideration for measurable residual disease assessment in B-lymphoblastic leukemia. Cytometry B Clin Cytom. 2021 Jul; 100(4):434-445."

Grant Award: DBT-BIRAC National Biopharma Mission Grant of INR 19.15 Cr as PI for First in Human CART-Cell Trial in India in collaboration with IIT-B.

- **Miss Steffi Vargsese** received the "2nd best oral presentation" award in the 24th Annual Pediatric Hematology-Oncology Conference (PHOCON 2021) December 10 11, 2021.
- Miss Karishma Girase received the "1st best oral presentation" award in the 13th virtual annual meeting of The Cytometry Society, 29 Oct 2021.
- Dr Dhanlaxmi Shetty was certified as an International Technologist in Cytogenetics by ASCP (American Society for Clinical Pathology) in 2021 and was also awarded Association of Molecular Pathologists - International Annual Membership for 2021 (Membership ID-1362100)
- Dr Sumeet Gujral was invited as an editor and Dr. PG Subramanian, Dr Prashant Tembhare and Dr. NV Patkar were invited and included in "responsible and contributory author" in drafting criteria/guidelines in the upcoming 5th edition of WHO Classification of Hematolymphoid neoplasms.
- Dr (Surg Cdr) Gaurav Narula was appointed to Clinical Advisory Committee 5th Edition of WHO Classification of Hematolymphoid Malignancies 2022 and also to the Subject Expert Committee for Drug Controller General of India.
- **Dr Nikhil Patkar** was awarded the Wellcome Trust-DBT India Alliance Senior Fellowship 2021.

Pediatric Solid Tumors

Till 11.07.2021

Convener, Dr Tushar Vora (Medical Oncologist); **Secretary**, Dr Siddharta Laskar (Radiation Oncologist). From 12.07.2021 Convener, Dr Maya Prasad (Medical Oncologist); Secretary, Dr Mukta Ramadwar (Pathologist).

Volume Indicators

A total of **584** patients were registered in the Pediatric Solid Tumor (PST) Disease Management Group (DMG) in the year 2021. Additionally, there were 295 referrals from other DMGs.

Diagnosis	2020	2021
Neuroblastoma	60	115
Renal Tumor	31	61
Germ cell Tumor (GCT)	21	60
Liver Tumors	20	39
Retinoblastoma	25	43
Sarcomas	89	124
Miscellaneous	96	97
No malignancy	17	34
No investigation	12	11
Total	371	584

4.8 2.8 1.5

Treatment Refusal and Abandonment (TR&A) Rate

Surgical Data:

Surgeries were performed in Tata Memorial Hospital (TMH) and at the Society for Rehabilitation of Crippled Children (SRCC) at Haji Ali, Mumbai (previously, the Childrens' Orthopedic Hospital).

	тмн
Major	298
Minor	106
Vascular access (PORT)	74
Total	498

Radiation Therapy (RT):

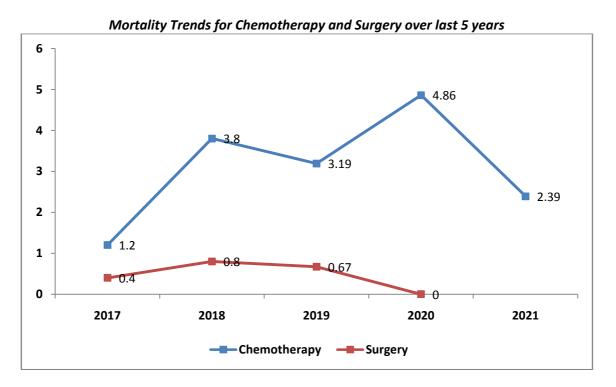
Radiotherapy Volume, Complications & Compliance

Total number of patients treated		182
Palliative RT		35
Radical RT (pre-operative, post operative, definitive)		147
	Conventional RT	31
Tachnique of DT	3D-CRT	01
Technique of RT	IMRT	138
	Interstitial Brachytherapy	05
Grade 0		46
	Grade I	86
Toxicity	Grade II	14
	Grade III	01
	Grade IV	-
Non- compliance		-
RT referral letters		19

3DCRT, Three Dimensional Conformal Radiation Therapy; IMRT, Intensity Modulated Radiotherapy; VMAT, Volumetric modulated arc therapy.

Outcomes

Treatment	Morbidity	Mortality
Major Surgery (n=298)	30-day, 18.8% (56/298)	0%
Chemotherapy (n=490)	Febrile neutropenia requiring in-patient care, 23.2 % (114/490)	2.09 % (10/490)
Radiotherapy, (n=147)	Grade 0: 46 (25.3%) Grade 1: 86 (47.3%) Grade 2: 14 (7.7%) Grade 3: 01 (0.5%) Grade 4: 00 (0%)	0 %



The mortality rate of surgery has consistently remained below 1%, with nil mortality over the past two years.

Of the 30 patients who expired while on chemotherapy, 10 were due to treatment toxicities and 20 due to disease progression.

Survival Rates

Cancer	(EFS) Event-Free Survival (%)	(OS) Overall Survival (%)
Wilms (3-year)	75.6	82
Germ cell Tumors (extracranial)	72	84
Retinoblastoma	79	81
Soft tissue sarcomas (non-rhabdomyosarcoma)	62	79
Neuroblastoma (3-year) (Low/Intermediate)	75	91.5
Neuroblastoma (High risk)	32	36
Extra-skeletal Ewing's Sarcoma	65.3	79.37
Hepatoblastoma (high-risk)	55.6	66

Research

Total numbe Tria		Completed trials		Ongoing Trials		Overall Patients Accrued
Investigator initiated	Sponsored trials	Investigator initiated	Sponsored trials	Investigator initiated	Sponsored trials	2638
22	01	47	01	19	-	

Thoracic Oncology

Till 11.07.2021

From 12.07.2021

Convener, Dr Nilendu Purandare (Radiologist); **Secretary**, Dr Sabita Jiwnani (Surgeon). **Convener**, Dr Sabita Jiwnani (Surgeon); **Secretary**, Dr Naveen Mumudi (Radiation Oncologist).

The thoracic disease management group (DMG) at TMH was amongst the highest volume thoracic centres in the world.

Volume Indicators

Two thousand six hundred (2600) new patients were registered in 2021; lung cancers were the majority (71%) followed by esophageal cancer (29%). Additionally, more than 1000 patients were consulted for second opinion. Teleconsultation, a service introduced for the convenience of patients during the COVID-19 pandemic, benefited 388 patients in 2021.

Surgical Services:

Year 2021	Numbers
Esophagectomy	184
Open	105
VATS	40
Robotic	22
Lung surgery	129
Open	70
VATS	53
Robotic	0
Metastatectomy	126
Open	64
VATS	61

Year 2021	Numbers
Robotic	-
Mediastinal mass	49
Open	38
VATS	06
Robotic	04
Chest wall surgery	39
PORT placement	02
Mediastinoscopy	65
Other surgeries	69
Staging laparoscopy	55

*VATS, Video-assisted Thoracoscopic Surgery

For all the lung and esophageal cancer patients operated during this time period, the margin positivity rate was 3.6% and 1.5% respectively. The mean and median lymph node yields were 12.6 and 11 respectively (Range 0 to 52) for lung cohort; mean and median lymph node yields were 28 and 26 respectively (Range 0 to 100) for esophageal cohort.

Outcomes	Numbers
Esophagectomy	184
Mortality	04
Major morbidity	52
Inoperable	-
Lung surgery	129
Mortality	05
Major morbidity	29
Inoperable	06

Outcomes	Numbers
Metastasectomy	126
Mortality	-
Major morbidity	05
Inoperable	01
Mediastinal mass	49
Mortality	-
Major morbidity	10
Inoperable	01

Radiation Oncology:

Volume treated:

Lung cancer	814
Radical	-
IMRT/3DCRT	146
SBRT	23
PORT	13
Palliative	630

Esophageal cancer	278
Radical	-
IMRT/3DCRT	130
NACTRT	52
Palliative	96
ILRT	-

Outcomes:

	%age	
Lung cancer		
Grade 1-2	22	
Grade 3-4	-	
Acute Esophagitis	-	
Grade 1-2	15	
Grade 3-4	-	
Acute Pneumonitis	-	
Grade 1-2	1	
Grade 3-4	-	

Esophageal cancer		
Grade 1-2	29	
Grade 3-4	2	
Acute Esophagitis	-	
Grade 1-2	17	
Grade 3-4	1	
Acute Pneumonitis		
Grade 1-2	1%	
Grade 3-4	-	

Medical Oncology:

The Medical Oncologists attended to 2211 new lung & esophageal cancer patients.

Survival

Considering all stages together and regardless of treatment received, the median overall survival of Lung cancer and Esophageal cancer patients in this cohort were 18 months and 15 months respectively; one-year OS were 60% and 57% respectively.

Research

Total Number of Clinical Trials		Completed Trials	
Investigator Initiated + Thesis	Industry Sponsored	Investigator Initiated + Thesis	Industry Sponsored
86	25	14	08

There were **65** publications by the DMG members.

Uro-Oncology

Till 11.07.2021

Convener, Dr. Amit Joshi (Medical Oncologist); Secretary, Dr Vedang Murthy (Radiation Oncologist). From 12.07.2021 Convener, Dr Vedang Murthy; Secretary, Dr Santosh Menon (Pathologist).

To sustain the increasing workload with increasing cases and to minimize the waiting period at all stages of the consultation, the DMG conducted four clinics in a week.

Teleconsultation services became popular and more than 1000 patients availed of the same.

The year 2021 attended to 2133 new patients and provided expert second opinion to almost 1200 patients.

	2016	2017	2018	2019	2020	2021
New General	1271	1373	1466	1493	690	1358
New private	942	1190	1232	1309	753	775
Total	2213	2563	2698	2802	1443	2133
Follow-up	14,000	16,000	18,256	20,091	30,560	30,729
Second Opinion	628	667	717	503	465	1194
Teleconsults	-	-	-	-	310	1038

Volume Indicators

Patient compliance to treatment was 75%; 25% dropped out before treatment.

Surgical Oncology:

A total of **589** major and 2981 minor surgical procedures were performed.

Total Major Surgeries, 589		
	Radical nephrectomy	84
	Open	57
	Laparoscopic	24
	Robotic	03
Renal Tumors	Nephron sparing surgery	53
	Open	25
	Robotic	28
	Excision of renal fossa recurrence	02
	Nephroureterectomy	13
Upper Tract tumours	Open	05
Upper Tract tumours	Laparoscopic	04
	Robotic	04
	Radical Cystectomy	55
	Open	47
	Laparoscopic	06
	Robotic	02
Bladder tumors	Ileal conduit	51
	Neobladder	02
	Cutaneous Ureterostomy	02
	Partial cystectomy	01
Prostate Cancers	Radical Prostatectomy	24
PIUSIALE CANCERS	Robotic	24
Scrotum surgery	Scrotal orchiectomy	61
Penile Cancers	Partial penectomy	01
	Total penectomy	03

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	Partial penectomy + Groin Node Dissection (GND)	31
	Total penectomy + GND	05
	Glansectomy + GND	03
	Wide local excision	03
	GND	15
	Circumcision	03
	High inguinal orchidectomy	44
Testicular tumors	Retroperitoneal Lymph Node Dissection	46
	Adrenalectomy	13
Adrenal	Open	07
	Lap	06
Laparoscopic Urology		40
Robotic Urology		58
Endosconia Urology	Transurethral Urinary Bladder Resection	116
Endoscopic Urology	Channel TURP	13

Radiation Oncology:

- Total Number of Patients in RT OPD: 3950
- Total No of Patients in RT OPD (Private): 1154
- Total No of Patients in RT OPD (General): 1029
- Total no of patients in RT OPD (ACTREC): 728.
 - Follow-up: 2911; Referrals: 125; Review: 478.
 - New files registered: 235; 2nd Opinion: 54.
 - Radiotherapy (RT) Compliance: 95.
 - Drop-outs: 5%; Referred outside: 47.
 - Total number of patients treated with RT: 551.

Type of cancer	Intent of treatment	Number of patients (TMH)	Number of patients (ACTREC)	Total
Renal Cancer -	Radical	04	04	08
Renal Cancer	Palliative	44	10	54
	Radical	30	33	63
Urinary Bladder Cancer	Palliative	48	20	68
	Radical	73	63	136
Prostate Cancer	Palliative	132	34	166
	Radical	07	03	10
Penile Cancer	Palliative	8	-	08
-	Radical	04	10	14
Testicular cancer	Palliative	05	-	05
0.1	Radical	09	-	09
Others -	Palliative	10	-	10
Total Radical		127	113	240
	Total Palliative	247	64	311
	Grand Total	374	177	551

Uro-Oncology Patients by sub-site and Intent of treatment

Total Radical Radiotherapy: 240

- Number of Patients treated with IGRT: 91
- Number of patients treated with SBRT/SRS: 86
- Number of patients treated with Adaptive RT: 63.

Medical Oncology:

Total number of new patients seen: 297 Total number of patients visits: 13,254.

Complications

Surgical Oncology:

<u>30-Day Complications</u> Surgical complications as per Clavien Dindo (CD) system:

CD Score	Rate
I	10.35 %
II	4.98 %
III A	6.73 %
III B	4.1
IV	1.01 %
V	0.51 %

Radiation Oncology:

RTOG acute Genito - urinary (GU) toxicity	Non TURP (n=50)	TURP (n=50)
Grade 1	21 (42%)	11 (22%)
Grade 2	04 (8%)	02 (4%)
Grade 3	-	01 (2%)
Grade 4	-	-
RTOG late GU toxicity		
Grade 1	13 (26%)	05 (10%)
Grade 2	03 (6%)	04 (8%)

Grade 3	01 (2%)	01 (2%)
Grade 4	-	01 (2%)
Stricture (CTCAE v 4.0)		
Grade 1	-	01 (2%)
Grade 2	02 (4%]	02 (4%)
Incontinence (CTCAE v 4.0)		
Grade 2	-	02 (4%)
CTCAE v 4.0, Common Terminology for Common Ad RTOG, Radiation Therapy Oncology Group; TURP , Transurethral Resection of Prostate.	verse Events version 4.0	;

Medical Oncology:

Renal Cell Carcinoma: 81	%
Grade 3/4 Hand-Foot Syndrome	26.4
Grade ¾ Hypertension	27
Hypothyroidism	7.2
Severe Cardiac Dysfunction	4
3+ Proteinuria	14.2
Fatigue	31
Grade 3 Diarrhea	19.3
Grade 3/4 Mucositis	31

Prostatic Cancer: 160	%
Grade 3/4 Fatigue	21.7
Grade 3/4 Anemia	11
Grade 3/4 neutropenia	14.4
Grade 3/4 Thrombocytopenia	3.6
Febrile Neutropenia	6
Grade 3/4 Diarrhea	10.8

Testicular tumor: 153	%
Grade 3/4 Hematologic toxicity (Colony-Stimulating Factor given)	44 36
Febrile Neutropenia	30.4

Morbidity & Mortality

Surgical: 30-day Mortality rate: 0.51%.

Medical Oncology:

30-day mortality for Testicular Tumors, 3%.

30-day morbidity

Cancer Site	% of patients
Cancer Testis	30.4
Renal Cell Carcinoma	26.4
Prostate cancer	27.1

Survival Rates

2-year Overall Survival for:

Seminoma: 94.9% Non-Seminal Germ Cell Tumour: 95.4%.

18 month Overall Survival:

Metastatic Castration Resistant Prostate cancer patients receiving palliative chemotherapy: 57.3 %.

Type of cancer 5-year overall survival		
Droctoto concor	High risk	85%
Prostate cancer	Intermediate risk	90%
Bladder cancer with Chemoradiotherapy		65%
Bladder preservation rate		84%

Organ	Survival (in months)	
Metastatic Penile cancer patients receiving palliative chemotherapy	Median OS	10.6
Metastatic Renal Cell Cancer patients receiving TKIs in first line	Median OS	22.6
Metastatic Renal Cell Cancer patients receiving TKIs in second line	Median OS	6.2

Research

Total number trial		Completed Trials		Ongoing Trials		Overall Patients
Investigator Initiated	Sponsor Initiated	Investigator Initiated	Sponsor Initiated	Investigator Initiated	Sponsor Initiated	Accrued
82	08	28	01	47	07	1600

Sections



Dermatology



Optometry



Neurosurgery



Psychiatry



General Surgery



Hematology



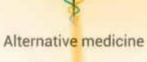
Orthopedics



Ophtalmology

Biochemistry

Obstetrics







Radiology



Geriatrics





Virology



Plastic Surgery



Pediatrics

Anaesthesiology, Critical Care & Pain

Head, Dr Jigneeshu Divatia.

The Department of Anaesthesiology, Critical Care and Pain at TMH, Mumbai and ACTREC included the Anaesthesia services, the Division of Critical Care, and the Division of Pain. The department consisted of 30 permanent staff and one Ad-Hoc consultant. There were 48 senior residents 49 post-graduate students.

The departmental staff in addition, also offered similar services to other cancer hospitals under TMC at Vizag, Sangrur, Mullanpur and Varanasi.

Service

The department provided the following services:

Anaesthesia:

Anesthesia services (under general anesthesia) were offered at thirty (30) locations in the hospital. In addition, the department conducted pre-anaesthesia check-up clinics. The high-risk surgical patients were discussed in the respective Disease Management Group's meeting.

Critical Care:

The Critical Care team managed the 14 bedded ICU, the 9 bedded SICU, and the 29 PACU beds. Patients admitted with Covid-infections at various locations were also managed by the team. A dedicated Cardio-Pulmonary Resuscitation (CPR) team was always on standby.

Pain:

There were separate clinics for patients with Acute and Chronic pain.

	January to December 2020	January to December 2021
	Tata Memorial Hospital (TMH)
Anaesthesia Services		
Elective Major OT	5418	7783
Emergency cases	584	816
Minor OT cases	1925	3044
Bone Marrow OT cases	1636	2053
Radiotherapy OT cases	796	997
Paediatric radiotherapy cases	1192	1142
CT scan and Interventional Radiology cases	440	471
MRI	117	281
GI endoscopy	607	1123
Pre-anaesthesia check-up	Total: 10,046	Total: 13,784
General patients	8212 (new) + 1834 (follow-up)	10,763 (new)+ 3021 (follow-up
	Total: 4957	Total: 6982
Private patients	3926 (new) + 1031 (follow-up)	5467 (new)+ 1515 (follow-up)
Critical Care services		
ICU admissions		
Total	1342 (969 ventilated)	2016 (790 ventilated with 3161 ventilator-days)
First Floor ICU	552 (333 ventilated)	1109 (547 ventilated with 1656 ventilator-days)
Surgical ICU	790 (636 ventilated)	863 (331 ventilated with 1438 ventilator-days)
Recovery Room admissions	6206	7727
Total ICU + Recovery Room admissions	7548	9743
Dialysis	396 sessions (127 patients)	457 sessions (181 patients)

Pain Services		
Patients seen by Acute Pain Services	2678	3517
Chronic Pain OPD		
General patients	Total: 4296	Total: 6344
	2141 (new) + 2167 (follow-up)	3127 (new) + 3217 (follow-up)
Private patients	Total: 1495	Total: 2577
	775 (new) + 720 (follow-up)	1122 (new) + 1455 (follow-up)
Interventional procedures for pain	34	37

[CT, Computed Tomography; GI, Gastrointestinal; ICU, Intensive Care Unit; MRI, Magnetic Resonance Imaging; OT, Operation Theatre; PACU, Post Anesthesia Care Unit; SICU, Surgical Intensive Care Unit.]

Significant Quality Achievements of the department:

The department provided several services in 2021 during the Covid-19 pandemic. The entire first floor ICU was converted into a Covid-ICU and during the surge of Covid-19 patients in the second wave, a new Covid-ICU with an additional 9 beds was opened. Despite the second Covid-19 wave from February to August 2021, there was no curtailment of services and work was almost at the pre-pandemic level. Besides manning the Covid ICUs and wards at TMH and ACTREC, the Department provided services to the Covid-userds and in the Fever OPDs. Several members of the department were part of the Covid-19 action group created to streamline management during the pandemic.

Quality indicators

Pain group:

New service initiatives introduced in 2021:

- Paperless Acute Pain Service (APS): web based data entry for both acute pain services and Pain clinic and tablets for data entry on APS rounds for direct online data entry
- Brief Pain Inventory (BPI) questionnaire was introduced to pain clinic, administered to patient by Pain nurse (to assess the Pain severity and interference with daily function)
- Witnessed a shift towards an increase in fascial plane blocks for postoperative pain management
- A Satisfaction survey continued to demonstrate that over 90% patients were satisfied with pain management provided by the APS.

Chronic Pain Clinic:

- 75% prescriptions adhered to the WHO Guidelines
- 52% patients had more than 50% pain relief, 28 % had 30–50% pain relief and 20% had less than 30% pain relief.

Paediatric anaesthesia group:

Four hundred forty-two (442) procedures were carried out on 415 pediatric patients. The ICU mortality was 0.48% and, the hospital mortality was 1.7%.

Thoracic anaesthesia group:

The thoracic anaesthesia group provided anaesthesia for 568 elective cases, including 169 esophagectomies with 29% major morbidity and 2.3% crude mortality and 231 lung resections with 21% major morbidity and 2.4% mortality.

Hepato-Pancreato-Billiary anaesthesia specialty group:

The group provided anaesthesia for 760 elective GI surgical procedures. 343 patients were evaluated in the high risk joint clinic, 338 (98.5%) patients were given fitness for surgery and 202 patients got operated with 22% major morbidity and 2.1% mortality.

Research

A total of 102 investigator initiated research projects were ongoing or completed in 2021. Project discussion meetings were held at regular intervals where investigators discussed the planned projects in the department before submission to the Ethics committee. The departmental members served on the Institutional Ethics Committee and the Data and Safety Monitoring Sub-committee.

Ongoing projects at other centres: Varanasi, 2; Sangrur, 5; and Vizag, 3.

A total 18 out of 80 book chapters in "Comprehensive Clinical Anaesthesia" were authored by the consultants of Department of Anaesthesia, Critical care and Pain of Tata Memorial Hospital, Mumbai.

Staff Achievements

JV Divatia:

- Life time achievement award from Pune Regional Anaesthesia Society (PRAS)
- President, Society of Onco-Anaesthesia and Perioperative Care (SOAPC).

Atul P Kulkarni:

• Editor-in-Chief, Indian journal of Critical Care Medicine.

Sheila Nainan Myatra:

- Elected as President Elect 2022 of the Indian Society of Critical Care Medicine (ISCCM)
- Appointed Council Member on the Asia Pacific Sepsis Alliance (APSA)
- Appointed Chair of the Intensive & Critical Care Medicine Committee (ICCCM) committee World Federation of Societies of Anaesthesiologists (WFSA).
- Appointed member of the Surviving Sepsis Campaign Guidelines Committee lead by the Society of Critical Care Medicine (SCCM) and European Society of Intensive Care Medicine (ESICM) to draft updated International Guidelines for the Management of COVID -19 patients in the ICU
- International Airway Management Society (IAMS) Education Award 2021
- Appointed as Associate Editor of Anaesthesia
- Appointed as Associate Editor of Canadian Journal of Anaesthesia
- Appointed as Associate Editor ofIndian Journal of Anaesthesia.

Jeson Doctor:

• West Zone Member of All India Difficult Airway Association (AIDAA).

Sohan Solanki:

- Governing Council Member of Society of Onco-Anaesthesia and Perioperative Care (SOAPC)
- Governing Council Member of All India Difficult Airway Association (AIDAA).

Sudivya Sharma:

- Fellowship in Paediatric Intensive Care from Great Ormond Street Hospital for Children, London
- Awarded European Diploma in Paediatric/Neonatal Intensive Care (EPIC).

Dental & Prosthetic Surgery

Head, Dr. KP Dholam (till 31.03.2021); Dr Sandeep Gurav (from 01.04.2021).

The Dental and Prosthetic Oncology department was an integral part of the Head & Neck Disease Management Group (DMG). The department provided specialized dental oncology services consisting of pre/peri-treatment dental management of patients undergoing radiotherapy and chemotherapy to eradicate oral foci of infection and to restore optimum oral hygiene. The Maxillofacial prosthetic services were offered to rehabilitate acquired intra-oral and/ or, extra-oral defects which could result from ablative cancer surgery.

	Dental Consultation & Procedures	Prosthetics Services
Year 2020	8985	857
Year 2021	16970	1289

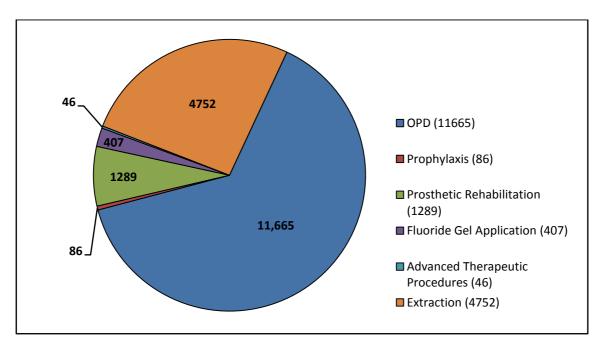
The department incorporated recent advancements in Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) technology and 3D printing in the work-flow that improved patient care. In the year gone by, a close liaison was developed with the 3D printing lab at ACTREC to utilize digital technology during prosthetic rehabilitation in indicated patients. In year 2021, the Department started a dedicated 'Dental Implant Clinic' twice weekly.

Service

In the year 2021, a total of 11,665patients received consultation in private and general outpatient services. Dental oncology services included extraction of infected, symptomatic teeth in 4,752 patients, prophylactic fluoride gel application in 407 patients, oral prophylaxis in 86 patients and other general dental procedures such as restoration/root canal treatment in 14 patients.

The department also provided maxillofacial prosthetic rehabilitation in 1,289 patients. Seventeen (17) patients received extra oral prosthesis while 1,272 patients were rehabilitated with intra-oral prosthesis such as; maxillary obturators (274), guide-bite prosthesis (481), occlusal guard (417), complete/ partial denture (53), implant-supported denture (25), tongue prosthesis with/without palatal augmentation prosthesis (7), and other miscellaneous prosthetic procedures (15).

Advanced therapeutic procedures such placement of osseointegrated implants (19), medical ozone therapy (18), and platelet-rich fibrin therapy in medication-related osteonecrosis of jaws/dental implants /extraction sockets (9) were carried out in indicated patients.



Education

The department conducted fellowship training program in oral oncology and maxillofacial prosthetics. The departmental members organized and conducted training and informal teaching sessions in dental oncology and maxillofacial prosthetics for observers from surgical and radiation oncology; and members from dental colleges. There were also annual structured teaching programs, lectures and seminars for students of physiotherapy, occupational therapy, speech therapy, nursing and Kevat patient navigation program. The staff members also participated in dissemination of specialty-related knowledge in the form of invited lectures and/or conferences.

Research

Research activities in the department included three projects focused on obtaining answers to common problems seen in our outpatient services. There were two cross-sectional studies, one aimed at analyzing factors affecting quality of life in Medication Related Osteonecrosis of Jaws (MRONJ) and other aimed at assessing outcome of corrective measures for tissue hypertrophy around dental implants placed in free-fibular grafted jaws. In addition, a retrospective study was initiated to assess the scope to re-classify Stage II MRONJ.

Two research projects were completed during the year. These included a pilot study to evaluate the effect of leukocyte platelet-rich fibrin on healing of MRONJ and another prospective observational study on oral health status in head and neck cancer patients undergoing neoadjuvant chemotherapy.

Publications in peer reviewed and PubMed indexed journal: **07** International and national conference presentations: **07**

Staff Achievements

Dr Sandeep Gurav:

- Received 'best paper' award in faculty session at 49th National conference of Indian Prosthodontic Society held on 02nd December 2021
- Invited faculty at 'Intraoral Maxillofacial Prosthetic Workshop' at Dr. Hedgewar Smruti Rugna Sewa Mandal's dental college and hospital, Hingoli on the occasion of National Prosthodontist Day on 22nd January 2021
- Mentor for Pre-conference course, titled 'Fabrication of guide-bite prosthesis: Our role as maxillofacial prosthodontist in early rehabilitation of mandibulectomy defects', at 49th National conference of Indian Prosthodontic Society held on 02nd December 2021
- Jt Secretary cum Treasurer for Association of Dental and Prosthetic Oncology
- Organizing committee member at 13th Biennial Conference of International Society of Maxillofacial Rehabilitation hosted by Indian Prosthodontic Society between 6th – 7th February and 13th – 14th February, 2021.

Dr Gurkaran Preet Singh:

- Invited faculty at 'Intraoral Maxillofacial Prosthetic Workshop' at Dr. Hedgewar Smruti Rugna Sewa Mandal's dental college and hospital, Hingoli on the occasion of National Prosthodontist Day on 22nd January 2021
- Presented a paper at 13th Biennial Conference of International Society of Maxillofacial Rehabilitation hosted by Indian Prosthodontic Society between 6th – 7th February and 13th – 14th February, 2021
- Mentor for Pre-conference course, titled 'Fabrication of guide-bite prosthesis: Our role as maxillofacial prosthodontist in early rehabilitation of mandibulectomy defects', at 49th National conference of Indian Prosthodontic Society held on 02nd December 2021.
- Secretary of Association of Dental and Prosthetic Oncology (ADPO).

Digestive Diseases & Clinical Nutrition

Volume

DMG	Pvt-New	Pvt-Old	Gen-New	Gen-Old	Total
Breast	236	315	89	624	1264
BST	48	91	73	175	387
GI	813	2517	259	2868	6457
GYN	168	350	99	363	980
HNC	554	1617	353	4010	6534
Hemat	8	8	7	4	27
Neuro	14	44	48	159	265
тн	366	902	118	1046	2432
Uro	134	213	60	327	734
Total	2341	6057	1106	9576	19080

Engineering Department

Chief Engineer (TMC), Mr. GS Dhanoa.

The principal objective of Engineering Department was to maintain & upgrade the hospital infrastructure and engineering services for uninterrupted functioning of the hospital.

The department provided Civil & Public Health, Electrical, Mechanical, Heating, Ventilation & Air Conditioning (HVAC), Communication Network & Electronic Private Automatic Branch Exchange (EPABX) system, Audio Visuals & Public Address system, Closed Circuit Television (CCTV), Pneumatic Tube transport system, Elevators & Escalators, Medical Gas Pipeline Systems (MGPS), etc services under one roof.

In the challenging circumstances during Covid-19 pandemic, the department continued maintaining the services & infrastructure in good working condition.

Some of the works completed in the year 2021 included:

- Augmented power supply at Golden Jubilee Block (GJB) electrical substation
- The new Pharmacy in GJB ground floor
- Installation & commissioning of the Oxygen generator plant in GJB
- GJB basement, Digital radiography room
- Upgradation of GJB elevators
- New Outpatient areas of GJB 5th floor
- New day-care on GJB 7th floor
- Upgraded TMH fire Hydrant system
- Day-care in Main building converted to Covid ward on 5th floor
- Chemotherapy ward renovated on 12th floor of Annex building

In addition to managing the TMH infrastructure, the Department was coordinating following Hospital Projects of TMC:

Mumbai, Maharashtra:

- Construction of Dharamshala & Doctors quarters A wing, at plot no. 3/330, Parel (The building virtually completed; Occupation Certificate awaited.)
- Construction of Dharamshala & Doctors quarters B wing, at plot no. 3/330, Parel (Building was expected to be completed by May 2023.)
- Construction of Hospital building, at plot no. 3/330, Parel (Except Commencement Certificate, all other statutory approval to commence the construction was obtained. Tender invited and work will be awarded on getting approval from DAE.)
- Redevelopment of TMC Staff Quarters at Mulund and Chembur, Mumbai (The proposal for Redevelopment of TMC Staff Quarters at Mulund submitted to DAE; approval was awaited.)
- Extension of Borges Memorial Home, Bandra, Mumbai (The vertical extension of West wing completed; Up-gradation of East Wing was under progress.)
- Advanced Centre for Treatment, Research & Education in Cancer (ACTREC), Navi Mumbai (Construction of the Hematolymphoid, Women & Children Cancer Wing; and of the Radiological Research Unit (RRU) almost completed; process to obtain Occupancy Certificate initiated 2022. Construction of support facilities building for Hadron Beam Therapy was completed).

Homi Bhabha Cancer Hospital & Research Centre (HBCHRC) in Mullanpur village of Mohali District, Punjab:

- The total built up area of the project was 40,545 Sq.mt. comprising Hospital Block, Doctor's Hostel, Nurse's Hostel, Dharamshala for patients & and Service Block
- The construction of Hospital Building comprised OPD, Day Care Wards, In patient Wards, ICU, BMT Wards, CSSD, Minor & Major O.T's, Pharmacy, Radiological Investigation block with MRI, Digital X-Ray, Ultra Sonography, Mammography, PET-CT, SPECT- CT, Radio Nuclide Wards, Laboratories, Radiotherapy block with True Beam Leaner Accelerator, CT Simulator, Brachytherapy, etc. The soft launch of the Hospital with OPDs, Day Care Wards, Emergency/Casualty area, Radiological investigations services & Radio Therapy Treatment was likely to be commissioned shortly

• The other blocks viz. Nurses Hostel, Doctors Hostel, Dharamshala and external development works round Hospital Building are at final stage of completion. The Service Block work was in progress.

Mahamana Pandit Madan Mohan Malviya Cancer Centre, Varanasi, Uttar Pradesh:

• The work of Residential quarter at MPMMCC was completed and occupied for usage. Hostel and Dharamshala works were expected to be completed by august 2022.

Homi Bhabha Cancer Hospital & Research Centre, Muzaffarpur, Bihar:

- The main hospital building was planned as Ground + 4 upper floors structure with built-up area equal to 19,557.69 Sq.mt . RT Block was planned as Gr. + 1 upper floor structure with approx built-up area 5667.91 Sq.mt.
- The construction of the boundary wall and main entrance work by CPWD was under progress. Construction of modular Cancer Hospital was completed through CSR initiative
- Tender for the Construction of HBCH&RC, Muzaffarpur Bihar was floated and under process for award of work
- Environmental clearance for the said project is granted by SEIAA (State Environment Impact Assessment Authority) on 31/12/2021.

Homi Bhabha Cancer Hospital & Research Centre, Visakhapatnam, Andhra Pradesh:

- This was an Establishment of "100 Bedded Cancer Hospital" with a built-up area of approx. 36,700 Sqm. The premises consist of RT-Block, Hospital Block, Registration block, Service block, Dharamshala Block, Cafeteria block, Doctor's & Nurse's Hostel
- The RT Block consists of Two Linear Accelerator, PET CT, SPECT CT, MRI, CT Scan, X-Ray, Ultrasound, and Tele cobalt which were completed installation and available for patient's services.
- Part of the hospital building was handed over in which OPD, Day Care with allied facilities commissioned for patient services. Interior works of Operation Theatre work tendering was refloated and under scrutiny for award of work. SITC of Medical Gas Pipe Line System was in progress and SITC of Pneumatic Tube system tube lying completed. EPABX system commissioned.

- Registration Block, Service Block, Dharamshala, Doctors and Nurses Hostel were completed and Occupation Certificate from AP Fire Dept. was obtained.
- The hospital was expected to commission in full-fledged capacity by the end of July 2022.

Strengthening/Renovation/Refurbishing/Retrofitting work at Dr. B. Borooah Cancer Institute, Guwahati, Assam:

The financial sanctions for the project received vide office order 1/3(5)/2019/TMC/R&D-II/2488, Dated: 19/02/2020 and the Architect was appointed for renovation/refurbishing/ retrofitting works vide office order TMC/CE/PRI/ARCH-BBCI/Retrofitting/2021-22/LOI/09, Dated: 30/04/2021 at BBCI. The structural report was obtained dated 06/08/2021 from Assam Engineering College, by the Architect through Department of Civil Engineering and user mandate was being finalized for preparing concept drawings.

Construction of an Ancillary Building at Dr. B. Borooah Cancer Institute, Guwahati, Assam:

The financial sanction for the project received vides office order 1/3(5)/2019/TMC/R&D-II/2488, dated 19/02/2020 and the Architect was appointed for Construction of an Ancillary Building vide office order TMC/CE/PRI/BBCI/Arch_Ancillary/2021-22/WO/20, Dated: 16/11/2021 at BBCI. The building was planned as Ground + 7 upper floors structure with built-up area equal to approx. 10354.2 Sq.mt (plinth area = 1281.4 Sq.mt approx.). The user mandate was being prepared in consultation with user department.

General Medicine

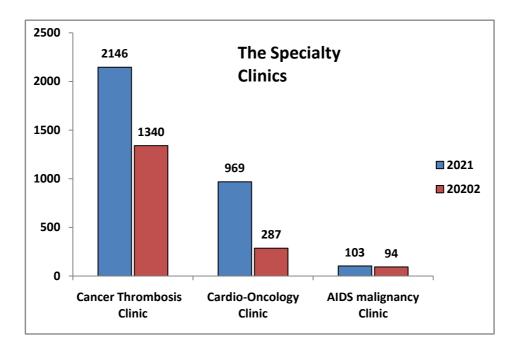
Head, Dr. SP Sawant.

Service

The department provided both outpatient and inpatient (ward and ICU) consultation services for management of medical co morbidities of patients undergoing surgery, radiotherapy and chemotherapy. Diagnostic services of ECG, 2Dechocardiography (OPD basis and portable) and Pulmonary function tests services were provided. Apart from management of common medical comorbidities, the department also developed the cardio oncology services that were an important upcoming subspecialty that catered to the cardiovascular care of cancer patients. In addition an important service run by the department was the cancer thrombosis clinic.

In 2021, in spite of the second wave of COVID pandemic, all the services especially Pulmonary function test and echocardiography were continued with all the necessary precautions as per guidelines. Teleconsultation were also offered. The first of its kind weekly Cardio oncology Joint clinic was started with KEM Hospital cardiology team.

	2017	2018	2019	2020	2021
Consultations (new and FU)	14400	14600	14640	8670	15,502
Echocardiography	11562	12383	12449	7429	9663
Pulmonary Function Test	4264	4968	5125	1375	2510
Electrocardiography (ECG)	38584	40752	41179	21932	34,654



The Cardio-Oncology Clinic was the first initiative of its kind in India. It was started in the year 2012 and cardiologists from KEM Hospital, Mumbai were also active participants.

Education

The departmental medical staff were trained to teach basic life support and advanced cardiac support to the faculty.

The Asia Cardio-Oncology Society was founded by Drs Sheela Sawant & Anuprita Daddi.

Research

Audit was performed on Direct Oral Anticoagulants (DOAC) in Cancer Associated Thrombosis (CAT) and Cancer treatment-induced cardiac dysfunction.

Extracurricular:

Dr Anuprita Daddi participated in the Mrs India Galaxy Beauty Pageant conducted by Vibrant Concepts in Delhi, and won the Title of Intellectual.

Staff Achievements

• Dr Sheela Sawant and Dr Anuprita Daddi have been certified in Cardio-oncology by the International Cardio oncology society, North America.

Information Technology

Head, Mr. VN Marathe.

The Information Technology (IT) Department played a pivotal role in the day-to-day functioning of the hospital in all the three major areas viz. Service, Research, Education. IT Department developed a comprehensive integrated Hospital Information System (HIS) to effectively manage clinical, financial and administrative aspects of the hospital. The HIS was User-friendly most of the modules were web-enabled. New features and functionalities were continuously added to cater for ever changing user requirements. The HIS ran 24x7 on IBM power Server with DB2/400 Relational Database Management System. It had High Availability & Disaster Recovery features. Patient Electronic Medical Records were available on intranet as well as internet. HIS has Comprehensive coverage of all hospital functions having integration with external systems like PACS, Lab Auto analyzers, Bar Code, Smart Card, Kiosk, Computer on Wheels etc. HIS enabled modules were to be implemented in a phased manner, providing for greater flexibility to meet our needs while protecting investment and minimizing the impact of change.

Service

During 2021, many applications were developed which enabled for better care to patients by the staff. Software Development, Software Maintenance, Hardware Maintenance, Network monitoring & supervision, User training, Various trouble shooting procedures, solving day-today user problems, data analysis, conducting meetings with users etc. were the major departmental activities.

The list of recent activities:

- Surgical Pathology Module (IHC Register)
- Gate Pass System
- Nutrition Module
- ONLINE Patient Registration facility from TMH, Parel or Outside the Hospital
- Development and Death Form and uploading Death Certificate
- Consent Form Scan System
- MP-QAP System

- ECG Report Entry Modified
- PFT Image Scheduler
- Online Payment for Smart Card & Trust Deposit
- Microbiology New Report Incorporated
- JC Application
- Canister Scan Application Developed
- Biochemistry Sample receiving screen Developed
- Tumor Marker Modality Report Changed
- Transfusion Medicine Changes Incorporated
- Request
- PAC-Registry (Pregnancy Associated Cancer Registry)
- Project Management System
- EQAS (External Quality Assurance Services)
- IHC Register
- Staff Covid Vaccination
- Teleconsulting Application
- PICC and Casualty Appointment System
- Vendor and Item Master Transfer to all org.
- Vaccination Software
- Asset Management System with asset into Asset transfer
- Sale counter Module Changes
- Donation Changes for Enac (Monthly and Yearly Donation)
- MSW Notes entry and allotment of accommodations to patient
- File Tracking System
- Deputation Leave
- Patient Data Posting

Education

Training was given to Nurses on computer concept, Hospital Information System, Microsoft Office and IT related topics. Laboratory Staff was trained to use Diagnostic Information System effectively.

Research

Data Analysis was regularly done for Clinical Information System, Patient Administration, Billing and Receipting System, Radiology Information System, Nuclear Medicine System, Operation Theatre Module, Radiation Oncology Information System etc. that provided data for Clinical Research.

Library Sciences

Head, Dr Deepali Kuberkar.

The TMH library had a seating capacity for 45 users inclusive of computer cell facility. During the period to avail this facility, about 39 users per day visited the library for reading or for the use of computer cell for literature or other information queries. To cater to the information need of the bona fide users including trainees, students and faculties (about 1500), the library offered a collection of about 8400 books, 22,000 bound volumes, and more than 1100 theses, dissertations and CDs. The library subscribed to about 150 journals, of which about 70% were also available in e-format. Some of the important medical databases viz. BNF (British National Formulary), TNM (Tumor, Neoplasms and Metastases), Cumulated Index to Nursing and Allied Health Literature (CINHAL) along with Nursing reference Centre (NRC) Plus were subscribed. Also to help clinical decision making process a bit easier, UpToDate database was made available under Homi Bhabha National Institute (HBNI) funding. Besides these, the end users benefited from having access to the online content on Ovid, Springer, Cambridge platforms. In addition, the library was an active member of the DAE-Science Direct consortia. With the objective to maximize the utilizations of these resources the library continuously offered onsite and remote access facilities to the members.

Gradually and steadily, the library overcame from the shadows of the pandemic. This observation was reflected in terms of circulation data which was raised to 1,206 items (566 items were borrowed and 636 were returned to the library). In the publication dimension during the period, TMH staff contributed 688 articles. This reflected the effective utilization of the library facilities. Furthermore, as document delivery activity, the library provided a total 899 of 1,036 articles request to the users with almost (87%) request met. Library provided reprography facilities including offset printing in selective manner. To continuously offer this service one new reprography machine viz. Canon IRAdvDX4751 was purchased and hence, for a total of 2686 requests, the library provided about 16 lacks copies.

Besides library orientation programs for the benefit of the new entrants, one-to-one hands on instructions for the effective utilization of library resources was an ongoing activity. In addition, the library team helped the end-users by way of attending telephonic and email requests. Maintaining staff publications was also an ongoing activity. The J-*Watch* (Journal Watch) facility was introduced during the period by way of periodically identifying some of the useful articles and for which senior faculties had coined their views and comments. The library continued to serve as the hub for various information activities.

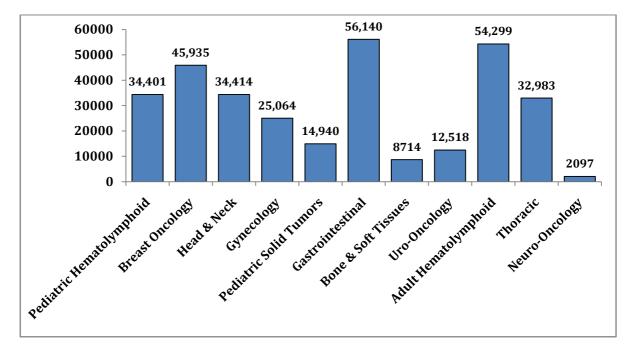
Medical Oncology

Head, Dr Kumar Prabhash.

Systemic therapy remained the backbone in every phase of cancer treatment of a patient. Hence, medical oncology continued to evolve in every aspect of cancer care. Last couple of years, there has been increased access to immunotherapy and targeted therapy. The Covid-19 pandemic affected cancer cares globally–the delivery of chemotherapy especially in adjuvant/neoadjuvant settings that can compromise the long term outcome. The Covid-19 isolation ward played a critical role in this regard; all cancer patients with covid-19 infections referred to the department were easily managed. Patients on curative intent treatment received chemotherapy inside the isolation ward. Almost 800 patients were managed in the Covid-isolation ward during the second and third wave of the pandemic.

Service

The departmental staff attended to **25,200** new patients in the year 2021. There were 13,400 inpatients admissions and 68,695 day-care admissions. The outpatient and casualty attended to 199664 patients. The faculty staff of 37 was organized into 11 working groups and 15,865 procedures were performed in the Minor OT which included bone marrow aspirations and biopsies, lumbar punctures, intrathecal injections, tapings (pleural, ascitic, etc.). The ACTREC solid tumour OPD began from year 2021 and resulted in increased footfalls of patients in ACTREC.



Out-patients categories in Medical Oncology

Newer Initiatives:

A weekly paediatric Chronic Myelomatous Lymphoma (CML) Clinic was started

- A weekly Survivorship Clinic for Adolescents and Young Adults (AYA)
- A dedicated Rare Tumour clinic was started to make treatment decisions based on riskbenefit assessment and improving the access to newer drugs under patient assistant programmes.
- Molecular Tumour Board
- Expansion of Geriatric clinic. Widened the scope of services that benefitted this population with different physical, social and psychological needs
- New Blincyto Humanitarian Access program (BHAP)–In partnership with Amgen and St Jude, the BHAP programme was launched in paediatric hematolymphoid unit for free access to drug, Blinatumomab.

Education

Every year the Medical Oncology department trained nearly 100 doctors in the speciality, which included 64 DM (Medical Oncology) 12 DM (Pediatric Oncology), 3 Hemat-Oncology/ BMT/

Molecular Oncology fellows, 4 PhD students and many observers/fellows who come from other institutions across the country and even from African and SARCC countries. These trainees were provided with extensive hands-on training in the management principles of common cancers with systemic chemotherapy/targeted therapy/immunotherapy, adequate exposure and training in the research methodology, and actively involved in clinical trial conduct and recruitment of patients.

Additionally, the Department of Medical Oncology Molecular Laboratory was actively involved in academics, including training of DM students; running of PhD, fellowship, and preceptorship programs in Molecular Oncology.

The department had a very systematic and regular academic programme for its trainees which followed the pattern:

- 1. Core medical oncology subjects discussion on every Friday
- 2. Case presentation and tumour board discussions on 1st, 2nd and 3rd Saturdays
- 3. Research and statistics class on each 2nd Saturday.

There were six invited lectures, 14 case presentations, 20 tumor board case discussions, 45 core medical oncology topic lectures and 14 sessions on statistical methods.

Assessment in medical oncology was conducted using the Objective Structured Clinical Examination (OSCE) approach, once every 3 months on the topics covered during the academic classes of the preceding months. Also, the students doing the case presentation on Saturday were assessed for their performance, which formed part of ongoing student assessment, rather than a one-time exit examination.

Research

The department has its own state-of-the-art molecular laboratory that is involved in service, research and training activities. The laboratory develops new molecular and genomic tests, initially on research basis and once standardized and proven useful, was offered on service basis, to any needy patient across India at very affordable cost.

There were about 150 pub-med indexed publications by the staff that included many practice changing articles.

Most of the departmental members were on the Editorial Boards of most cancer related journals published from the country. Senior departmental members were also representatives on various prestigious scientific national committees like ICMR, DCGI, NCCP, DBT and DST.

Medical Oncology Molecular Laboratory

Officer in Charge, Dr Kumar Prabhash.

The Department of Medical Oncology-Molecular Laboratory, a state-of-the-art molecular laboratory was started in 2005, and was the first diagnostic laboratory in Tata Memorial Hospital (TMH) to perform molecular studies, to begin with Reverse Transcription Polymerase Chain Reaction (RT-PCR) and later Real-time Quantitative Polymerase Chain Reaction (RQ-PCR). The laboratory was the first to standardize and implement the Next-Generation Sequencing (NGS) test and liquid biopsy in diagnostics at TMH. The lab developed new molecular and genomic tests, initially on research basis and once standardized and proven useful, these tests were later offered on service basis not only to patients registered at TMH, but also to patients across the country at very affordable cost. Since 2019, the diagnostic services were transferred to molecular pathology, and the laboratory was focusing more on research, development and academics.

Service

Laboratory actively conducted weekly molecular tumor board in collaboration with medical oncology, pathology, and other clinical units to deliberate upon the molecular markers and therapeutic regimens for cancer patients.

Academics

Since 2016, the department was regularly conducting quarterly Preceptorship Program for Epidermal Growth Factor Receptor (EGFR) mutation analysis in Non-Small Cell Lung Cancer (NSCLC). From 2017 onwards, a one-year training program in molecular oncology that involved intense training in various PCR techniques and Next Generation Sequencing was conducted.

Academic training during 2021-2022: Faculty training: 1 faculty Molecular training program: 1 student Observer training: 9 students Classes for coursework: core course work for PhD, DM and MD students Dissertation training: 4 students The laboratory was involved in organization of various educational workshops and conferences. Various cancer genomics, computational biology, and clinical biology talks were delivered at international and national events organized/hosted by National Institute for Research in Reproductive Health (NIRRH), Cancer Research & Statistic Foundation (CRSF), SoMex, MS University, Mizoram University, Parul University etc.

Research

The various projects:

- A study of profiling genomic alterations in cancer patients
- Study to test the feasibility and proof-of-concept utility of liquid biopsy in disease monitoring and therapeutic resistance in lung and head and cancer
- Genomic profiling in Thyroid carcinoma: a detailed genetic study of various thyroid cancer subtype
- Collaborative study to evaluate the prevalence of EGFR mutation status in small cell lung cancer, molecular profile of EGFR resistance, cost-effective solutions for Osimertinib etc. was underway.
- A few pilot studies to explore Beta Adrenergic receptor in Bone & Soft Tissue, Wnt signaling pathway in Metronomic therapy, molecular characteristics of gallbladder cancer etc.
- Centre for Computational Biology, Bioinformatics and Crosstalk laboratory was designed and being established
- A collaborative initiative for Biotechnology Information System (BTIS) Distributed Infiormation Sub-Centre (Sub-DIC) project was funded by DBT for 5 years. The Lab will be providing scientific and human resources to establish and run the proposed BTIS facility.

Medical Physics

Head, Dr. RA Kinhikar.

The Department of Medical Physics has 29 Medical Physicists at TMH and at ACTREC (including 6 on contract) and other technical staff. There were 12 Medical Physics interns as well from BARC, Mumbai and BBCI, Guwahati in TMH and ACTREC. Preparing the specifications, procurement of Radiotherapy equipment, Commissioning, acceptance, dosimetry, periodic calibration& quality assurance, maintenance of imaging machines (simulator/CT Simulator), teletherapy & brachytherapy machines, treatment planning & dosimetry for treatment of radiotherapy patients, procurements of radioactive sources, looking after the radiation safety & protection of the staff/patients/public were some of the important tasks carried out by the department.

Service

The Department of Medical Physics worked in close association with Department of Radiation Oncology for radiotherapy of cancer patients and was actively involved in dosimetry, beam data acquisition of various Linear Accelerators, Telecobalt & brachytherapy machines. Planning & execution of advanced techniques like 3D Conformal radiotherapy (3DCRT) treatment with Multi-Leaf Collimator (MLC), Stereotactic Body Radiotherapy (SBRT), Intensity Modulated Radiotherapy (IMRT), Volumetric Modulated Arc therapy (VMAT), Image Guided Radiotherapy (IGRT) treatments were some of the advanced & skilled jobs carried out by department staff. The department kept abreast with the international standards of dosimetry by participating in International Atomic Energy Agency (IAEA)/World Health Organization (WHO) / Bhabha Atomic Research Centre (BARC) dose inter-comparison and many other clinical trial protocols like National Research Group (NRG)/Radiation Therapy Oncology Group (RTOG) / European Society for Radiotherapy & Oncology (ESTRO) etc.

There were total 06 Linear Accelerators, 02 Tomotherapy machines, 05 Telecobalt machines for RT treatment and 02 simulators (conventional and CT simulator) for treatment and planning of teletherapy. Brachytherapy patients were treated with Ir-192 HDR after-loading machine.

Calibrations, Quality Assurance, & Quality Audits maintenance of these teletherapy and brachytherapy machine, treatment planning & dosimetry, procurements of radioactive sources,

looking after the radiation safety & radiation protection of the staff/patients/public were some of the important functions carried out by the department.

The department was equipped with many advanced equipment like Treatment Planning Systems TPS (Eclipse, TomoPlan, Oncentra, i-Plan), high precision dosimeters & calibration instruments (DOSE1, Unidos, Tomoelectrometer), 3-D Water Phantom (Blue Phantom, scanner), Advance patient specific Dosimetry System (Octavius4D, MatriXX Evolution), TLD reader (Rexon), Film Dosimetry System (Omnipro), Gafchromic Film dosimetry system etc.

The department also advised other departments like Diagnostic Radiology, Transfusion Medicine, Tissue Bank, Bio-imaging and ACTREC (CRI) for their requirements of radiation protection, in-vivo dosimetry Quality Assurance (QA), source procurement & disposal as per AERB guidelines. The departmental staff were actively involved in Radiation safety, planning of RT rooms, equipment specifications etc for new centre's at Varanasi, Visakhapatnam & Mullanpur etc.

Education

The department conducted 2-year Advanced Diploma of Radiotherapy Technologist's that was recognized by Maharashtra State Board of Technical Education (MSBTE).

Medical Physics residents were inducted at Varanasi, Vizag and Sangrur from 2020.

Senior faculty was guides to PhD students from AERB, under HBNI.

Senior Medical Physicists also educate and trainee physicists, doctors, nurses, technologists & many visiting national and International Atomic Energy Agency (IAEA) trainees.

Research

There were many research projects initiated by the department in collaboration with the department of Radiation Oncology. The staff was involved in many IAEA projects. In addition, they were also involved in projects with CDAC for development of indigenous treatment planning systems. The Spatially Fractionated Radiation Therapy (SFRT) or GRID therapy project was in collaboration with IAEA. The projects for upcoming proton therapy were submitted to the competent authorities for consideration.

Future Plans:

The acceptance testing and commissioning with site preparation of Proton facility at ACTREC was ongoing and will soon be commissioned.

The department was involved planned in finalizing the treatment planning system & indigenous brachytherapy machine Kirknidon, in collaboration with BRIT.

The department was prepared to set up Radiotherapy machines at the present and soon to be commissioned new cancer hospitals across India.

Staff Achievements

Dr. RA Kinhikar:

- Committee by TMC with Gunma University (TMC-Gunma University Moonshot Meeting for Carbon Ion therapy) to discuss about the collaborative work plan for Carbon ion therapy
- National Project Coordinator (NPC) for IAEA project.



Head, Dr. SK Biswas.

The Department of Microbiology was successfully using newer technologies along with conventional microbiology for the accurate identification of hospital acquired infections and other microorganisms encountered by cancer patients.

Antimicrobial Susceptibility testing by Minimum Inhibitory Concentration (MIC) methods was started in April' 21 for all patients, thereby helping the clinicians to decide on when to start appropriate antibiotic as well as the dosage required.

Serum Beta-D-Glucan testing was also started in 2021 so that other invasive fungal infections caused by other than Aspergillus species could be detected.

Providing rapid and accurate diagnosis of viral infections using molecular diagnostic methods was a routine practice.

The diagnostic virology services were expanded to support the needs of patients with haematolymphoid malignancies and bone marrow transplantation. Syndromic panel testing for upper respiratory tract infections, lower respiratory tract infections and sepsis was started. Testing for SARS Corona Virus-2 was started in the month of April' 20 and was being continued in collaboration with Department of Surgical Pathology.

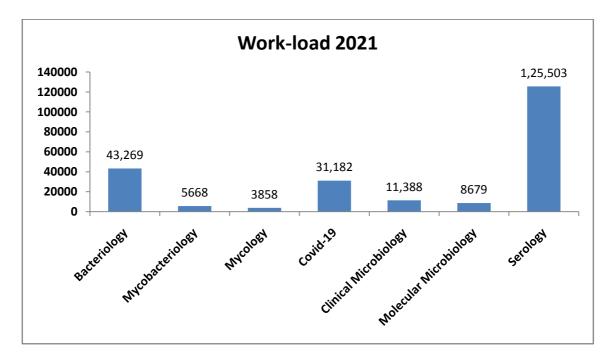
Clinical rounds in the critical areas and wards to monitor healthcare associated infections and bedside support for management of infectious complications, helped to optimize quality of services.

The department procured Mycobacteria Growth Indicator Tube (MGIT) system for rapid detection and recovery of Mycobacterium species. Standardization and validation process was completed and has been put in routine service.

Service

The total number of specimens processed was 2,29,547.

The compliance to turn around time was maintained with equivalence to the previous year.



Quality Indicators:

The department continued to be accredited by the National Accreditation Board for Laboratories for the second decade.

Education

The faculty was involved with the training of postgraduate students of the MD Microbiology program and the MD programs in Pathology, Transfusion Medicine and DM Critical Care Medicine.

The ongoing educational programs viz. Certificate Course in Hospital Infection Control was done this year but training technologists in laboratory biosafety and Infection Control, Nurses training, dialysis technicians could not be held due to Covid pandemic.

Research

The faculty continued to publish articles in national and international journals.

Staff achievements

Dr. SK Biswas continued to be zn Executive Council Member of Indian Association of Medical Microbiologists.

Nuclear Medicine & Molecular Imaging

Head, Dr Venkatesh Rangarajan

The department of Nuclear Medicine and Molecular Imaging performed the largest number of Positron Emission Tomography and Computed Tomography (PET/CT) diagnostic scans in India and Southeast Asia Cancer Hospitals. The department provided the service through three PET/CT scanners and one Single-Photon Emission Computerized Tomography (SPECT/CT) scanner. The required Radiopharmaceuticals were supplied by the Hospital radio pharmacy and Board of Radiation & Isotope Technology and other commercial Suppliers.

Service

The department Performed 20033 PET/CT scans using various Radiopharmaceuticals. It performed 5955 SPECT and general Nuclear Medicine studies. 203 Therapeutic Procedures were performed for various cancers including thyroid, Neuroendocrine cancers, Prostate and liver cancers. The 18F DOPA (dihydroxyphenylalanine) and 68Ga Exendin PET scanning was introduced as new services in 2021. The 225Actinium – an alfa therapy agent - was introduced as new therapeutic service for Prostate cancer and neuroendocrine malignancies.

	2019	2020	2021
PETCT	16962	9760	17242
NM/SPECTCT	5129	3431	6082
ACTREC PETCT	2881	1991	2791
Total	24972	15182	26115

PET/CT at TMH	17573
Nuclear Medicine/SPECT/CT	5955
ACTREC PET/CT	2791
Total Isotope Scans	26319
Isotope Therapies	203

Education

Six doctors completed their residency and passed out as MD Nuclear Medicine physicians. Dr Manikandan received the HBNI gold medal. Ten Trainees completed the post graduate Diploma in Fusion Imaging technology course. The first batch of MSc nuclear medicine and molecular Imaging technology successfully passed out in year 2021.

The department staff authored one book and four chapters on nuclear medicine topics.

Research

The department was involved in research using Prostate-Specific Membrane Antigen (PSMA) Radiopharmaceuticals for Diagnosis and therapy. Besides Prostate cancer, other malignancies were under study. The department successfully completed a study along with Atomic Energy Regulatory Board (AERB) task force that studied 177Lutetium based Radiopharmaceuticals, resulting in the Pharmaceuticals being now permitted by the regulator, to be treated on a day care basis without a delay decay tank.

The department along with the Centre for Development of Advanced Computing (CDAC) & the Ministry of Electronics and Information Technology (MeitY) was involved in Artificial Intelligence based research project with Mastretich University (TRAIN).

Staff Achievements

Venkatesh Rangarajan:

- President of the Association of Nuclear Medicine Physicians of India
- Apex Expert Member for Nuclear Medicine for National Medical Commission.

Archi Agrawal:

• Elected Fellow of the Indian College of Nuclear Medicine.

Ashish K Jha:

- Ernest Lawrence Oration Award, Nuclear Medicine Physicist Association of India
- Fellow, Indian College of Nuclear Medicine, India
- IAEA Travel Grant to attend Acc App Conference in Vienna, Austria.

Nursing

Deputy Nursing Superintendent, Ms Sindhu Nair Principal, Ms Anita D'Souza.

All the hospital nurses epitomize the best that there is, in Nursing Care and rose to unexpected challenges with creativity, compassion, innovation, and faith.

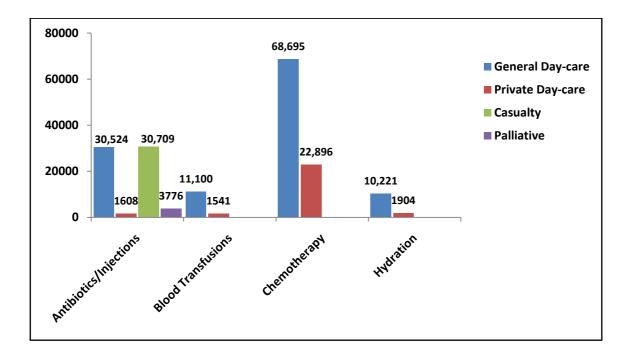
All the planned activities like work-flows, policy matters, standard operative procedures, etc. were made, keeping the patients as centre of the focus. These documents were uploaded on the hospital web portal that ensured its visibility across all hospitals in India as well.

Service

Blood collections				
In Golden Jubilee Block	In Homi Bhabha Block	In Palliative Medicine	In Preventive Oncology	
1,99,785	1,47,121	1284	6572	

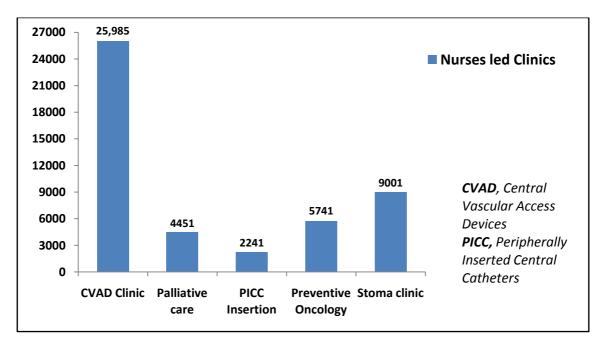
The various locations from where the nurses collected the blood from patients:

In the Preventive oncology and the Palliative Care departments, they assisted the respective departmental members in the following:



Nurses-led Clinics:

The Central Vascular Access Device insertion, the Peripheral insertion of central lines, and the Stoma clinic, are manned only by the nursing staff.



Promoting Self Care:

As the surge of Covid-19 continued, the concern was not only ensuring the availability of enough beds for patients and protective kits for the health care worker but for also for the well being of the nursing fraternity through the nursing welfare committee "Sahkruti".

One hundred twenty-five (125) nursing staff underwent preventive health-check up in Department of Preventive Oncology. Many nursing staff enrolled in the wellness app., "REACH" to make emotional well being their priority. As the acuity of patient care intensified the demands of professional care also increased.

Live and online training using virtual platform was carried to disseminate knowledge on various aspects of nursing care, which included communication skills, medication safety, oxygen therapy, Head & Neck surgical nursing, fire safety, drain care, CPCR, etc.

A novel avenue in training: The Nursing Department introduced a novel Mentor System or the Buddy Concept to all the new recruits (67 in year 2021) that improved the bonding and the learning processes.

Staff Achievements

Dr Manisha Pawar, Vice Principal–College of Nursing, Tata Memorial Hospital presented two research papers at the 2nd World Conference on Public Health 2021 and won the Emerald SDG Global Research Impact award-2021 for both the presentation.

Occupational Therapy

Officer in Charge, Dr Manjusha Vagal.

The Occupational Therapy offered a holistic approach to all patients (of all age groups) across their disease continuum and promoted their quality of life and functional independence. Occupational Therapy services were provided to patients in a variety of care settings including hospital, home, inpatient, palliative care unit and community. Occupational therapists offered individual treatment sessions to patients on skill development in their various deficit areas like: physical motor deficits, cognitive and visual perceptual deficits, sensory processing deficits, deficits with their abilities to do self-care skills, decreased strength, endurance and range of motion of muscle and joints, balance and coordination deficits, feeding and swallowing deficits and difficulties in children. Similarly, the department addressed emotional and mental health issues, adaptive equipment needs, orthotic and prosthetic needs of patients. Group therapy sessions were provided to patients through Trismus Clinic, GyneClinic and Lymphedema Clinic.

Service

In the year 2021, the Occupational Therapy department attended 19,102 patients (8578 outand 10524 in- patients). In addition to regular rehab, the department fabricated 17 Low temperature thermoplastic splints, 18 Temporary above knee and below knee prosthesis, 36 Permanent Above and Below Knee Prosthesis, and 593 Spinal braces for patients.

The extension of the department at "Rehabilitation and Research Centre (RRC) at Dr. Ernest Borges Memorial Home (Dr E.B.M.H), Bandra manufactured and supplied 1237 Jaw stretcher keys, 30 Upper limb Lymphedema kits and 28 Lower limb lymphedema kits to the hospital dispensary. Forty-seven (47) Orthoses and 8 Prostheses were prepared. A total of 246 patients and 121 follow-up visits were recorded for Occupational Therapy services at RRC, EBMH, Bandra in the year 2021.

Tele-rehabilitation: Occupational therapy was provided through TMH teleconsultation platform to patients from Breast, Head & Neck, and BST DMG.

Purposeful/ Meaningful Activities were encouraged and various activities including narratives, art and craft, books reading for emotional health and for fine motor skills in Palliative patients were provided to all patients, especially to those below 10 years of age.

Emotional Health: Counseling, relaxation exercises, etc. were offered for betterment of their emotional health.

Pan India: Occupational therapy services were initiated at the recently commissioned cancer hospitals under TMC-DAE. The department also established Occupational Therapy services in a private hospital, the Thangam Cancer Hospital, in Namakkal, Tamil Nadu.

Education

Department started Master's program in Oncology under HBNI from November 2020.

Since 2012, the Occupational Therapy Interns from L.T.M.C. Sion Hospital, Maharashtra University of Health Sciences, were regularly trained in Onco-rehabilitation on their rotation posting at TMH.

Throughout the year the department was involved in education of observers from various faculties like Occupational Therapy and Palliative Medicine.

Research

The research topics submitted/approved included:

- Occupational Therapy Recommended Rehabilitation Protocol for Treating Trismus in Head and Neck Cancer Patients: A Pilot Study
- Development and validation of "multidimensional self-reported sexual function questionnaire" in Indian patients treated for cervical cancer
- Multimodal Prehabilitation in Patients with Bone Sarcomas Around Knee Joint–A Pilot Study
- Taylors Brace on Functionality of Patients with Stable Metastatic Thoracolumbar Spine: A Pilot Study
- Effectiveness of Sleep Hygiene Using Person-Environment Occupation Framework In Head And Neck Cancer Patients–A Pilot Study
- Occupational therapy interventions for cognitive and functional outcomes in patients with primary diffuse Glioma–a pilot study
- Frailty indices for predicting postoperative complications after esophagectomy

- Validation of patient reported outcome measure TESS (Toronto Extremity Salvage Score) for benign and malignant extremity tumors
- Prevalence, predisposing factors and management of Head and Neck Lymphedema in patients following treatment for Head & Neck Cancer (HeNLy-1 Study).



Working of the Occupational Therapy Department

Palliative Medicine

Adhoc Officer in Charge, Dr Jayita Deodhar

The department offered the following services:

- Adult Palliative Care clinic
- Paediatric Palliative Care Clinic
- Ward consultation liaison
- Respite Palliative Care Services
- Emergency Department consultations
- Hospice liaison service
- Postgraduate (PG) training program: (MD Palliative Medicine) intake of 3-4 PG trainees/ year
- Postgraduate Academics
- Education programs for external medical, nursing, allied health staff and volunteers
- Institutional Review Board approved investigator initiated and thesis related research and audits
- State and national level advocacy programs and policy initiations.

Service

Number of patient assessments in 2021:

Total New Registrations: 6940

Total Follow up: 18,109

Total number of Palliative care consultations in the Emergency Department (ED): 2455

Total number of patient assessments done (clinic, ward and ED): 36,388.

Paediatric Palliative Care new referral: 306

Paediatric Palliative Care follow-up: 486

New patients assessed through Paediatric Palliative Care Service Project: 493

Ward Consultation New Referral: 1198 Ward Consultation Follow-up Visit: 5146 Respite Palliative Care Admission: 160 Hospice Referral: 92 Educational and financial help: **252** patients.

Quality initiative:

- Digital health initiative: To adapt to the pandemic condition, the department modified the
 existing digital home care programme for assessment of advanced cancer patients residing
 in Mumbai and western and central suburbs and Navi Mumbai, through telephonic and
 video consultations. There were 1253 new registered patients and 8884 follow-up reviews
 were conducted.
- Paediatric palliative care: The Department initiated a new Clinical Fellowship programme in Paediatric Palliative Medicine from October 2021 supported by Narotam Sekhsaria Foundation.
- Helpline during pandemic: Staff and Volunteers in the Department of Palliative Medicine provided daily telephonic support for Can-Helper and National Palliative Care Helpline set up through collaboration with Cipla Foundation for cancer and palliative care patients.
- Working with Government of Maharashtra in collaboration with Mumbai Palliative Care Network for implementation of Palliative Care Policy.

Education

Capacity building: The ASCO Palliative Care eCourse (APCeC) was conducted under the aegis of the American Society of Clinical Oncology (ASCO) and Palliative Care Interdisciplinary Curriculum Project (PCIC). This was the first time that ASCO conducted a Palliative Care eCourse in India.

Twenty-five (25) International and National faculty from seven countries delivered the training program which was attended by 168 professionals from oncology, palliative medicine, general medicine, family medicine, anaesthesia, nursing, rehabilitation, psychology and counselling.

- National and International Conference Presentations and training programs conducted by the department staff: **14**
- Total number of participants trained: 261

- Ongoing departmental studies by the departmental medical staff at the end of 2020: 14
- Peer reviewed national and international publications by the departmental medical staff: **09**
- Book Chapters: 03
- Online modules: **04**
- Total number of National and International Observership placements in the department: 16

Research

The departmental staff, individually and in collaboration with the various DMG's, initiated many trials as principal investigators (PI) and co PI in various subsets related to improvement of quality of life in cancer survivors.

Staff Achievements

Dr. Jayita Deodhar:

- Re-elected to the Board of Directors in the International Psycho-Oncology Society (IPOS)
- Co-Chair of LMIC Special Interest Group of IPOS
- Member of the Palliative Care Special Interest Group of IPOS
- Editorial Board of Psycho-oncology Journal
- Part of the Subeditorial team in Indian Journal of Palliative Care as Section Editor for Psycho-oncology.

Dr. Raghu Thota:

- Founder Secretary of Society of Onco-anaesthesia and perioperative care
- Editorial Board Member of PAIN PHYSICIAN Journal
- Founder President of SIPP
- He serves as Executive body member ISSP (National), ISA Mumbai & AIDAA Mumbai, Coordinator Cancer Pain SIG.

Dr. Mary Ann Muckaden:

- Immediate Past President of Indian Association of Palliative care
- Lead in Indo-American Cancer Association for Palliative Care
- Executive board member of Asia Pacific Hospice Network
- Advisor for Cipla foundation
- Past Chairperson International Children's Palliative Care Network.

Dr. A. Damani:

• Central Council member in Indian Association of Palliative Care.

Pathology

Head, Dr. Sangeeta B. Desai.

Service

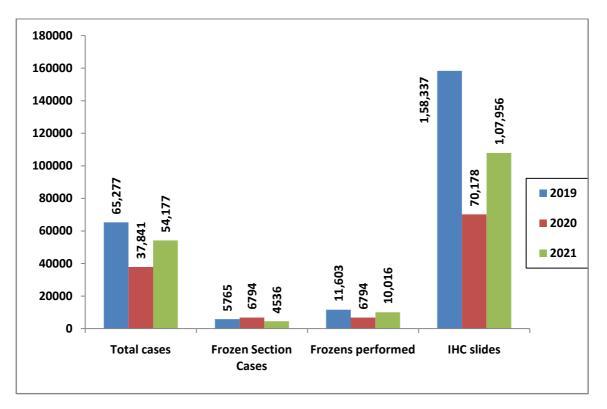
The department of pathology continued to provide a wide range of diagnostic services during this unceasing global health crisis of COVID19 pandemic. This included surgical pathology, Fine needle aspiration cytology, Exfoliative cytology, Molecular testing, Biochemistry and Hematopathology to all in-house patients and this expertise was also extended to referral services to cancer patients throughout the Indian subcontinent.

The department maintained a National Tumor Tissue Repository to facilitate translational research.

The department offered diagnostic services to **54,177** histopathology cases in the year 2021 that included small biopsies, big specimens and referral material. The pandemic led to a decline in the number of cases by 17.01% as compared to year 2019, but increase of 43.17% as compared to the year 2020. The total number of frozen section cases reported was 4536 and frozen sections performed were 10016. The total number of Immunohistochemistry (IHC) slides were 107956; a 31.81% decrease of as compared to that in the year 2019, but increase of 53.83% as compared to the year 2020.

In 2021, eight (08) new antibodies were standardized by the Immunohistochemistry section that was utilized for primary diagnosis and grading of tumors.

Comparison of workload from the year 2019-2021



Quality initiative:

- 1. National Cancer Grid (NCG) External Quality Assurance (EQAS) program in Histopathology was continued in the year 2020 with 173 centers participating in it across India. The following runs were completed:
 - One run of tissue processing module
 - Two runs of Diagnostic Histopathology module of which one was digital using Whole slide imaging
 - Two runs of Minimal Data Set Reporting (MDSR module) (both were digital)
 - The IHC module included runs for Breast, Lymphoma and Sarcoma panels.
- The IHC section successfully participated in the proficiency testing program for IHC by the College of American Pathologists (CAP). The department successfully completed 8 modules which comprised 16 cycles. The IHC section also successfully completed four cycles of In-Situ Hybridization (ISH), PD-L1 immunohistochemistry (IHC) proficiency testing program for non-small cell lung carcinoma (NSCLC).

3. The histopathology laboratory continued participating in External Quality Assurance program conducted by Neuberg Anand Academy of Laboratory Medicine. In total, four cycles were completed which comprised one case for tissue processing and analysis, and five virtual cases for diagnosis.

Education

Department of Pathology participated in Hospital Clinical Meetings conducted every Thursday, by participation in Grand Rounds, Landmark Papers and Mortality meetings.

Every year 12 MD Pathology students and 3 DM Oncopathology superspeciality course students were admitted under the auspices of Homi Bhabha National Institute, recognized by the National Medical Commission.

Technicians and pathologists from other TMC centers were trained in Department of Pathology, TMH.

- 48 lectures / seminars were conducted by faculty during pandemic for HBNI post graduate students
- 29 Journal Club discussions were held in the year 2021
- MAPCON Slide seminar discussions were held for 130 slides /cases in the month of August 2021

Total number of Observers / Trainees / PG students visited Department of Pathology in the year 2021:

Year	PG students	TMC HBNI-PG Students	Observers	Oncopath Trainees	Fellow / UICC fellow	Trainee Technicians	Total
2021	55	17	14	03	04	03	96

Mounted & Unmounted specimens from various sites are preserved and catalogued for various HBNI MD/ MCh and DM examinations (n=1497)

Site	Mounted	Unmounted
Head & Neck	162	41
FGT	159	76
GI & HB	135	135
Bone & ST	103	128
Genito-Urinary	90	91
Thoracic	58	73
Breast	51	18
Skin	19	
CNS	17	23
CVS & Spleen	12	63
Autopsy specimens		103
Total	806	751

Teaching slide sets developed and updated for PG students/Oncopath trainees/Observers:

Name of the slide set	Number of slides
Interesting and teaching slides cataloged specifically in various systems	3380
Mixed cases for PG students from all systems (Black Boxes)	1219
MAPCON Slide boxes from year 2000 upto 2021	2262
Senior Surgical Pathology Meeting slides	2598
Immunohistochemistry Teaching slides	531
Total	9,990

Research

The department of Pathology published and contributed to 47 research papers.

Notable among ongoing projects was the Establishment of National Tumor Tissue Repository (NTTR) at the Tata Memorial Centre spearheaded by Dr Sangeeta Desai.

Remote reporting for frozen section was successfully validated and established by the department under her guidance. For this purpose, Grundium OCUS 40x single slide scanner was installed in the Frozen section in April 2021. It proved to be a great boon for remote reporting of frozen sections, especially in the month of August, when the operation theatres were working for extended hours till 10 pm.

Staff achievements

- **Dr Sangeeta Desai** contributed to the final published version of the ISO 13131: 2021 Health Informatics Tele health services.
- **Dr Kedar Deodhar** has been appointed as the Regional advisor (South East Asia) for the The Royal College of Pathologists, UK.
- Dr Santosh Menon and Dr Sumeet Gujral have been invited on the editorial board of the WHO classification of male genito-urinary system and hematolymphoid tumours respectively (Lyon, France).

Clinical Biochemistry

Head, Dr Tanuja Shet.



The Department of Clinical Biochemistry provided an extensive repertoire of services ranging from routine spectrophotometric clinical chemistry assays like glucose, electrolytes, minerals, organ function tests (LFT, RFT etc.) to various specialised tests like hormone assays, vitamin estimations, tumour marker levels, serum protein electrophoresis etc. All these laboratory tests served as backbone for patient management across all DMG's (Disease Management Groups). The laboratory provided its services 24 x 7 throughout the year and adapted very well during the lockdown phase of COVID-19 pandemic and ensured that essential services were not disrupted. This was possible due to the collective team effort of every personnel of the department and the continuous support from the administration.

Service

The department offered an extensive clinical chemistry test menu of approximately 200 different assays available on major sample types (serum/plasma, urine, CSF and body fluids). These included biochemical tests, tumor markers, protein electrophoresis, vitamins,

hormone estimation and drugs monitoring as well. The laboratory had three, high throughput random access biochemistry analysers (Beckman Au680, AU5811-1 & AU5811-2).

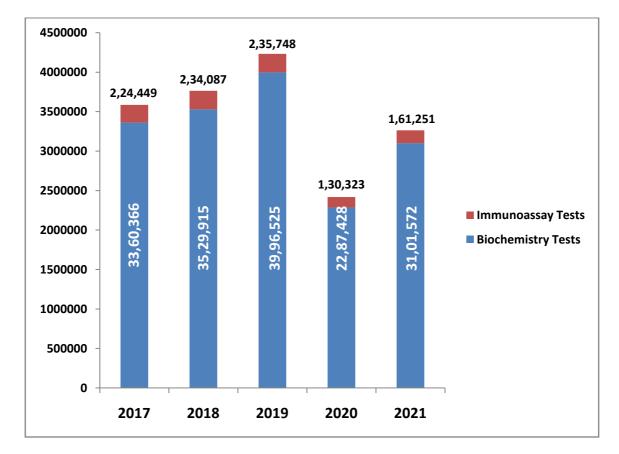
The lion share of biochemistry analysis was done on these machines. In 2020, the department joined the wagon of Covid antibody testing and added a Cobas 6000 integrated analyzer which helped add many more tests in 2021. The older machines were replaced by more advanced Alinity-i modules for better performance. Twenty-five more tests were added in the year 2021. As the CAR T cell unit had started functioning in ACTREC, the department offered a panel of cytokines for monitoring patients on real time that included: -IL-1b, IL-2, IL-2RA, IL-8, IL-10, IL-15, IL-17, IFN- Gamma, RNF-alpha, GM-CSF, MIP-1alpha, MCP-1. Newer tests were also added for better management of diabetes, hepatocellular carcinoma and host of hormone assays and drug monitoring tests as well e.g Hyper glycosylated beta HCG, AMH, Inhibin B, ICGC (Indocyanine Green Clearance test), Haptoglobin, Levitiracetam, IgE, IFE-IgD&IgE, C3, C4, IL6, Ammonia, TroponinT, Insulin, C-Peptide, Progesterone, Thyroglobulin, ACTH, IGF-1, HGH (Human Growth Hormones) and DHEA-S. Other specialised tests like quantification of Immunoglobulin were done by rate nephelometric and immunoturbidimetric techniques by the Beckmann Immage 800 system and the Binding Site's Optilite machine (Free Light Chains) respectively. Serum protein electrophoresis was done on the Sebia Minicap (Capillary Electrophoresis) and immunofixation electrophoresis on the Sebia Hydrasys2 system. Also introduced recently was the HPLC, (D10) the gold standard method for testing HbA1c as a service that allowed for accurate testing of HbA1c and excluded all haemoglobin related errors.

Despite the pandemic and newer tests, the departments turnaround time (TAT) was maintained and in fact became faster. The TAT was achieved in more than 95% of the tests, with the fastest ones being as quick as 30 minutes.

Quality was the mandate and the laboratory performed exceptionally well in Proficiency testing programmes like External Quality Assurance Services (EQAS), Randox International Quality Assessment Scheme (RIQAS) and College of American Pathologists (CAP) with > 95% concordance for all parameters. There was real time addressal of all quality and test related issues by the Doctors and Scientific officers in the department.

Screening of HbA1c in Police personnel: This was a study driven by the preventive oncology department to be performed on 75000 participants; till date, 13,000 personnel were tested.

Workload over five years:



TMC Clinical Chemistry Consortium:

There was heterogeneity across platforms in various centres of TMC, hence the above consortium was initiated with a view to harmonise assays across these platforms. The Clinical chemistry teams at all TMC institutes were instructed to send sample with highly abnormal values to get rechecked with another centre ensuring accuracy of testing and reducing errors. A quarterly meeting was held with the staff that ensured continuing medical education and discussed transport or test related issues.

Education

The Advanced Clinical Biochemistry training course was conducted once this year. It was a six months' course followed by another six months of internship. Post graduate (MD, Pathology)

students were trained in Biochemistry and their relevant assessments were conducted in the department.

Due to cancellation of conferences, the staff took the initiative to conduct webinars and educational sessions online.

Research

The departmental staff started submitting prospective clinical trials based on tumour markers. Two projects approved by the ethics committee in 2021:

- National Quality Assurance (NQA) program in Biochemistry for Electrophoresis, Immunofixation and Tumor markers in centers of the National Cancer Grid
- Prostate Health Index (PHI) Is it a Master Key for Diagnosis of Prostate Cancer?

Cytopathology

Officer in Charge, Dr Kedar Deodhar.

The department offered a (3-tier) cancer screening and diagnostic services with minimal turnaround time (TAT) of 24-72 hour for exfoliative and Fine Needle Aspiration Cytology (FNAC) samples as routine services. The samples from the Intensive Care Units (ICUs) and other critical areas were reported within four hours. The department offered special services such as Cell Block, Endobronchial Ultrasonography (EBUS)-FNA, Endoscopic US (EUS)-FNA and Rapid On-Site adequacy testing (ROSE) for FNAC samples and Liquid Based Cytology (LBC) to improve sample adequacy.

Synoptic formats were implemented that ensured uniform and standardized reporting. The Staff members attended various training courses, conferences, workshops and underwent regular technical and diagnostic proficiency tests, in-house and organized by the Indian Academy of Cytologists (IAC).

The Department was accredited for diagnostic services by the IAC and the National Accreditation Board for Testing & Calibration Laboratories (NABL) and also for Training and Examination by IAC. The Department was a service provider of National level External Quality Control System (EQAS) Cytopathology for various laboratories in India. The Department was involved in research in technical, diagnostic and quality control aspects of Cytopathology, and, offered training to postgraduates, pathologists and cytotechnologists.

Service

The workload of the Department comprised of 18588 samples (57301 smears) in the year 2021. The samples consisted of 3164 exfoliative gynaecological, 7498 exfoliative non-gynecological, 5787 FNAC (including 129 Liquid-based Cytology) and 2139 Cell blocks. EQAS Diagnostic Cytopathology service with two cycles of the Proficiency Test series was rendered by the department.

Education

Department imparted training in cytopathology for 5 MD Pathology Postgraduates, 3 DM Pathology, 2 DM Medical Oncology, 9 Post MD Pathology and 1 DNB Pathology and 2 MLT

students. Six students were currently undergoing the 'Advanced Cytopathology Technicians Training Course' conducted by the Department. An interesting cytology case was uploaded on the hospital website in a quiz format every month. Staff regularly participated in the departmental academic & DMG meetings, CMEs, Conferences and Workshops held in and outside the hospital.

Research

Two research papers on urine cytology and pleural fluid were published in 2021.

Audit:

Regular follow-up and clinical audit of all reported cytology samples was carried out to evaluate the performance characteristics. The reasons for diagnostic pitfalls, inadequacy rate, etc. were monitored and appropriate corrective and preventive measures taken.

Staff Achievements

- Saleem Pathuthara received Best Paper Award for Proffered e-Oral Paper Presentation for presenting "Outcome of Glandular Cell Abnormalities in Cervico-Vaginal Cytology: 5-year Study" (S. Pathuthara, A. Shaikh, S. Jagtap, S. Menon, B. Rekhi, K. Deodhar) at 4th Annual MACyCON 2021 held at TN Medical College, Mumbai on 6-7 February.
- **Suhas Dhende** received the prestigious Jwaladevi Award for presenting the best innovative paper viz., 'Xylene Free Papanicolaou Staining A Pilot Study" (S. Dhende, S. Pathuthara, M. Uke, K. Deodhar) at CYTOCON 2021 held at AIIMS, New Delhi on 19-21 November.
- Dr Kedar Deodhar and Saleem Pathuthara were appointed as Technical Advisory Committee Members for upgrading Cytology Clinic at Cama Albess Hospital in collaboration with TMH.

Hematopathology

Officer in Charge, Dr Sumeet Gujral.



The Hematopathology Laboratory services were essential for the primary diagnosis of hematological malignancies, the monitoring of patients while on therapy for all malignancies, and for the preoperative & postoperative hematological workup of surgical patients. The routine laboratory investigations included: Complete Blood Count (CBC), Reticulocyte count, Coagulation Profile (PT, APTT, D-Dimer, Fibrinogen), Peripheral blood smear examination, cytochemical staining like Myeloperoxidase (MPO), Non-specific Esterase (NSE), Leukocyte Alkaline Phospatase (LAP), Tartarate Resistant Acid phospatase (TRAP), and Body Fluid Examination.

Service

The Laboratory had the state-of-the-art hematology analyzers and coagulation analyzers that were interfaced to the Hospital Information System to cater to the requirements of the patients. The routine hematology laboratory functioned 24 hours and processed more than 1500 tests in a day with results being available to the patients within 3 hrs for most of the routine tests.

The Laboratory also performed Manual Differential count of D8 Acute Leukemia patients and Ascitic Fluid Examination of Gastrointestinal patients for Spontaneous Bacterial Peritonitis on urgent basis on clinician's request. The laboratory performed testing for functional iron deficiency using Reticulocyte Hemoglobin Content (Chr).

Coagulation Profile in Covid pandemic:

In the Covid pandemic, the D-Dimer testing increased tremendously, as was well expected. Huge numbers of these tests were performed continuously due to well planned inventory management.

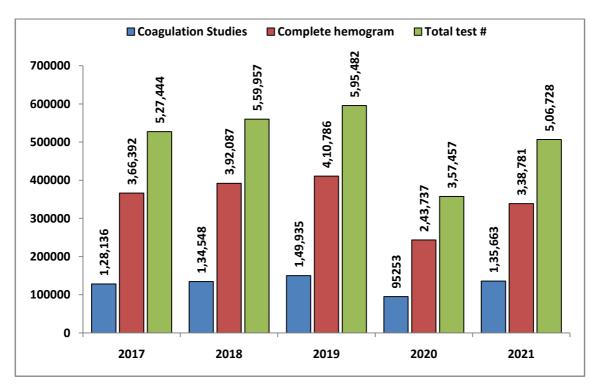
Transport Hub: The laboratory had the responsibility for transporting Bone Marrow, peripheral blood samples for Flowcytometry, Molecular and Cytogenetics labs from TMH to ACTREC after shifting of these labs to ACTREC. The lab was also responsible for transporting Biopsy paraffin blocks and slides for Histopathology thru' and fro. All these diagnostic material were transported to ACTREC to the respective labs maintaining integrity and in best possible ways four times a day from Monday to Fridays (twice a day on Saturdays).

Name of the Test	Numbers	
Routine Hematology		
Complete Hemogram	3,38,781	
Manual Differential Counts/Malarial Parasites/Reticulocyte counts/RBC Morphology	28,115	
ESR	2041	

The total number of tests performed in 2021

Coagulation studies				
Prothrombin Time	65,527			
Activated Partial ThromboplastinTime	65,064			
Fibrinogen	2763			
Fibrinogen Degradation Products (D-Dimer)	2309			
Cytochemistry	2128			

Routine Hematological Tests



Education

The educational programs carried out by the laboratory included:

- Complete blood count- CME for Medical lab technologists One course every year
- Complete blood count-Bench to Clinic course for Pathologists One course every year

- Complete blood count Bench to Clinic course for technologists Once in a year
- 6 months Advanced Training program for technologists 6 trainees.

In addition, the laboratory trained and shared its knowledge and expertise to medical community in other parts of India. Fifty M.D. pathologists from various parts of the country visited as observer for training in CBC, Coagulation, Morphology, Cytochemistry, Body Fluid and Quality Control.

The Laboratory conducted online SOP reading and Academics scission for staff during Covid-19 pandemics.

Research

The following research studies were conducted during 2021 in the laboratory and presented in various conferences:

- Coagulation especially D-Dimer tests in covid Positive patients
- Comparison of WBC differential system flags of Beckman Coulter DxH 800 with ADVIA 2120i and Peripheral blood smear examination from Tertiary Cancer Centre
- Detection of malaria parasite on DXH-800 using Volume Conductivity Scatter (VCS) Parameters
- Efficacy of biomarkers in sepsis
- Validation of system flags for platelet on automated cell counters and screening on peripheral blood smear
- Detection of sepsis using volume, conductivity and scatter Parameters of Beckman coulter DxH 800
- Population based biological reference interval for Cellular Hemoglobin Distribution width (CHDW) parameter
- Correlation of Abnormal cells population and Myeloperoxidase (MPO) activity in Acute Leukemia Automated and Manual method
- Review of Quality Control for better performance and management
- Comparative evaluation of schistocytes count by automated methods and microscopic Determinat.

Staff Achievements

Dr Sumeet Gujral

- Member of Technical committee of National Accreditation board for Testing and Calibration laboratories (NABL) in Medicaltesting
- Member of drafting committee for NABL 112 standards document in hematology
- Committee for ICMR Standard Operating Procedures (SOP's) on "Immunophenotyping of Hematolymphoid Neoplasms"
- Membership of Editorial Boards of reputed publications
- Editorial Board of "Clinical Cytometry, Part B"
- Editorial Board of "Indian Journal of Cancer"
- Editorial Board of "Indian Journal of Pathology and Microbiology"
- Editorial Board of "National Journal of Basic Medical Sciences".

Molecular Pathology

Head of Pathology, Dr. Sangeeta B. Desai.

The Molecular Pathology division was committed to performing and delivering high quality molecular analysis of various solid tumors, the results of which were used for diagnosis, treatment and prognostication of tumors, thereby providing a direction of offering personalized cancer treatment to improve outcomes. The laboratory strived towards continual improvement of the existing processes to improve test performance and scope of molecular diagnostics assays. During the onset of pandemic, Molecular Pathology Laboratory geared up to offer Covid-19 real time Reverse Transcription Polymerase Chain Reaction (RTPCR) as a round the clock service in the hospital.

Around **29,000** Covid tests were performed in the year 2021.

In routine diagnostics, introduction of clinically relevant molecular diagnostic tests based on the request received from various disease management groups were designed, developed, validated and incorporated for patient care. The chromosome 19 miRNA cluster (*C19MC*) and (chromosome arm) 1q gains by, Fluorescence in Situ Hybridization (FISH) was validated and successfully introduced in the routine diagnostics. The scope of Next Generation Sequencing (NGS) was increased to include somatic BReast CAncer gene (*BRCA*) testing for gynecological cancers and was being offered in routine diagnostics. The DNA polymerase epsilon (*POLE*) mutation test was also standardized and introduced in routine diagnostics for endometrial cancer. The detection of Phosphatidylinositol-4,5-Bisphosphate 3-Kinase Catalytic Subunit Alpha (*PIK3CA*) mutation was introduced in the routine diagnostic test. Limited Panel NGS test (10-12 Genes) was currently under validation and would soon be available for routine patient care.

In addition, Molecular Pathology was committed to providing External Quality Assurance Scheme (EQAS) in solid tumor molecular diagnostic tests, which was a Method Based Proficiency Test (MBPT) for all the National Cancer Grid (NCG) and non NCG centers in the country involved in solid tumor molecular diagnostics. So far 28 centers across the country had enrolled under this Molecular Pathology Quality Assurance Program (MPQAP) under the aegis of NCG EQAS

The laboratory was also a part of the Department of Health Research of the Indian Council of Medical Research (DHR-ICMR) initiative of DHR-ICMR Advanced Molecular Oncology Diagnostic Services (DIAMOnDS), since 2019. It served as the 'Hub' of Molecular Pathology diagnostic

services, currently for Breast and Lung Cancer. The main aim of the DIAMOnDS program was to provide accessibility of advanced Molecular diagnostic tests to needy patients.

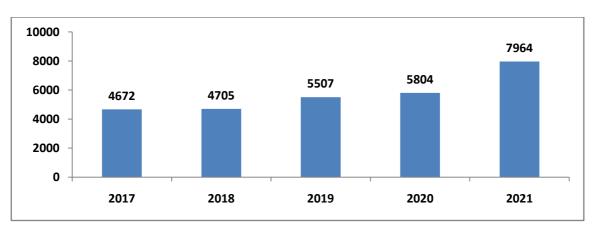
Service

The Molecular Pathology Laboratory offered clinically relevant, molecular diagnostic assays as per the national and international guidelines using PCR, Fluorescence in Situ Hybridization (FISH), Sanger sequencing, Multiplex Ligation-dependent Probe Amplification (MLPA), Gene expression analysis, Real time PCR and next generation sequencing based tests. A total of **5,804** requisitions were received in the year 2020 with a 5% increase than the previous year despite the impending lockdown. The NGS requisitions doubled since the year 2019.

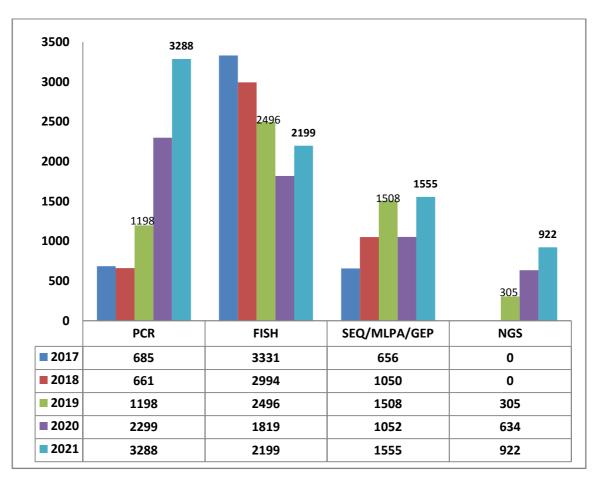
Molecular Pathology Laboratory, was offering clinically relevant and targeted therapy based molecular diagnostic assays as per the national and international guidelines using Polymerase Chain Reaction (PCR), FISH, Sanger sequencing, Multiplex Ligation-dependent Probe Amplification (MLPA), Gene expression analysis, Real time PCR and NGS based tests. A total of **7964** requisitions were received in the year 2021 with a 27% increase than the previous year.

The laboratory was National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited and tests were being performed as per the recommended norms. The laboratory also routinely participates in the College of American Pathologists (CAP) Proficiency Testing as part of the EQAS. Trend analysis for the routine diagnostic tests was performed on monthly basis.

Covid-19 RT PCR test that was initiated at the beginning of the pandemic was still being continued and providing COVID-19 testing to all staff/staff relatives and patients of the hospital.



Molecular Pathology Test requisitions (2017–2021)



Technique-wise requisitions received during the period 2017–2021

Education

The Pathology residents were rotated monthly for training in routine molecular pathology. The laboratory offered 1- year fellowship programme for post-MD Pathology wherein they got an overall exposure to Molecular Pathology. The laboratory also provided internship programs for Master of Science students and MD students. Monthly lectures were conducted in the laboratory and periodic competency levels were assessed to ensure up-to-date knowledge of all the staff, about the laboratory activities, scope and regulations. Under the Molecular Pathology Quality Assurance Program (MPQAP) and the EQAS scheme, the laboratory conducted three webinars in 2021, pertaining to quality maintenance and improvement of molecular diagnostics in solid tumour. The MP-EQAS provided a *DIGI-EQAS*, the digital EQAS scheme that aimed to educate participants on the interpretation of Molecular Pathology interpretation and reporting.

Research

There were fifteen Principal Investigator initiated projects ongoing in the laboratory with the dedicated project staff working on them.

The medical and scientific staff of Molecular Pathology published seventeen (17) articles in peer reviewed journals and participated in two international conferences.

Staff Achievements

- **Dr Shruti Rao** won the award for poster presentation entitled "Cell of Origin of primary CNS lymphomas determined by gene expression profiling and immunohistochemistry" at the 5th Annual national conference of Neuropathology Society of India (NPSI) with Asian Society of Neuropathology (AOCN) congress, September 2021.
- **Dr Archita Juneja** received an award for the poster presentation entitled 'Embryonal tumour with multi layered rosettes (ETMR): Institutional experience of C19MC amplification' at the 5th Annual NPSI-AOCN conference, September 2021.

Physiotherapy

Officer in Charge, Dr Anuradha Abhijeet Daptardar.

Physiotherapy Department comprised dedicated Physiotherapists and Trainee Onco Physiotherapists. The Physiotherapy team continued to restore patients to their highest level of function and independence through individualized therapeutic exercise program and a wide range of state of the art techniques. The department provided care to both, in- and outpatients. The staff of Physiotherapy Department, apart from being members of various DMGs, provided valuable inputs in the Intensive Care Unit (ICU) management of patients. The Department functioned from 8.00 am to 7.00 pm in order to benefit larger volumes of patients.

Services

The department attended to **23,533** patients in the year 2021. Physiotherapy services included Pulmonary Rehabilitation, Post- operative group therapy program for breast cancer patients, Lymph edema management, Rehabilitation of Shoulder and Neck Dysfunction, Management of Trismus, Respiratory care, Mobilization, Ambulation, Pain relief and Management of Cancer Related Fatigue. The department staff also contributed to rehabilitating patients and staff in the Covid-ICU and the covid-ward with evidence based physiotherapy protocols developed for Covid-19.

The department initiated Geriatric assessments in 2021 for patients attending the Geriatric Clinic in the hospital. The department introduced Teleconsultation as one of the service and offered teleconsult to 10 patients in 2021.

	Out-patients	Ward patients	ICU patients	Total
DMG patients	7830	8927	3269	20,026
Pulmonary rehabilitation	524	-	-	524
Neuro-rehabilitation	220	141	79	251
Geriatric assessment	363	-	-	363
Preventive Oncology	35	-	-	35
Lymphedema	554			554
Hospital staff	208	-	-	208
Covid afflicted	35	127	-	162
Postoperative Breast-care class	1400			1400
Teleconsultation	-	-	-	10
Total	9555	10,503	3475	23,533

Education

- Six months Onco- Physiotherapy training program. (Intake twice in a year, March and September)
- Orientation program and training imparted to the students from various Physiotherapy colleges via zoom platform
- Physiotherapists are part of support groups imparting on line education to patients and caregivers
- On lineTraining imparted to Kevat students
- Two Physiotherapy Observers from different institutions completed their Observership in the Physiotherapy Department
- Observers from Medical social service; and Fellows from Dental, Palliative medicine, and Breast DMG, were posted in the department.

Research

- A randomized controlled trial evaluating the role of exercise in women undergoing treatment for breast cancer (Ongoing)
- Cross-cultural adaptation of the Breast Cancer and Lymphedema Symptom Experience Index (BCLE-SEI) in three Indian languages; Hindi, Marathi and Bengali and comparison of bio-impedance spectroscopy devices (Completed)
- Effectiveness of compression garment in preventing breast cancer-related lymphedema: A randomized controlled trial (Completed)
- Acupuncture as a modality of treatment for Chemotherapy-Induced Peripheral Neuropathy in Breast Cancer-A Phase 3 Randomized Controlled Trial (ABC-CIPN) (Ongoing)
- Utility of pectoralis major myofascial flap in reducing pharyngocutaneous fistula rates after salvage total laryngectomy (Ongoing)
- Prospective pilot study to evaluate the success of LYMPHA (Lymphatic Microsurgical preventive Healing Approach) in women undergoing axillary dissection for breast cancer. (Completed)
- A randomized controlled trial to assess the incidence of lymphedema in women with breast cancer undergoing sentinel lymph node biopsy or low axillary sampling (AiSLe). (Ongoing)
- Exercise for the management of head and neck cancer related fatigue a systematic review (Ongoing)
- A study to assess the effect of pelvic floor muscle strengthening exercise on urinary incontinence in patients with cervical cancer undergoing radiation therapy at a tertiary cancer centre. (Completed)
- Effect of nurse led intervention on cognitive and non-cognitive functions and serum TNF alpha level in patients undergoing adjuvant chemotherapy for colorectal cancers at TMH (Ongoing)
- Cross-cultural adaptation of the gynaecological Cancer lymphedema questionnaire (GCLQ) in two Indian languages—Hindi and Marathi. (Approved)
- Physiotherapy Interventions in cancer patients infected with COVID-19-Retrospective Analysis (Ongoing)
- Frailty–A cross sectional study of frailty in head neck cancer patients & its impact on treatment outcomes. (Ongoing)

• IMPACT- Individualised home-based exercise program in major gastrointestinal surgeries as a part of prehabilitation: a randomised clinical trial (Ongoing).

The departmental staff participated in many virtual and offline conferences. There were three publications from the department.

Staff Achievements

Dr Anuradha Daptardar

- Felicitated virtually by Indian Association of Physiotherapists, Women Cell on International Women's Day for her contribution in the field of Oncology
- Invited as Chief Guest for the virtual Survivor program organized by MGM college of Physiotherapists, Aurangabad
- President of Society of Onco Physiotherapists (SOP) in India
- Peer Reviewer for Indian Journal of Critical Care Medicine (IJCCM).

Psychiatry

Officer in Charge, Dr Jayita Deodhar.

The multidisciplinary mental health professional Psychiatric Unit provided a specialized psychooncology service by conducting psychological assessment of cancer patients of all age groups, in ward and out-patient settings. The service also conducted neurocognitive testing, both for clinical purposes and as part of research projects. Psychological support was provided to the staff that accessed the services, or was referred by the hospital Staff Clinic. A liaison input was provided in specialized clinics like Survivors Clinic (After Completion of Therapy) and Palliative Medicine. Individual and group psychotherapeutic sessions were conducted. The Psychiatry and Psycho-oncology services provided psycho educational and support activities for the patients, their caregivers, and survivors.

Service

A total of **4206** patient assessments were done in 2021. There were 1180 new assessments and 3026 reviews, seen as part of consultation and liaison inputs of the psycho-oncology service.

Diagnostic breakup	Distress: 45% Adjustment disorder: 41.7% Depressive disorder: 13.5% Anxiety disorder: 10.6% Pre-existing major mental Illness like, psychotic & bipolar: 10% Substance abuse: 5%
Support group interventions	Expert on mental health issues in support group meetings conducted for patients and survivors and caregivers in different disease management groups in TMH and nine (9) conducted by other organizations on virtual platform

Quality achievements with impact on patient care:

- Innovation in therapeutic approaches Mandala art-based intervention was incorporated for psychotherapy programme for adult and paediatric patients attending Psycho-oncology services.
- Psycho-oncology online support group A virtual support group for patients on psychooncologic care was initiated on World Mental Health Day in October 2021. This group was conducted every month and approximately 105 patients attended the same.

Patient empowerment programmes:

Conducted and facilitated support groups and panel discussions on various platforms for patients, survivors and their caregivers.

Education & Research

Faculty in Training programs: 15

Observers trained: 04

National Conference Presentations: 05

International Conference Presentations: 02

Ongoing departmental studies: 12 (as Principle Investigator in Investigator Initiated Trials)

Publications: 07.

Staff Achievements

Dr. J. Deodhar

- Academic curriculum coordinator for KEVAT: Patient Navigation Training Programme of Tata Memorial Hospital
- Board of Directors, International Psycho-Oncology Society (IPOS)
- Co-Chair, LMIC Special Interest Group of IPOS
- Member, Palliative Care Special Interest Group of IPOS

- Academic curriculum coordinator for KEVAT: Patient Navigation Training Programme of Tata Memorial Hospital
- Editorial Board Member of Psycho-Oncology Journal
- Editorial Board Member of Indian Journal of Palliative Care.

Ms. Savita Goswami

- Education lead in Survivorship special interest group of IPOS
- Invited speaker on DD Sahyadri television programme on cancer survivors and cancer awareness programme
- Psychosocial Advisory Panel of PALCARE of Jimmy S. Billimoria Foundation
- Advisory panel of Indian Cancer Society
- Advisory Committee of TYACON Foundation.

Pulmonary Medicine

Head, Dr Sandeep Tandon.



The Department of Pulmonary Medicine showed good progress over the past 5 years. The outpatients cum ward consultations saw a big jump to approximately 10,600 in 2019. In 2020 due to Covid this dropped to 6300, which was at 60% that of the previous year and in 2021 this picked up to **8660**.

The team started performing bronchoscopies, especially for immune-suppressed infections in dedicated two hour morning time slots from April 2019. The numbers of bronchoscopies performed by Pulmonary Medicine from mid April 2019 to March 2020 were 250 over one year. These numbered 150 in 2020 and 370 plus in 2021, despite Covid, indicating a progressive increase in numbers over past 3 years.

The faculty initiated Cryo lung biopsies for diffuse lung disease and Radial Endobronchial Ultrasound (EBUS) guided biopsies of lung lesions not visible on bronchoscopy. This was in addition to the more than 120 diagnostic and staging Linear Probe EBUS in 2021 done jointly with Thoracic surgery and Interventional radiology.

What was noteworthy was that Pulmonary Medicine services were run at 60% capacity despite all the resident doctors working round the clock in Covid-19 Isolation Wards as well as volunteering for Covid-19 ICU duties in addition to Chest Clinics and despite our two Part time Consultants doing round the clock weekly Covid-19 Ward duties in their respective Hospitals as mandated by their hospitals over 2020-21. The Department of Pulmonary Medicine continued nevertheless to provide its services to the Hospital despite the additional major responsibility of Covid-19 related staff administrative and database coordination as Staff Physician throughout the Covid-19 pandemic.

Education

The highlight of 2021 the Department was the commissioning on 8th February 2021 of the Pulmonology Simulation Lab, funded from a generous donation, in the presence of Dr Anand Bang and Dr Badwe. It was the first of its kind in any Government Institution in Maharashtra. It offered simulation and manikin based structured objective training with objective skill assessment and grading against benchmarks to observers, residents and faculty in basic, advanced and emergency bronchoscopic procedures as well as specialised skilling in EBUS and pleural procedures. This benefited trainees across specialties like Pulmonology, Surgical Oncology, Anaesthesiology across the country. The Department conducted two hands on training workshops for 10 faculty and 40 residents in 2021 under this "UPSKILL" initiative which was completely in sync with the motto of access to specialist pulmonology education and upskilling of professional skills for all. The faculty were invited to speak on multiple national forums. The departmental staff were also invited to organise and conduct a 2 hour virtual mock Lung Cancer MDT meeting as an educational workshop for pulmonologists at the NAPCON 2021 and it was widely appreciated.

Research

Despite faculty constraints, the part time faculty team contributed significantly and together coauthored and published 7 papers in 2021 and 4 more papers were accepted and were awaiting publication next year. This was a significant improvement of effort to increase research output apart from ongoing inter departmental and inter institutional projects.





Radiation Oncology

Head, Dr Jai Prakash Agarwal.

The Department of Radiation Oncology of Tata Memorial Hospital was a comprehensive, state-ofthe-art department aimed at providing holistic and efficient patient care through a dedicated team of radiation oncologists, medical physicists, radiotherapy technologists, nurses and other supporting staff.

Service

In the year 2021, **6711** patients underwent external beam radiation therapy at the Tata Memorial Hospital and **2308** brachytherapy fractions were delivered. The number of patients treated during the year were about 10% higher than 2020. To achieve this and in an attempt to battle the waiting list as well as non-functioning treatment units, the department increased the machine treatment hours from 7.30am to 09.00 pm.

	2019	2020	2021
External Beam Therapy (No. of patients)	8073	6083	6711
Brachytherapy (No. of Applications)	3897	1951	2308
Treatment Planning / Beam Modification	17916	13579	18930

Brachytherapy formed an integral part of treatment for advanced gynaecological tumors which were now treated with the modern and sophisticated brachytherapy applicators (Venezia and Vienna Applicator) that allowed the delivery of image-based brachytherapy. The in-house indigenous facility for fabrication of radiotherapy treatment accessories was functional since a decade at ACTREC and was extended to fabrication of brachytherapy applicators and breast boards with the use of 3 D printing facility at ACTREC.

The Radiation Oncology Information System (ROIS), which was already in use for various processes, was recently configured for patient's billings.

Education

The department was a training hub for post-graduation and training for all cadres of radiation oncology personnel in the country and region. Till date more than 204 MD and 245-technologists received their respective degrees from the institute. The department organized the "Radiation Oncology Practicum" annually and in 2021, the XIX Annual WCI-TMH Radiotherapy Practicum Workshop was held on "Practice and nuances of Spine SBRT" on 24-25 September 2021. Despite the ongoing pandemic, there were 20 national trainees and fellows training in the department. Several of the staff members were involved in national and international teaching programs like the ICRO, IAEA and ESTRO. Joint academic sessions were initiated with the Princess Margaret Hospital and University of Toronto.

In 2021, the departmental staff members served as resource persons for the IAEA training course in Palliative treatment and Esophageal cancers held online, organised by Malaysia and Mongolia. The members o delivered lectures and participated as panellists for regional webinars conducted by the FARO (Federation of Asian Radiation Oncologists).

Research

The faculty in the department was actively involved in institutional/ multi-institutional national & international research protocols. Physicians in the department continued to publish their original research in peer reviewed journals like the Lancet Oncology, Journal of Clinical Oncology, JCO Global Oncology, International Journal of Radiation Oncology, Biology and Physics, Radiotherapy and Oncology, Clinical Oncology, to name a few. The Clinical Biology Lab studied various aspects of radiation biology and cancer chemotherapy, in collaboration with inhouse basic scientists, radiation oncologists and with institutes like IIT-B, BARC and Manipal University. The lab was awarded a patent for Liposomal in-Gel composition as an injectable drug depot for the delivery of radio sensitizers (345684) in 2020 and had filed two more patents on the newly tested radio-sensitizers that await approval. There were 199 publications by department faculty in peer reviewed International and National Journals in addition to contributions to book chapters. In addition, 31 conference proceedings were also published.

The department had 2 symposia with the Gunma University focusing on areas of collaboration between the two centres.

The year also saw the progress on the National Hadron Therapy Project that was soon to be commissioned.

Faculty Achievements

- Faculty and examiners for global workshops and examinations like the GOLF examination (conducted by IFHNOS), FRCR Part I preparatory course (Royal College) and workshops like AAZPIRE
- Resource persons for the IAEA training course in Palliative treatment and Esophageal cancers held online, organised by Malaysia and Mongolia
- Nominated to several positions like Director of the Cochrane India Network Affiliate, Tata Memorial Centre for 2021-2023 by the Cochrane Initiative, UK
- Awards include the SIU Academy Awards of the Outstanding Webcast for 2021, Best Clinical Researcher Award 2021 by the Indian Society of Neuro-oncology
- Board of international and national societies like the ILROG, HNCIG, EMBRACE Study Group, GEC-ESTRO etc.
- Resource persons for the Education and Quality Improvement modules at the UICC Master course
- Advisors for the NHA Health Benefit Packages for the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana.

Radiodiagnosis

Head, Dr Suyash Kulkarni.

Service

A summary chart of factual data for period 01.01.2021 to 31.12.2021:

Radiological Investigations

Procedures	2020	2021	% Increase
Conventional Radiography	45953	56469	23
C.T. SCAN (No. of Patients/Reports)	22228	41300	86
Ultrasound / Color Doppler	33444	37020	11
M. R.I. Scan (No. Of Patients/Reports)	6912	14697	113
Mammography	7531	12570	67
Interventional Procedures	4428	5387	22

Significant quality achievement of the department that has had an impact on patient care:

- Examiners at various Universities
- CT Scan and MRI services started 24x7
- Reduction in waiting list for CT Scan, MRI and USG appointments
- Posting of Junior Residents in KEM Hospital and Wadia Hospital
- Started VAAB procedures for Breast DMG patients
- Started Contrast Enhanced Mammography
- Started Cryoablation procedures in Interventional Radiology
- Started IRE procedures in Interventional Radiology.

Speech, Swallowing Therapy and Audiology

Officer in Charge, Mr Arun balaji KD.

Over the last six years the department successfully developed a strong protocol for evaluation and rehabilitation of Oropharyngeal Dysphagia following Head & Neck Cancer and Post Thoracic Surgery after Esophagectomy and lobectomy. Clinical Dysphagia evaluation followed by objective dysphagia evaluation such as Flexible Endoscopic Evaluation of Swallowing (FEES) and Videofluoroscopic Swallowing Evaluation (VFSS) was jointly performed by Interventional Radiology, were the key success for successful speech and swallowing rehabilitation. Recurrent Head & Neck Cancer patients posed more functional challenge, and rehabilitation in these complex group required strong multidisciplinary approach for excellent outcomes and good quality of life. Personal Protective Equipment (PPE) was regularly used in the pandemic.

Service

2021	Total No of Patients	Total No of New Patients	No of Settings	Dysphagia Rehabilitation	Laryngectomy Rehabilitation	Audiology (Audiometry)
Total	15,871	6399	15,871	12,004	690	3867

Speech & Swallowing Therapy Procedures	2019	2020	2021
Total number of patients	13,242	10,129	15,781
Dysphagia Rehabilitation	9708	7524	12,004
Laryngectomy Rehabilitation	503	418	690
Fiberoptic Endoscopic Evaluation of Swallowing (FEES)	1115	817	871
Video fluoroscopy of Swallowing (VFS) / Modified Barium Swallow	439	332	852

Voice Evaluation (Acoustics)	212	109	106
Video laryngostroboscopy	-	21	-
Joint Head Neck Speech Therapy Flexible Laryngoscopy	880	864	1819

There was focus on providing adequate Total Laryngectomy Tracheo-esophageal Puncture (TEP) voice rehabilitation. The TEP valve was successfully changed in **37** patients. Evaluation of Total Laryngectomy Swallowing and Hypertonicity was successfully performed using Video fluoroscopy; voice production was augmented with Botox in five (**05**) patients.

Education

The TMC Speech & Swallowing Therapy fellowship program entered the third year since inception. Foreign faculty invited for this fellowship program included: Dr Justin Roe, Head of Speech & Language Therapy, The Royal Marsden Hospital & Imperial College London; and, Dr Vrushali Angadi, Assistant Professor in Speech Language Pathology at University of Kentucky USA.

The departmental staff delivered three lectures virtual lectures for conferences of the United Kingdom.

Internship Speech Therapy students from All India Institute of Speech and Hearing, Mysore visited the department on a regular basis as part of their training.

Research

A research article on "sequential swallowing assessments in patients undergoing upfront surgery for oral tongue squamous cell carcinoma" was published ahead of print in 2021.

Other ongoing studies included:

- Functional rehabilitation after glossectomy
- Head & Neck Lymphedema.

Staff Achievements

Mr Dhanush S (Scientific Officer C – Speech and Swallowing Therapy at TMC Varanasi) – awarded "Sponsor-a-student Award Program" for March 2021 Annual Meeting (virtual) in the Dysphagia Research Society, United States of America.

Future Plans:

- Funding was received for procurement of a new Digital Audiometer and Otoacoustic Emission video-otoscope
- A proposal to translate and validate Pediatric Audiology Quality of Life Questionnaire in Hindi (PAQL-H) & Marathi was put forth
- Establishment of similar services at other cancer hospitals under TMC across India.

Department of Surgery

Head, Dr Ajay Puri.

Service

The department offered the state of the art surgical care that included complex and challenging vascular reconstructions and multiple organ resections, skull base procedures, limb salvage surgeries, minimal access and robotic surgeries. A large volume of microvascular reconstructions were regularly performed.

The department continued to actively support the units based at Sangrur, Vizag and Varanasi that have were expanding their scope of activity.

Despite the second wave of COVID-19 by the delta variant during March–June 2021, the department continued to deliver exemplary surgical services by substantially increasing on previous numbers in addition to providing personnel for "Covid related" duties across the hospital.

Procedures	2020	2021
Major OT Procedures (Surgical)	6002	8599
Minor OT Procedures (Surgical)	8309	12,048

Education

The department augmented its intake of M.Ch students to aid capacity building of surgical oncologists for the country and currently trained 92 M.Ch students, 31 Post M.Ch. candidates, 17 HBNI fellows besides training multiple national and international visitors. The annual "Oncosurg" conference was successfully organized on a virtual platform with recorded videos. In addition, the department members conducted and participated in many specialty meetings within TMH, nationally and on international platforms. They established an online portal for surgical technique videos that helped for training purposes.

Research

The department had to its credit many investigator-initiated and sponsored research studies as well as research collaborations with reputed Indian institutes like IIT, BARC and multiple international institutes. An indigenous robotic stereotactic system was being developed by Neuro unit at ACTREC in collaboration with the Department of Remote Sensing and Robotics, BARC, Mumbai. Surgeons involved with the tissue bank were part of a collaborative endeavour that received DST funding for developing enhanced biologic dressings for wound care. The Staff members continued to contribute chapters to various oncology books and have numerous publications in national and international peer reviewed journals.

Staff Achievements

Dr. RA Badwe

- The best Angel Communicators of Covid Pandemic Era award by Hon'ble Governor of Maharashtra nominated by Public Relations Council of India committee
- Nelson Mandela Nobel Peace Award conferred by Nelson Mandela Nobel Peace Award Academy.

Dr Ajay Puri

• Co Editor Book - A Case study Atlas on Orthopaedic Surgical Oncology for Bone Tumors by Springer publications.

Dr Pankaj Chaturvedi

- Vice Chairman, Global Outreach Program, American Head Neck Society
- Technical Advisory and Monitoring Committee, Ministry of Health and Family Welfare.

Dr. SV Shrikhande

• Awarded "Excellence in Cancer Care" Award in July 2021, by Governor of Maharashtra, His Excellency Shri. Bhagat Singh Koshyari, Shri Rajesh Tope, State Cabinet Minister of Health, and Shri Aslam Shaikh, Guardian Minister of Mumbai City, Government of Maharashtra.

Dr Amita Maheshwari

• President Elect, Association of Gynaecologic Oncologists of India, 2019-2022

- Principal Editor (India) for the Journal of Gynaecologic Oncology
- Member of Palliative Care Curriculum committee of International Gynaecological Cancer Society.

Dr. Prathamesh S. Pai

- President, Foundation for Head and Neck Oncology, India, 2021-2023
- Editor Stell and Maran's Head and Neck Surgery Text Book 8th Edition.

Dr Vinay Kant Shankhdhar

• Prof. S. R. Singh Oration-MLN Medical College, Allahabad.

Tissue Bank

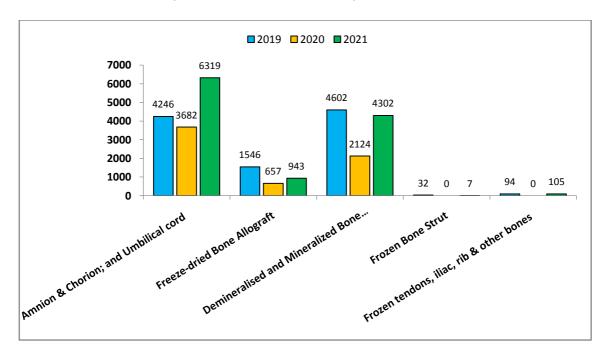
Mrs Urmila Samant, Consultant

The TMH Tissue bank was a unique facility in the country and was registered with the Directorate of Health Services, Maharashtra State. Surgical residues and tissues, obtained from living and cadaveric donors, and amniotic membrane donated after deliveries, were processed after appropriate screening and terminally sterilized by gamma radiation. These safe, reliable, cost effective and quality assured human bone allograft and biological wound dressings were utilized in the hospital and distributed across India for transplantations from varied disease conditions.

Service

In 2021, the Tissue Bank processed 1277 amnion, 1721 living bone, 04 whole tooth, 05 dentin donors, resulting in the production of **11,730** grafts.

Grafts issued during the year were **8632**. These were utilized by all hospitals under Tata Memorial Centre, 265 hospitals in Mumbai, and 217 hospitals in other States of India.



Education

The tissue bank was involved in conducting awareness programs to promote tissue donation and utilization of allograft; and, the education and training of personnel to open new Tissue banks. Continuous networking with donor hospitals and tissue retrieval centers in Mumbai and outside was ongoing to increase awareness and the tissue donor pool.

Thirty-two (32) Nursing students and one Doctor were educated on the regulatory requirements of tissue banking as well as the donation, processing, and clinical use of human allograft. Four (04) observers visited to learn basic tissue processing procedure with a view to starting a new tissue bank.

Lectures were given on Tissue bank awareness to Wadia Hospital Nursing students.

The staff of Tissue Bank participated in virtual Basic course on Organ Donation and Transplantation organized by Zonal Transplant Coordinating Centre (ZTCC), Mumbai.

Research

Research activities focused on the clinical efficacy, improvement of the Tissue Bank products and the development of new and/or customized grafts for specific surgical and medical requirements. The Tissue Bank products were used in the various research projects of dental students. Assistance was also provided to 7 MDS students for research projects using the dental allografts.

Ongoing collaborative projects included those on:

- Placental tissue for non-healing wounds
- Allografts for dental regenerating materials for intraosseous periodontal defects
- Evaluation of mineralized & non-mineralized tooth allograft.

Staff Achievements

• The staff of Tissue Bank was involved in the panel that outlined the new Regional cum State Organ and Tissue Transplant Organization (ROTTO-SOTTO) guidelines and contributed to a ROTTO – SOTTO video increasing awareness of tissue donation.

Transfusion Medicine

Head, Dr. S.B. Rajadhyaksha.

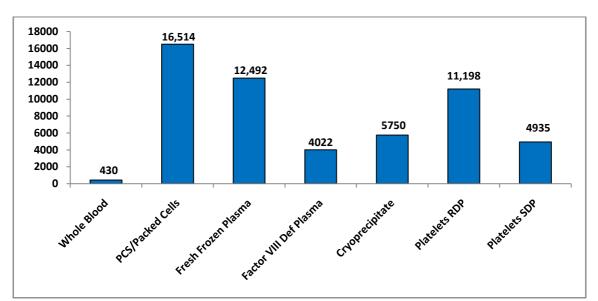
The Department of Transfusion Medicine (DTM) provided high quality, specialized blood components to oncology patients and maintains high standards of services. It had state-of-the-art-technology and its services (like blood irradiation) were availed by various institutes in the city.

Service

To ensure adequate blood supply, 162 outdoors blood donation camps were conducted and total **11308** blood units were collected as compared to 9983 units in 2020. All blood donation procedures (indoor and outdoor) were conducted following adequate safety measures as per government guidelines for ongoing COVID-19 pandemic. In continuation of voluntary donor motivation campaign, blood and platelet donation awareness sessions were conducted on digital platform. A total **49976** blood components were made available for patients. From voluntary donors, **4369** plateletpheresis procedures were conducted. The DTM was registered in Haemovigilance Programme of India (HVPI) and started reporting Donor Adverse Reactions.

The process of sending surplus plasma for fractionation was initiated in 2020 and was being continued regularly. Seventy (70) granulocyte concentrates were issued for patients with severe neutropenia.

Corporate (CSR) funding enabled the department to procure essential equipment like Platelet Incubator with Agitator, Central Monitoring System, Donor Couches, Tube Sealer and Cryobath. DTM has also received CSR funds to establish NAT facility to enhance blood safety.



Blood Components prepared

Comparison of annual departmental activities

	2020	2021
Blood Units Collected	13,441	16,944
Blood components prepared [Whole Blood + Packed Red Cells + Platelets (RDP) + Fresh Frozen Plasma + Cryoprecipitate + Factor VIII Deficient Plasma]	39,589	50,406
Plateletpheresis Procedures	3743	4369
Single Donor Platelets (SDP) prepared	4195	4935
Specialised procedures		
a. Irradiation of Blood products	26,367	32,791
b. Granulocyte harvests	73	74
c. Therapeutic phlebotomy	15	22
d. Therapeutic leukapheresis	02	03
e. Therapeutic plasma exchange	11	05
Total	26,468	32,895

	2020	2021
Laboratory investigations		
a. Blood grouping	38,892	53,051
b. Cross matching	28,988	37,350
c. Antibody detection	133	218
Total	68,013	90,619

Education

Continued educational and recapitulating teaching activities were carried out on digital platforms.

Research

Research activities were focused on patients and donor safety.

Staff Achievements

Dr. SB Rajadhyaksha:

• Member of Governing Council of State Blood Transfusion Council (SBTC), Maharashtra.

Dr Priti Desai:

- Expert Committee member of 2nd Edition of National Blood Transfusion Council (NBTC) standards for blood centres
- Member of Special Interest Group (SIG), an initiative under Indian Society of Transfusion Medicine (ISTM): Patient Blood Management.

Dr Anisha Navkudkar:

- Member of Special Interest Group (SIG), an initiative under Indian Society of Transfusion Medicine (ISTM): Immunohematology
- Member of Young Professional Forum (YPF), an initiative under Indian Society of Transfusion Medicine (ISTM)
- Received "Award of Excellence" at TRANSCON 2021 (virtual conference).

Stewardship



Food Services

Administrative Officer, Mr. RA Patil.

The core team of the Food services was formed by: the Kitchen team that comprised 3 Head cooks, 13 Cooks, & 40 ward boys; and, the Cafeteria team that composed of 2 Head butler, 4 Butlers & 12 ward boys, along with 5 supervisors, 1 Technical staff, and 2 Attendants.

The team proudly catered to more than 2000 persons, four times a day that covered around 8000 meal servings (TMH Staff and patients from 16 different wards), and also arranged breakfast & meals during more than 100 meetings/conferences in the year 2020–2021.

The kitchen worked 24 x 7 during the past years of the covid pandemic, and offered nutritious and tasty food items at all times. The food menu was changed regularly to suit all palates and tastes.

Since April 2020, the kitchen supplied 5.5 lakh food packets for Covid positive patients and their relatives.

As the diet requirement varied from patient to patient, the cooks ensured to these needs by providing adequate, appropriate, and tasty offerings.

On festive occasions, Theme Luncheons were organized; these received accolades from the staff members.

The management efficiently managed to provide delicious, nutritional, and varied catering within the allocated annual budget.

The kitchen recently procured a 'Chapatti making' machine in TMH and introduced in-house kitchen for the residential staff of Anushakti Nagar in BARC campus. These initiatives resulted in cost savings of more the INR 8 lakh per month.

The kitchen was certified as 'Good' at the "Eat Right Campus" as per the guidelines established by the Food Safety and Standards Authority of India (FSSAI).



TATA MEMORIAL HOSPITAL, Mumbai

is certified as



as per guidelines established by Food Safety and Standards Authority of India



Good

Shri Arun Singhal **Chief Executive Officer** FSSAI

Auditing Partner ASTRALEUS SERVICES PRIVATE SHREE ANALYTICAL TESTING & LTD. REASEARCH LAB

Training Partner

Implementation Partner STATE FDA MAHARASHTRA

Valid up to: 21 January 2024

Achievements

Mr. Rajendra A. Patil (Deputy Administrative Officer) & his family felicitated for exemplary work at TMH by Smt. Hemamalini & Mumbai Suburban Collector, Smt. Nidhi Choudhary at the Diwali SnehSammelan of ParmarthRatna Awards 2021 on October 30, 2021.

Housekeeping

Officer in Charge, Mrs Rajlaxmi Naik.

It was essential to provide a peaceful, infection-free and pleasant atmosphere for the stressedout cancer patients who were being treated at India's premier cancer centre, the Tata Memorial Hospital, Mumbai.

The Housekeeping Department (HKD) was an important operational department that performed a critical role in ensuring cleanliness and hygiene of a highly desirable level in the entire hospital premises.

The HKD also managed Organic Manure plant, maintained the garden, undertook re-location of equipment and furniture systematically and in time; ensured maintenance and upkeep by coordinating user complaints about maintenance, electrical, civil, linen & laundry with their respective departments; planned schedules and supervised Pest control and façade cleaning; implemented doctor's quarters allocation; made Foyer & stage arrangements for functions, examinations, events, etc. at GJB auditorium and HBB 13th floor.

The HKD accomplished these vast arrays of tasks by utilizing the latest equipment, materials and techniques, while meticulously planning & scheduling their activities. The HKD trained, motivated & mentored their in-house staff to improve their performance and productivity that ensured thorough & timely completion of tasks.

The HKD, during the Covid pandemic, undertook sanitization of the general areas, shifted materials and beds, helped with arrangements in vaccination booths, and delivered food packets to quarantine areas for resident doctors.

The HKD was repeatedly appreciated and praised for their prompt response, dependability, efficiency and timely performance by the Directors and Administrative Staff.

Linen & Laundry

Deputy Administrative Officer (Linen & Laundry), Mrs Rashmi Chhabria.

Linen & Laundry Department provided indirect services to the patients and played a vital role in smooth functioning of the hospital. They ensured adequate supply of clean linen for the comfort and varied needs of the patients as well as doctors/Nurses and staff members.

Linen was one of the major infection spreading sources, if proper care was not taken. Hence infection control was imperative in the laundry activities and the following measures were implemented:

- Sluicing infected/stained linen in the wards and CSSD
- Collection of soiled linen in hamper bags from the wards
- OT green linen sent through linen chute in cotton hamper bags
- Separated soiled and clean linen area; separate entry for soiled linen
- Soaking of infected linen (with blood and body fluid) in disinfectant White linen to be soaked in 1% Hypo-Chlorite for minimum 20 minutes – Colour linen with combination of Chlorhexidine & Cetrimide or any other equivalent disinfectant. Cetrimide was a detergentbased disinfectant
- Handling of linen wearing gloves and facemasks by the laundry workers
- Use of Hypo Chlorite in washing process
- Use of hand rub Chlorhexidine Gluconate
- Daily cleaning of flooring with Hypo-chlorite
- Separate linen trolleys for collection and delivery of linen
- Washing of linen trolleys every day with disinfectant
- Use of iron racks instead of wooden racks for storage of linen to avoid bed bugs, white ants and moths
- Dry and clean storage area to avoid fungal infection.

In addition to the above, the following work was performed by the Linen & Laundry department to provide efficient services to the patients and Staff of TMH:

Laundry:

- 1. Numbers of pieces washed annually, ~27,00,000
- 2. Soiled linen included Patients linen, Doctors uniform, OT green linen, Aprons, Towels, etc.
- 3. Bed making done of 764 Beds on daily basis of all the wards
- 4. On-line Gate-pass prepared for outward movement of soiled linen
- 5. On-line receipt and Issue of linen to various areas of the hospital
- 6. Collection of Soiled linen and proper distribution of clean linen as per wards / departments
- 7. Utmost care was taken for highly infected and Covid patients soiled linen
- 8. Laundry services were operational from 6.00 am daily, throughout the year
- 9. Half-yearly linen inventory conducted of various wards for maintaining linen accountability in ward.

Linen:

- 1. Linen Department was a centralized department that functioned by maintaining the stock of the fabric and stitched linen, to support day to day requirement of various areas of the hospital
- 2. Issued uniform to staff to all cadres
- 3. Regular stitching work was done through RC Vendor, via the Work-order
- 4. Linen department held 134 Non Stock items (Fabric, Raw-Material, Tailoring Accessories)
- 5. Annual & Half-yearly Stock-Verification of Linen Inventory was done, through Maintenance & Verification cell
- 6. New service of embroidery on Scrubs and Aprons was introduced by Linen department after procurement of the Embroidery Machine
- 7. Linen Department took maximum efforts and innovative methods to fulfill the requirements of various wards & departments
- 8. Online receipt and issue of linen fabric and finish goods was performed for smooth functioning of departmental work
- 9. Condemn & Mending (with physical verification) and other emergency work was carried out by the tailors.

Personnel

Deputy Administrative Officer (Personnel), Mr. MD Ghodake.

The hospital employed 808 Labour Staff governed by Brihanmumbai Municipal Corporation (BMC) and the Central Government of India (CG) rules. They play vital role in the smooth function of patient care services and were responsible for Cleanliness and the Transport of Specimens, Documents, Food & other services to patients etc.

During the year 2021, the department conducted staff promotional activities, and 53 labour staff (BMC&CG) got promoted and 40 employees were given permanent status; 69 labour staff superannuated/voluntarily retired. New promotion policy for CG employee was implemented.

Meetings were conducted with recognized union to resolve the common issues for smooth functioning of the hospital work. Allocation of man power to wards, departments and sections was fulfilled to maintain a high standard of cleanliness and hygiene. The Time Keeper Office functioned in three shifts i.e. from 6 am to 11.30 pm, to facilitate deployment of labour staff to various departments in the hospital. Deployment of substitute against absenteeism through the system was implemented. Attendance card system was discontinued to avoid human movement in Time Office.

Implementation of swiping based monthly attendance was implemented for salary calculation through Pay Roll of BMC & CG employee. Intimation of EOL to employee concerned via sms was successfully implemented that helped group 'D' employees to apply leave against EOL days. As per Ministry of Finance directives, Overtime allowance of BMC & MTS was reduced from 17768 hrs to 6537 hrs. This was made possible because of continuous support of TMC CAO, Nursing In charges, and HODs.

Submission of identity card form for labour staff as well as pensioner and festival advance form, Annual Budget, Pass Port form, service certificate to retirees and Pension form were made available through online process. Computerized leave application, leave crediting and leave record maintenance system was successfully made operative. During the year, 75 files of retired employees and family pensioners were scanned and entered in PDR software. Now the pension related documents and calculation data could easily be extracted without referring to the personal file of the pensioner. It reduced the time required to perform this activity manually. Bank/court recovery/Pensioners forms related work in rule out labour staff was also done through Personal Information System (PIS) transaction. Three hundred twenty (320) number of e- service books for CG Employees were prepared and made available online. The Annual Performance Assessment Report (APAR) for Group 'D' CG employee was implemented and APAR related grievance settled amicably.

The Personnel Department organized various training programmes for labour staff through outside agency. The training was imparted to all the labour staff on behavioral aspects, communication, family budget, dignity of labour, absenteeism, etc.

The Personnel Department in coordination with the selection committee nominated labour staff with good work record for "Best Worker Award" and were felicitated at Annual Hospital Day Function.

RTI CELL:

In the year 2021, 181 (one hundred eighty one) Right to information (RTI) applications were received by RTI cell, TMC. All the applications were replied in prescribed time. Out of these 181 applicants, 36 (thirty six) preferred appeal (First Appeal) to the First Appellate Authority (FAA). Total 3 (three) CIC hearings (Second Appeal) were attended before Central Information Commission and compliance as per CIC orders completed in time.

Purchase Department

Purchase Officer, Mr. HC Waghmare.

The Purchase Department procured various consumables, capital & minor equipments, spare parts, local purchases etc. The department strived to provide efficient service to the institute by way of arranging seamless and timely procurement and distribution of quality materials to the various user departments.

In the year 2021, the following were procured:

- Capital Equipment, Spares, and Consumables to the tune of INR 71 crore through the Import Cell
- Similar above items worth INR 18 crore through Non Rate Contract channel, and,
- Reagents, Consumables and other essential services worth INR 57 crore through Rate Contract Cell.

In the calendar year 2021, materials worth INR 146 crore were procured.

As per Rule 149 of General Finance Rules (GFR) 2017, the department began the process of procurement of materials through GeM (Government e-Marketplace). In the calendar year 2021, department procured 33 materials through GeM.

The department also began the process of procurement through Central Public Procurement Portal (CPPP).

Security

Chief Security Officer (TMC), Mr Johnson Lukose.

The security department shoulders its core responsibilities of Surveillance, Supervision and Regulation of the movement of people, material, elevators, vehicles, etc. in order to ensure safety & security of the hospitals' property.

Other responsibilities included: fire-fighting, scrutinizing the documents of foreign nationals and their attendants before registration & admission, and liaise with local police & Civic officials.

Besides the above normal duty, the department arranged transportation of food and medical supplies to the Covid facility at ICS, doctor's accommodation at Ajmera (Wadala) as well as the other sites i.e. Haffkine, NPP, etc.

In addition to this, the hospital transport was engaged in collecting Breakfast, Lunch & Dinner from various locations in Mumbai to cater the needs of Residents, Emergency Staff and Patients at Borges Memorial Home, who were quarantined / isolated due to the pandemic.

Transport arrangements were also made for collection of SWAB from different locations in Mumbai where hospital staffs were quarantined and isolated. Shifting of COVID Positive patients and quarantine cases including staff was carried out with due protections to different locations across Mumbai.

The mammoth job of adhering to COVID protocols and clearing the human remains, following all laid-down guidelines each and every time, and by liaison with BMC and Police Escort to designated crematorium was carried out.

Adequate arrangements in coordination with Police and other related agencies were made during the VIP visits.

The Republic Day and the Independence Day celebrations were organized.

The Vigilance Awareness Week–2021 was observed from 26.10.2021 to 01.11.2021. This year the theme was "Independent India @75: Self Reliance with Integrity". The inaugural function was graced by Mr. Vishwas Nangare Patil, IPS as the Chief Guest.

Central Sterile Service Department

Officer in Charge, Mr Rajesh More.

The Central Sterilization Supply Department (CSSD) is an integrated service in hospital that performed sterilization activities on medical devices, equipment, consumables; and supplied the same to the user department for use in patient care. A consistently high-standard in the sterilization techniques and product quality was maintained with the centralization of cleaning, packing, sterilization, and distribution of all items in one department. The CSSD provided services to all the major departments of the hospitals such as Operation Theatres, all wards & ICUs, Outpatient departments, etc.

The CSSD department's vision was to provide an efficient, continuous and quality supply of sterilised material to all patient care areas to minimise infection in patient care, using the state-of-the-art technologies. The department has modern equipment such as ultrasonic machine, washer disinfector, pre –vacuum sterilisers, Ethylene Oxide sterilizer and H₂O₂Plasma sterilizer, sealing machine, hot air drier.

The Department followed sterilisation validating indicators such as physical, chemical, biological for the effective monitoring process to check the quality of the sterile material before issuing to user department. There was a system in place to support and ensure that surgical instruments are correctly handled before and after surgery.

The Department also followed the unidirectional flow concept in the department to avoid any cross contamination in the different areas of the department such as decontaminated area, packaging area, sterile storage area.

The CSSD department functioned in shifts round the clock, processing linen materials, dressing materials, surgical instruments, ETO materials, Plasma materials by various method of the sterilization. The Steam sterilizer, on an average, cycles 30 times per day, with 40 cubic feet of material per cycle. The Gas sterilizer takes one load of 5 cubic feet per day and 4-5 cycles of Plasma sterilization per day.

The department also received and issued disposable materials and consumables to user department such as gloves, cap, mask, gowns, drapes, catheters, etc.

In the pandemic times, additional responsibility of PPE, mask receiving and distribution to all other centres of TMH was carried out.

Medical Social Services

Officer in Charge, Mr Chandu Parab.

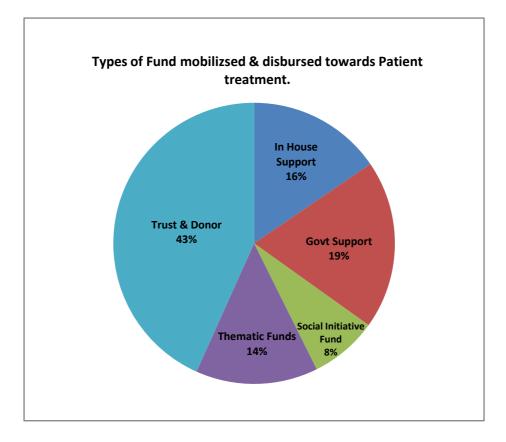
The Department of Medical Social Services (MSS) catered to socio-economic needs of patients where objective and subjective assessment of a patient and their families was vital in order to offer seamless care. On one hand, the department carried out a thorough need-based assessment to determine precisely the support that was needed by a patient, and on the other hand, it engaged into networking and advocacy to gather resources (in the form of money, materials, accommodation, etc.) for those needs. The role of Medical Social Worker (MSW) was to optimally disburse these obtained resources to needy patients.

The SOP-guided thematic funding broadened the horizons from curative intent to improving quality of life, End of Life care, gender sensitive needs, and age-appropriate care. Counselling, caregiver's education, informational updates etc. were broad activities conducted by the MSW team. The team also played a strong role in documenting at very early stages, the eligibility of a patient for various financial support schemes of government such as the 'Mahatma Jyotiba Phule Jeevan Arogya Yojana, the 'Ayushman Bharat Pradhan Mantri Jeevan Arogya Yojana', the 'Health Ministers Fund', and similar funds from various States in the ciountry.

Despite challenges of the pandemic, the MSW team worked tirelessly and made some remarkable achievements in the year 2021:

- More than 5000 patients were provided treatment almost free-of-cost after assessment
- Nearly 20,000 patients were offered counselling and guidance
- Up to 13,000 patients were provided medicinal concessions to the tune of over INR 1.25 crore
- Cumulatively, over INR 15 lakh of scholarships were granted to 63 patients and survivors pursuing education while on treatment; and, encouraging and helping them return to their normal lives
- Nearly 1000 patients were helped with accommodation arrangements at TMH partnered facilities in addition to another 1000+ patients who were guided in identifying and arranging for accommodation with other entities. Information about food, travel and logistics was also provided to these patients

- The members of MSS team continued their academic contribution to various mentorship activities, research studies, trainings, community awareness in prevention oncology and setting up of MSS Departments at other TMC hospitals across India
- A sum of INR 39 crore was mobilized for providing financial assistance to 9735 cancer patients including covid-positive cancer patients
- An MSW notes page was introduced in the Electronic Medical Records to capture psychosocial assessment of patients so that clinical teams could plan treatment accordingly
- A digital token system was introduced, that ensured efficiency and transparency in the systems and processes followed in the department and also for better data capturing in the form of MIS Reports.



Public Relations Office

Mrs Swati Mhatre, Junior Public Relations Officer

Public Relations (PR) played an important role in maintaining a positive image of the organization. The role of PR officers had to be proactive with the various publics of the institution. The department followed the simple principle of compiling data by active research, evaluating & analyzing the problems/data, and planed with the management and implemented such programs, keeping in considerations the resources available. Prompt feedback was accumulated to analyze the success of these programs and to make them better.

The various core areas/publics of the PR were:

Media:

Maintaining transparent environment with the media with regular personal contact led to TMH friendly media with positive achievements of TMH being widely highlighted & reported in the media (newspapers/online). The following press conferences were held during the year 2021:

- Press conference on the Clinical Breast Examination on February 25
- Press release sent to various newspapers regarding inauguration of Digital Mamorgraphy facility on March 8
- Press Release sent to various newspapers regarding Alkem Laboratories Ltd. partners with Tata Memorial Hospital to establish state of Art cancer care facility at Muzzaffarpur, Bihar on March 24
- Press release sent to various newspapers regarding MHADA to handover 100 flats to TMH on March 25
- Online press conference arranged regarding TMH to received 3800 O2 concentrators on May 10
- Press release sent to various newspapers regarding TMC publishes first of its kind study on the cost of illness of oral cancer in India on June 19

- Press release sent to various newspapers regarding TMC launching "Centre for strengthening cause of Death Data" E-learning course on August 6
- Press release sent to various newspapers regarding TMC demonstrated study on Image Guided IMRT in cervical cancer reduces toxicity v/s conventional RT on September 23
- Press release sent to various newspapers regarding inauguration of NAT Project (Nucleic-Acid Amplification Test) funded by State Bank of India's CSR arm SBI foundation and SBI DFHI on November 26

Advertisements:

In the year 2021, a total of 84 tender Notices/Advertisements were published in various newspapers.

Staff Welfare Program:

An employee of the institution was the main backbone for running the hospital smoothly. Various in-house/outdoor activities were conducted to encourage them.

Cultural:

Rangoli competition, Diwali celebration for staff, various competitions on the occasion of Hindi Pakhwada (fortnight), and Marathi Bhasha Week were organized.

Sports:

The department coordinated all cultural & Sports activities directed by the Department of Atomic Energy

Donations:

The department worked towards getting donations for patient welfare fund, cancer research, specific patient treatment, etc.

The department also conceptualized the Corporate Social Responsibility (CSR) funding for the hospital. The efforts led to a successful campaign and resulted in the following funds.

Patients/ Relative:

The department in co-ordination with various NGO's, also organized outings, cultural programmes, yoga sessions, movie shows, etc. for the patients regularly. These programmes provided a welcome relief to the patients from their pain and stress, and they looked forward to such programmes.

International Patients Relations:

Mails were sent to International Patients for the purpose of Medical visas & consultations. The PR Office also advised, counselled, and guided the International patients on exchange of currency, accommodation, and other issues.

A total of 591 Foreign National patients registered in TMH in the year 2021.

LIC Death Claims:

All LIC & Pvt. Insurance Policy death claims were processed by the PR to avoid any hardship faced by the survivors for claiming their insurance. A total of 126 claims were processed in 2021.

Conferences / Meetings/ Seminars:

The PR Office coordinated conferences, meetings & seminars for the hospital. They looked into the requirements of kit bags, flowers, medals, transport, receiving dignitaries, banners, posters, badges, etc.

NGO's & Volunteers:

More than 30 NGOs and over 40 volunteers were allocated specified voluntary activities for patients' support that included:

- Streamline patients at the OPD, DMG, blood collection centres
- Helpline, for Financial support, Accommodation guidance, General counseling & guidance to walk-in new/old patients, Ration distribution, Educational support, Rehabilitation, Goodie bags distribution to admitted patients, Fruits distribution to OPD & Gen. ward patients, etc.
- Cloak Room Services managed by Braj Gauri Trust for to patients to keep their luggage.

Some of the regular donors:

Access Life Assistance Foundation	Little More
Al Musaddiqah Women Welfare Organisation	Love & Care
Amba Gopal Foundation	Make A Wish Foundation
Brain Tumor Foundation	Madat Trust
Braj Gauri Trust	Manav Seva Cancer Relief Trust
Cancer Patients Aid Association	Oncohappy (Brain Cells Foundation)
Cankids	Shraddha Foundation
Cuddles Foundation	St. Jude Trust
Government of Assam	Sadbhavana Trust
Gunwanti J. Kapoor Trust	Sanjeevani Life Beyond Cancer
Gurnani Sati Charitable Trust	Suryakhetra Foundation of Education & Charitable Trust
Indian Cancer Society	Tarun Mitra Mandal
Impacct Foundation	Utsaah Foundation
JASCAP	V Care
JACAF	Vasanta Memorial Trust
Karo Trust	Woman's Cancer Initiative
Konark Cancer Foundation	

Achievements:

- Mr. SH Jafri, Senior PRO TMC was appointed as chairman of Mumbai chapter of the Public Relations Council of India (PRCI) on January 17.
- SH Jafri, Senior PRO TMC was conferred with Honorary Doctorate in Humanities by UN affiliated, Baptista Peace University on February 4.

Quality Management

Quality Manager, Mrs Chitra Hingnekar.

The Laboratory quality management team continued to work towards maintaining the required standards, regulatory norms and accreditation status through internal audits and external Desktop/remote surveillances in the year 2021.

Clinical Laboratories:

The Clinical Laboratories obtained the grant of continuation of accreditation through Desktop surveillance for their services in May 2021 in lieu of On-site assessment due to Covid Pandemic.

- Newly joined consultants, senior residents, and adhoc doctors of Histopathology, Cytopathology, Molecular pathology, Microbiology & Serology, and Biochemistry were recognized as authorized signatories (26) in their respective laboratory disciplines through Desktop and remote assessments.
- Internal audits were conducted by the National Accreditation Board for Testing and Calibration Laboratories (NABL) trained TMC consultants and staff for all the accredited clinical laboratories and sample collection areas of the hospital. Non conformities identified (42) were dealt with appropriate Corrective and Preventive Actions (CAPA) resulting in continual improvement and adherence to the required standards.
- The laboratories participated in the External Quality Assurance & Proficiency testing Programme conducted by the College of American Pathologists (CAP–PT). The Labs had **108** challenges (Cycles) for total **51** test parameters that helped them to evaluate the reliability of methods, materials, equipment and training impact.

Education:

Keeping in accordance with ISO 15189:2012 standards and relevant NABL requirements, training and orientation sessions were conducted for the existing and new staff. Covid appropriate behavior was followed during all the sessions.

- Four Biannual phlebotomy training sessions were conducted in co-ordination with the Nursing and Laboratory staff in the month of July and December 2021. 274 attendees from Nursing, laboratory, Phlebotomy and Clerical staff were benefitted from the above sessions.
- Annual Management Review meeting was held in Nov, 2021 to review the Quality Management System and the services provided by the Clinical laboratories in the presence of the HODs/OICs, and the user departments.
- As a part of staff induction and training, following sessions were conducted to the newly joined staff (consultants, SRs, JRs, Trainees, Permanent, Contract and Leave substitute staff) that was attended by **224** staff members.
 - Universal safety precautions and Biowaste management (Once)
 - Fire Safety (Once)
 - o DIS (Once)
 - Orientation on QMS and accreditation (thrice)
- In addition DQMs and QM met four times in the past one year to review the DESKTOP surveillance and QMS requirements.
- Dedicated sample counter was made for sample accession and submission for transporting to ACTREC, ensuring safety and sample integrity.

Hospital:

Facility Rounds were conducted during the last quarter of the year in the Radio-diagnosis, Nuclear Medicine, Radiation Oncology Departments and OT Premises for identification and redressal of infrastructural concerns.

Patient Safety:

Incident Reports data submitted On-line were analyzed and presented during the Hospital meeting. A total of 908 Incidents, Clinical (855) and facility (53) were seen reported from the time of introduction of on-line Incident reporting system (February 2020 – December 2021).

Staff Clinic

Staff Physician, Dr Sandeep Tandon.

The Staff Clinic was concerned with providing medical treatment to 2230 TMH staff including 1537 super staff (excluding CHS dependents), 693 labour staff (including their dependents) for their day to day ailments. The clinic also offered medical facility to the project staff along with conducting routing activities of clinical medicine as well as Occupational-Health related administrative responsibilities. The clinic was also concerned with managing and reporting Needle-Stick injuries, Vaccinating Staff against Hepatitis-B, Conducting Pre-employment examination, and preparing health-related policies & guidelines. In 2021, the staff clinic dealt with approximately 27807 consultations, 501 pre-employment examinations, 45 Hepatitis-B vaccinations, and 38 Needle-Stick injuries.

Salient unique initiatives:

- 1. New initiative of online Yoga Classes (Weekdays as well as Weekend batches) with the support of Kaivalyadham, Mumbai
- 2. New Diabetic OPD in Staff Clinic
- 3. Health Insurance Scheme that had been initiated for the Labour staff, was running smoothly with increasing number of Labour staff opting for it
- 4. Staff access to their investigation reports online through their Employee Portal, as well as incorporation of scanned staff ECGs linked to employee Portal, for access in emergency
- 5. Incorporated Online Local Purchase Prescription Module, so as to have documentation and records pertaining to local purchase prescriptions issued from Staff clinic for audit trail and quick procurements
- 6. Online Medical certificate issuance initiated linking it to HRD. Time office and Personnel Departments, thus saving paper and ensuring online records
- 7. Online EMR for clinical documentation and scrapping of the Paper Files system
- 8. Staff clinic played an important role administratively in the run-up to our Institutions Covid preparedness with numerous staff teaching sessions along with HICC as well as triaging of staff on medical grounds with varying degrees of strictness criteria at various phases of the lockdown, which was a massive exercise in itself

- 9. Daily Documentation of staff Covid positives, all staff high-risk contacts quarantined, following up on a daily basis their reports, quarantine leaves, confirming negative covid reports prior to joining duties, online certification of fitness and quarantine leaves, daily Whatsapp Audio/Video rounds of all admitted staff Covid patients
- 10. Daily updated submission of staff positive, staff Discharged, staff Quarantined and staff fit to rejoin duties lists to the administration
- 11. Informing reports of RT-PCR (COVID-19) on daily basis to staff
- 12. Informing staff about their negative RT-PCR report & taking care of post covid-19 issues till they were fit to join duty at TMH
- 13. Approving medical fitness to join duty post isolation/quarantine period
- 14. Segregating staff for either home isolation or institutional isolation facility depending on co-morbidity
- 15. Preparation of periodically reviewed and revised list of special leave on basis of Risk Stratification and Risk grading into various categories and subsequent decisions based on these
- 16. Hospital staff who worked from home, assisted the Clinic in telephoning the staff and informing them their due dates for swab tests and fitness to join duties
- 17. Entertaining numerous panic stricken phone calls, messages, reports and queries from staff throughout the pandemic patiently with empathy
- 18. Compiling data of covid positive staff on a daily basis throughout the pandemic with weekly administrative reports to administration for DAE submission.

Studies

Academia

Director Academics, TMC Prof. Shripad D. Banavali Dy. Director Academics, TMC Prof. Siddhartha Laskar Dean Academics (Projects) Prof. Kailash Sharma In-charge, Students Affairs Prof. Sarbani Ghosh Laskar

Tata Memorial Centre (TMC) is a Grant-in-aid institute under Department of Atomic Energy and is a stand-alone post-graduate institute under Homi Bhabha National Institute (HBNI), which is a deemed to be University under Department of Atomic Energy. For the last more than 75 years now, TMC has been contributing in the development of trained manpower in the field of oncology for the entire nation by imparting knowledge through various educational activities

For academic purposes, the Mumbai units of TMC comprising of Tata Memorial Hospital (TMH), Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), and Centre for Cancer Epidemiology (CCE), are clubbed together. We have post-graduate courses like M.Sc. in oncology nursing, patient navigation (Kevat), clinical research, radio-physics, etc. Eighty-five (85) students were registered in all these courses in 2021. We offer MD courses in 8 subjects namely; anesthesiology, microbiology, nuclear medicine, palliative medicine, pathology, radiodiagnosis, radiotherapy, and transfusion medicine. The admission of MD students for the year 2021 has been delayed this year because of various reasons and students are just joining in March 2022. The same is also true for our DM & MCh students. We offer DM in 6 subjects critical care, gastroenterology, interventional radiology, medical oncology, onco-pathology & pediatric oncology; and MCh. in 4 subjects—gynecological oncology, head & neck surgery, plastic surgery & surgical oncology. Every year 156 students join TMH for MD / DM / MCh courses. We also offer PhDs in both health-sciences and life-sciences. There are 18 Principal Investigator (PI) Labs in the Advanced Centre for Treatment, Research & Education in Cancer (ACTREC) at Kharghar, Navi Mumbai who take in up to 20 to 25 new PhD students each year.

TMC also runs various HBNI certified Fellowships as well as TMH Fellowships. Sixty-six (66) students join these various Fellowships every year. Last year we started 3 new HBNI Certified courses: M.Sc. in Public Health & Epidemiology; Masters in Occupational Therapy Oncology; Fellowship in Immuno-Oncology; and, we have received HBNI approval for 3 new courses: Masters in Patient Navigation (Oncology); Fellowship in Pediatric Palliative Care; and MD–PhD Program. In addition, we have also started 7 new TMH Fellowships: Fellowship in Geriatric Oncology; Fellowship in Immuno-Oncology; Fellowship in Pediatric Oncosurgery; Fellowship in

Head & Neck & Neuro-Oncology Imaging; Fellowship in Pediatric Interventional Radiology; Fellowship in Women Cancer Imaging; and, Fellowship in Musculoskeletal Oncology Imaging.

We also run technological and skill development courses. We offer 6 months' trainee/ observership in all the fields of oncology. TMC is recognized as a Training Centre in Cancer Education and Research by several National & International Organizations including WHO, IAEA, INCTR, and Governments of various African & SAARC countries. Because of the Covid-19 Pandemic and the ensuing travel restrictions, we had to keep our International training on hold in 2021. Yet, three overseas specialists visited TMC in 2021. In spite of the pandemic related lockdown & travel restrictions, 229 specialists from various parts of India have visited Tata Memorial Centre as Observers from all over India in the year 2021.

Like all across the Globe, Covid-19 really changed the way academics was done even at TMH. Not only all the Teaching was web based, we even conducted most of the MD / DM / MCh exams online as per the NMC guidelines. Even most of our Entrance Exams for technical courses & Fellowships were successfully done through web-based proctored exams. In addition to the courses, TMC as well as individual departments and Disease Management Groups (DMGs) conduct various CME activities all throughout the year, including our Annual Meeting on Evidence Based Medicine. Even most of these were done on web-based platforms.

Our residents always work hard, however this year was more important since they have been working with 25% less numbers, since last year's batch of residents have still not joined. I would take this opportunity to thank all our residents. At the same time, to improve their experience here, we have started the in-house Gymnasium last year. We also conducted "Conquest 21" a sports meet involving both students and staff of TMH, which was a great hit. We have also taken this opportunity of having less residents to renovate our PG Hostel located in BARC Campus and will soon inaugurate the new 14 storey Resident Hostel in the Haffkine's Campus.

Additionally, Academic activities are also taking place at Dr. B Borooah Cancer Hospital in Guwahati, Assam. TMC now has begun the process of starting similar academic activities at its various other centres like HBCH in Sangrur (Punjab), HBCH & MPMMCC in Varanasi (UP), and HBCH in Vizag (AP).

Certificate Courses

Name of the Training programms	Number of Students
Cytopathology for technicians	6
Advanced Hematology	7
Advanced Clinical Biochemistry for technicians	7
Advanced CT Scanning	5
Advanced Interventional Radiology	2
Advanced Mammography imaging	5
Advanced MRI	6
Onco-Occupational therapy	8
Molecular Biology	1
Onco-physiotherapy	10
Certified training in Oncology for doctors	7
Post-basic diploma in Oncology nursing	22
Library Trainees	2
TMC Fellowship in Speech & Swallowing Therapy	-
Medical Physics	8
One-year Certificate course in Introperative Neurophysiological Monitoring (INOM)	2
Basic Palliative Care nursing	29
Six weeks certificate course in Palliative Care	30
Six-week certificate course in Hospital Infection Control	9
One-month certificate course for long term Central Venous Access Devices (CVAD)	10
Three-month certificate course in Entrostomal Therapy	6
Tot	al 182

Conferences, Continuing Medical Education (CME), Seminars, Training Programs, Updates & Workshops

	January	
EQAS-Diagnostic Cytopathology	December 31 — January 1	Cytopathology
National conference of Geritric surgery	9	Nursing
Right choice Study monitoring/year-in review conference 2021	14	Medical Oncology
Chemotherapy certification program	18—30	Nursing
	February	
Training of Trainers (Maharashtra government)	2	Palliative Medicine
19th Evidence-Based Medicine (EBM), Preconference Workshops	26—March 7	ТМС
	March	
CME Radiology	8	Radiodiagnosis
Anesthesia Review course (ARC'21) with 'PEEP' 2021	20	Anesthesiology, Critical & Pain
	April	
Good Clinical Practice—Basic and Advanced courses	17—24	Clinical Research Secretariat
Interventional radiology workshop	18	Radiodiagnosis
	May	
	ividy	

	June	
9th Education in Cancer and Acute Pain (ECAP, 2021)	12	Anesthesiology
CPR course	26	Anesthesiology
	July	
BRITE 2021 — (case B ased R eview In Critical Care Medicine for T he E xaminee)	16—18	Anesthesiology
	August	
Master Course in Oral Cancer management	6—7	Head & Neck DMG
A BATs (B iochemistry, A ssays & T umor) view of Cancer: Perspectives of the Clinical Biochemistry Laboratory	28—29	Biochemistry
	September	
Endo skull-base conference	4	Head & Neck DMG
Certificate Course on Basics of Cancer Screening and Prevention for Nursing Staff	6—25	Preventive Oncology
MRI workshop	18	Radiodiagnosis
Hallmarks of Cancer	25	Pediatric Oncology
Pain management	29	Nursing
	October	
ASCO Palliative Care e-Course (APCeC)	2-10	Palliative Medicine
14th Annual Short Course in Clinical Research Methodology	9—30	Clinical Research Secretariat
BRIT— Breast workshop (BR east Interventional	16—17	Radiodiagnosis

	November	
17th Annual Surgical Oncology workshop (Oncosurg, 2021)	19—21	Surgery
Nursing training program	22—27	Pediatric Oncology
AORN national conference	27—28	Nursing
4th Thyroid Preceptorship program	29—December 4	Head & Neck DMG
	December	
GI endoscopy training for technicians	4—5	Digestive Diseases
The Difficult Airway conference (DAC, 2021)	9—10	Anesthesiology
Annual traning for Phlebotomists	10	Nursing
Symnposium on Interventional Radiologty	16—17	Radiodiagnosis
Women's Cancer Initiate (WCI) Gynecological cancers	18	Gynecology DMG
HOPE 2021	24	Medical Oncology
Updates on Occupational Therapy practices	31	Occupational Therapy

Institutional Ethics Committees

IEC-I Secretary: Dr Gouri Pantvaidya, Surgeon Chairperson: Dr Nithya Gogtay, Pharmacologist. IEC-II Secretary: Dr Priya Ranganathan, Anesthetist Chairperson: Dr Shyam Kishore Shrivastava, Radiation Oncologist.

The Institutional Ethics Committees-I & II (IECs) were constituted by the Director, Tata Memorial Centre (TMC) under authority vested by the Governing Council of the TMC.

Term: 02 years (July 2020–June 2022)

Terms of reference:

- 1. Ensure highest scientific and ethical standards of research at TMC
- 2. Review and approve proposals for clinical, basic or translational research projects (Intra and Extra mural) for scientific and ethical content
- 3. Improve ethical standards and issue guidelines on ethical dilemmas related to patient care services
- 4. To function as a forum to advise the administration in case of any ethical issues that may arise from patients, families or public
- 5. To endeavor to be a national standard of reference
- 6. To issue and periodically, update and revise SOPs and guidelines for effective functioning of IECs as and when necessary
- 7. Continuing the education in clinical research bioethics by holding seminars, workshops and interactive discussions for all categories of staff members including nursing and paramedical staff
- 8. To initiate and commission research studies on ethical aspects of practice in TMC.

The IEC functioned as per the Standard Operating Procedures based on the ICMR guidelines (2017), New Clinical Trials Rules 2019, WHO Standards and Operational Guidance for Ethics Review of Health-Related Research with Human Participants 2011, and ICH-GCP 1996 (amended up to November 2016).

Institutional Ethics Committee-I

Name	Position	Affiliation	Affiliation Status	Gender	Expertise
Dr Nithya Gogtay	Chairperson	Professor, Head Department of Clinical Pharmacology, KEM Hospital	Non Affiliated	Female	Basic Medical Scientist (Clinical Pharmacologist)
Dr Sangeeta Mudaliar	Co- Chairperson	Full Time Consultant & Head of the Department, Paediatric Hemato- Oncology B J Wadia Hospital	Non Affiliated	Female	Medical Oncologist (Pediatrician)
Dr Gouri Pantvaidya	Member Secretary	Professor, Department of Surgical Oncology,Tata Memorial Hospital	Affiliated	Female	Surgeon
Mr. KV Ganpathy	Member	CEO, Jeet Association for Support to Cancer Patients (JASCAP)	Non Affiliated	Male	Lay Person
Dr Mrunal Marathe	Member	Freelance Counselor and Trainer associated with NGO-St.Jude's -	Non Affiliated	Female	Social scientist
		Childcare Centre and Adoption Group, Asha Sadan Orphanage			

Name	Position	Affiliation	Affiliation Status	Gender	Expertise
Mr. ND Jaywant	Member	Advocate, High court, Mumbai	Non Affiliated	Male	Legal expert
Dr Sachin Satpute	Member	Asst. Professor, Dept. of Pharmacology, Topiwala National Medical College & BYL Nair Ch.Hospital	Non Affiliated	Male	Basic Medical Scientist (Clinical Pharmacologist)
Dr Bharatsinha Bhosale	Member	Senior consultant Oncologist, Bombay Hospital Medical and Research Institute; Visiting Consultant Oncologist Jaslok Hospital Medical & Research Institute, SL Raheja Fortis group of Hospital	Non Affiliated	Male	Medical Oncologist
Dr Maya Prasad	Secretary, Data Safety Monitoring Unit (DSMU)	Associate Professor, Department of Medical (Paediatric) Oncology, Tata Memorial Hospital	Affiliated	Female	Medical Oncologist (Pediatrician)

Name	Position	Affiliation	Affiliation Status	Gender	Expertise
Dr Santosh Menon	Member	Professor, Department of Pathology, Tata Memorial Hospital	Affiliated	Male	Basic Medical Scientist (Pathologist)
Dr Prakash Nayak	Member	Assistant Professor, Department of Surgical Oncology, Tata Memorial Hospital	Affiliated	Male	Surgeon
Dr Jeson Doctor	Member	Professor, Department of Anaesthesia, Critical Care and Pain, Tata Memorial Hospital	Affiliated	Male	Anesthesiologist
Dr Sabita Jiwnani	Member	Associate Professor, Department of Surgical Oncology,Tata Memorial Hospital	Affiliated	Female	Surgeon
Dr Tabassum Wadasadawala	Member	Professor, Department of Radiation Oncology,Tata Memorial Hospital	Affiliated	Female	Radiation Oncologist

Institutional Ethics Committee-II

Name	Position	Affiliation	Affiliation Status	Gender	Expertise
Dr Shyam	Chairperson	Director,Radiation	Nonaffiliated	Male	Radiation
Kishore		Oncology, Apollo			Oncologist
Shrivastava		Hospital			
Dr Sudeep	Co-	Consultant,	Nonaffiliated	Male	Surgeon
Shah	Chairperson	Surgical			
		Gastroenterology,			
Da Daire	N 4 a va la a v	Hinduja Hospital	A ff:l:atad	F amala	
Dr Priya Banganathan	Member	Professor, Dept. of	Affiliated	Female	Anesthetist
Ranganathan	Secretary	Anaesthesia, Tata Memorial			
		Hospital			
Dr Padmaja	Member	Prof. (Additional),	Nonaffiliated	Female	Clinical
Marathe	weinbei	Dept of	Nonarinateu	Temale	Pharmaco-
warathe		Pharmacology and			logist
		Therapeutics,			106131
		Seth GS Medical			
		College and KEM			
		Hospital, Mumbai			
Mrs Manisha	Member	Member of Ethics	Nonaffiliated	Female	Lay Person
Naikdalal		Committees at			-,
		Hinduja Hospital			
		(IEC-1), IITB,Global			
		Hospital, Nair			
		Hospital, ISBEC			
		(InterSystems			
		Biomedica Ethics			
		Committee);			
		Alternate Member			
		(Layperson) at KEM			
		Hospital and			
		Lilavati Hospital			
Dr.	Member	Associate	Nonaffiliated	Female	Social
Bindulakshmi		Professor,			scientist
Ρ.		Advanced Centre			
		for Women's			
		Studies, School of			
		Development			

Name	Position	Affiliation	Affiliation Status	Gender	Expertise
		Studies, Tata			
		Institute of Social			
		Sciences			
Mr Agnel	Member	Advocate	Nonaffiliated	Male	Legal expert
Carneiro		Associate, Mulla &			
		Mulla & Craigie			
		Blunt & Caroe,			
		Mulla House,51			
		Mahatma Gandhi			
		Road, Fort,			
		Mumbai 400 001			
Dr Gaurav	Member	Professor, Dept. of	Affiliated	Male	Medical
Narula		Medical Oncology			Oncologist
		(pediatric), Tata			
		Memorial Hospital			
Dr Nehal	Member	Associate	Affiliated	Female	Radiation
Khanna		Professor, Dept. of			Oncologist
		Radiation			
		Oncology, Tata			
		Memorial Hospital			
Dr Shivakumar	Member	Associate	Affiliated	Male	Surgeon
Thiagarajan		Professor, Head			
		And Neck			
		Oncology, Tata			
		Memorial Hospital			
Dr Nita Nair	Member	Professor, Surgical	Affiliated	Female	Surgeon
		Oncology (Breast			
		Service), Tata			
		Memorial Hospital			
Dr Nilesh	Member	Consultant, Asian	Nonaffiliated	Male	Medical
Lokeshwar		Cancer Institute,			Oncologist
		Sion (E), Mumbai			
Dr Sewanti	Member	Consultant, Medical	Nonaffiliated	Female	Medical
Limaye		Oncology,			Oncologist
		Kokilaben Dhirubhai			
		Ambani Hospital			
		and Medical			
		Research Institute,			
		Mumbai			

Name	Position	Affiliation	Affiliation Status	Gender	Expertise
Dr Munita Bal	Member	Professor, Dept. of	Affiliated	Female	Basic
		Pathology, Tata			Medical
		Memorial Hospital			Scientist
					(Pathologist)
Dr Nilendu	Member	Professor, Dept. of	Affiliated	Male	Radiologist
Purandare		Nuclear Medicine,			
		Tata Memorial			
		Hospital			

Staff:

Name & Designation
Mrs. Abhidnya V. Desai, IRB Administrator
Mrs. Uthara H. Iyer, IRB Administrator
Mr Sandeep Kalsekar, Software Programmer
Mr Ramchandra Patil, Senior Assistant
Mrs Megha Chalke, Private Secretary
Mrs Sapana Rane, DSMU Co-ordinator
Ms Deepa Sarang, Scientific Assistant

The types of projects reviewed by the IEC were:

- 1. Investigator initiated projects or trials, soliciting funding from national funding agencies
- 2. Investigator initiated projects or trials, soliciting funding from international funding agencies
- 3. Investigator initiated projects without specific funding
- 4. Multicentre academic trials with national collaborators
- 5. Multicentre academic trials with international collaborators
- 6. Pharmaceutical/ Industry sponsored trials
- 7. Intramural projects: Funding is provided for institutional projects (TMH & ACTREC) after a process of review and competitive scoring by the IEC
- 8. Thesis of the students appearing for M.S., MD & Ph.D. courses.

IEC Performance in 2021:

Number of Meetings Conducted

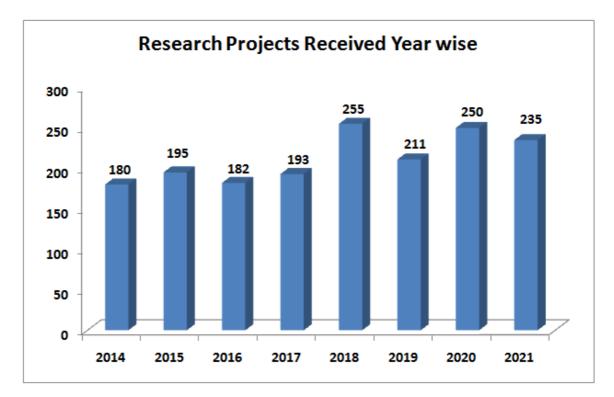
	Committees			
Types of Review	IEC I	IEC II	Total	
Full Board	12	12	24	
Expedited	-	-	0	

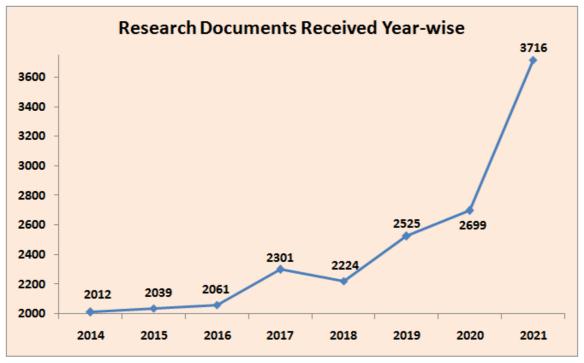
Types of Review of projects

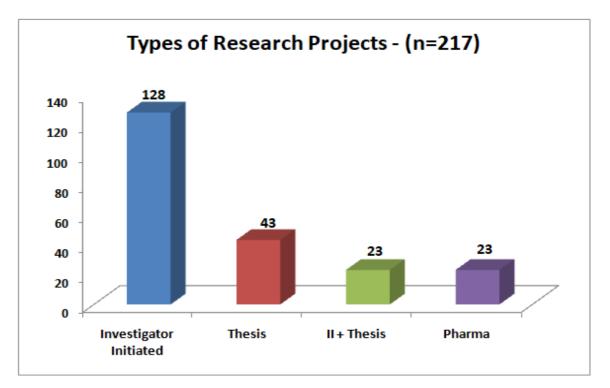
Types of Review	Total
Full Board	217
Expedited	-
Exemption	8
Total	225

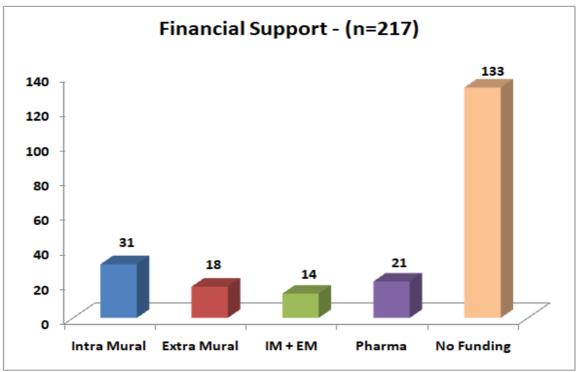
Type of Approved projects	No. of projects (IEC-I)	No. of projects (IEC-II)
Investigator Initiated	64	64
Investigator Initiated + Thesis	9	14
Thesis	25	18
Pharma	10	13
Total	108	109

Full Board - The median (IQR) turnaround time from date of submission to final decision (including response time of PIs to IEC queries) – **12 (8to21) weeks.**

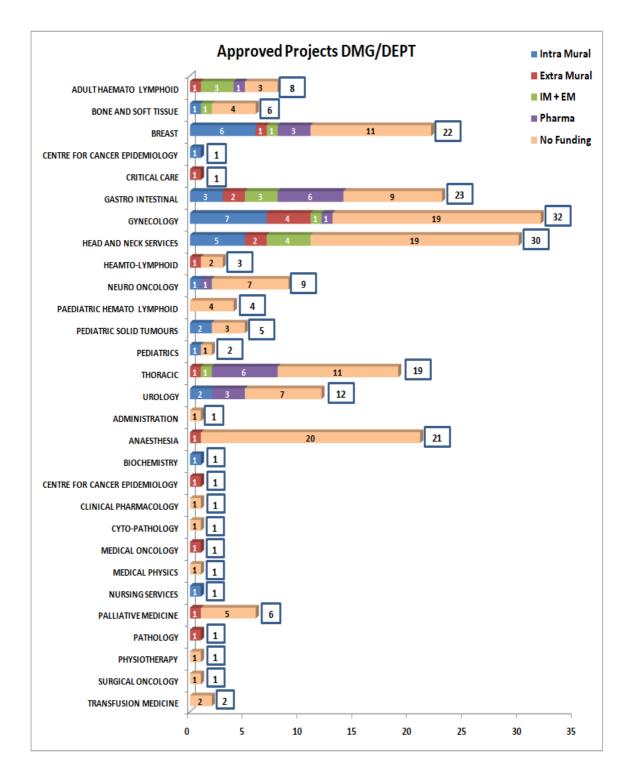








Successful completion of projects in 2021: 114.



COVID Projects Received and Approved in 2021: 07.

Achievement:

Institutional Ethics Committee -I, II was granted renewal by the National Accreditation Board for Hospitals accreditation under Ethics Committee Accreditation programme. The Accreditation was effective from December 11, 2020 to December 10, 2023.

Standard Operating Procedures:

- Revised Standard Operating Procedures based on New CT rules 2019
- Created a new SOP on Emergency Research
- Shared TMH IEC SOPs with the TMC Satellite centres.

Activities:

- The TMC IECs obtained approval for Ethics Committee registration with National Ethics Committee Registry for Biomedical and Health Research (NECRBHR), Indian Council of Medical Research
- TMH IEC Secretariat extended its support for setting up of IEC at TMC Satellite Centre-HBCH, Sangrur
- TMH IEC Secretariat extended its support for setting up of IEC at TMC Satellite Centre-HBCHRC, Visakhapatnam.

Changes in Functioning / Additional Activities Due to Covid Pandemic:

A] Virtual IEC meetings

- IEC meetings were conducted on the zoom platform in the wake of the COVID-19 outbreak
- The mode of videoconferencing used ensured confidentiality of the data and discussion. The privacy of the members participating in the meeting was protected. Since Zoom enabled group discussions, all members were able to participate in the discussion of projects in which they did not have any conflict of interest, thus making virtual meetings equivalent to full board meeting
- Conflict of interest of members was managed by allocating them to a virtual waiting room which is a feature of Zoom application to ensure that confidentiality of the discussion.

B] COVID-19 Research Projects

- IEC was equipped with the online web portal to manage the electronic submission of COVID-19 projects. This facilitated timely IEC review and accelerated procedures. The virtual IEC meetings ensuring appropriate scientific and ethical review and fulfilling the quorum requirements were conducted
- During the COVID-19 pandemic, while the hospital was operating at limited manpower, the IEC functioned seamlessly owing to the IEC online portal and the in-house IEC program. The IEC secretariat effectively managed the study submissions as well as IEC meetings via the digital platform
- The submission of e-copy of research protocol and relevant documents were screened for their completeness and categorized by the Member Secretary as exempt/ expedited review/ emergency full committee review depending on the urgency and need
- IEC conducted expedited reviews for COVID projects and additional full board meetings were held for review of COVID projects
- IEC prioritized the research review based on urgency and took needful steps to facilitate the review of new research and conduct ongoing research with needful amendments.

C] Others

Support for Institutional Virtual Meetings

• In lieu of the COVID-19 pandemic, all meetings, seminars, workshops etc. at TMC migrated to the Zoom videoconferencing platform. The Management entrusted IEC Secretariat at TMH to handle and manage the institutional Zoom Account.

Education/Trainings

• Dr Nithya Gogtay, Chairperson, IEC-I made a presentation on COVID-19 vaccines and abortion cell lines.

Quality Improvement Initiatives:

• The IEC enlisted the help of NCG CRO team to assist the DSMU in conducting monitoring of investigator-initiated trials, to streamline the process of study monitoring. This was a step forward in ensuring research compliance to protocol and Good Clinical Practice.

The IEC Online portal:

- Issuance of IEC correspondence to the investigators
- Enabled re-review of resubmitted projects.

Future steps:

- To complete Phase-II of IEC online portal
- To improvise IEC online portal to convert manual process to electronic system
- To conduct IEC meetings in a paperless environment.

Research Projects approved by the Institutional Ethics Committees

Prinicpal Investigator (PI)	IEC–I
Agarwal Jai Prakash	Comprehensive assessment of Pulmonary function in patients receiving radical Radiation Therapy for carcinoma lung (CoP-RT).
Agrawal Archi	Patterns of uptake and Standarized Uptake Values on 68-Ga PSMA PET CT in benign prostatic lesions and low risk / intermediate risk / high risk prostate cancers.
Badwe Rajendra	Phase 1 study of safety and feasibility of Ayurvedic oral cannabis preparation in the peri-operative period in breast and oral cavity squamous cell cancer
	Representation of Indian geriatric patients with cancer in clinical trials: A retrospective analysis (The ReproGeri study).
Baheti Akshay	Diagnostic performance of Diffusion-weighted imagingin the detection of residual tumor after neoadjuvant chemoradiation in rectal adenocarcinoma: A prospective multicentric study.
Bakshi Sumitra	ThrUS Trial: A single centre, double blinded, randomised study evaluating role of Thoracic spine Ultrasound pre-Scan for epidural catheter insertion in adult patients undergoing cancer surgeries.
Bakshi Ganesh	Translation and Validation of the English metric version 3.22.15 of the Scored Patient Generated Subjective Global Assessment short form (PG-SGA SF) into two of the Indian languages namely: Hindi and Marathi languages.
Bal Munita	Neuroendocrine Neoplasms of the Larynx: A clinicopathologic study.
Dhattachariaa Ataau	Bayesian Survival Analysis in Clinical Trials: An Intervention to Promote Early Decision Strategy
Bhattacharjee Atanu	Methodological Development of Bayesian Mediation Analysis and Application in Head and Neck Cancer Survival Data.
Chaturvedi Pankaj	Intra-operative gross examination versus frozen section for achievement of adequate margin in patients undergoing surgery for oral cavity squamous cell carcinoma: A randomized controlled trial.
	Evaluation of distress in survivors of cervical cancer
Chopra Supriya	Clinical outcomes and quality of life in patients with locally advanced vulvovaginal cancers: Ambispective registration study.

Prinicpal Investigator (PI)	IEC–I
Deodhar Jayita	ECHO Telementoring to Improve Quality Palliative Care in Underserved Areas of Zambia, Kenya, Nigeria, Ghana, South Africa, and India
	Field testing the validity and feasibility of the NCG-SHS screening Tool for Serious Health-related Suffering, at tertiary healthcare institutions across India
	Assessment of feasibility and effectiveness of yoga therapy in psychological distress, quality of life and spirituality in adult advanced cancer patients in a Respite Palliative Care setting in India.
Desai Sangeeta	Evaluation of Dual Color-Dual In-Situ Hybridization (D-DISH) for HER2/neu Testing in Breast Cancer.
Dhamne Chetan	Randomized control trial to test Pre-exposure prophylaxis (PREP) with oral Acyclovir to prevent chickenpox in varicella-seronegative children with hematolymphoid malignancies receving intensive chemotherapy at Tata Memorial Hospital.
Doctor Jeson	A prospective study to determine the volume of endotracheal tube cuff inflation that results in successful nasotracheal intubation in head and neck cancer patients with CMAC D blade videolaryngoscope amongst anaesthesia trainees-A prospective single arm interventional study
	To estimate the trend and rise or fall of the intracuff pressure using continuous intracuff pressure monitoring in children less than 7 years of age undergoing anaesthesia with microcuff endotracheal tubes - a single arm prospective observational pilot study.
Epari Sridhar	CDKN2A deletion in IDH-mutant diffuse astrocytic tumors
Lavanya, G	Cervical Cancer Treatment in HIV positive patients: A Survey Of treatment practices in India.
Ghosh Jaya	Survival and reproductive outcomes of patients with malignant ovarian germ cell tumors, a retrospective analysis from tertiary care center in India
	Retrospective study of outcomes of Stage III Endometrial Cancers Treated at Tata Memorial Centre.
Ghosh Laskar Sarbani	Head and Neck Radiotherapy (in Tata Memorial Hospital) during COVID-19 Pandemic.
Goda Jayant	Demographic profile, Clinico-pathological spectrum, and Outcomes of Primary Central Nervous System Tumors Associated with Phakomatoses: A Retrospective Audit.

Prinicpal Investigator (PI)	IEC–I
Goel Mahesh	REtroperitoneal SArcoma Registry (RESAR): prospective collection of primary retroperitoneal sarcoma patient's data, radiological and pathological material for the TransAtlantic Australasian Retroperitoneal Sarcoma Working Group.
Goswami Savita, Mrs	Efficacy of Supportive Expressive Group Therapy (SEGT) in Psychological and Spiritual Wellbeing, Body Image and Quality of Life in Young Adult Survivors of Childhood Cancer (YASCC).
Gulia Seema	Retrospective and prospective analysis of microinvasive breast cancer: clinicopathological features, treatment and outcome
Guila Seema	Avoiding prophylactic growth factors during paclitaxel phase of dose dense adjuvant chemotherapy in breast cancer.
	Occurrence & frequency of comorbidities in Women's cancers (Breast, Cervical, Ovarian & Uterus) in India at Tata Memorial Hospitals
Gupta Sudeep	Protocol NoD9670C00001: A Phase 3, Randomized, Multi-center, Open-label Study of Trastuzumab Deruxtecan (T-DXd) Versus Investigator's Choice Chemotherapy in HER2-low, Hormone Receptor Positive Breast Cancer Patients whose Disease has Progressed on Endocrine Therapy in the Metastatic Setting (DESTINY-Breast06)
	Protocol NoD967JC00001: A Phase 1b/2 Multicentre, Open-label, Modular, Dose-finding and Dose-expansion Study to Explore the Safety, Tolerability, and Anti-tumour Activity of Trastuzumab Deruxtecan (T-DXd) in Combination with other Anti-cancer Agents in Patients with HER2-positive Metastatic Breast Cancer (DESTINY- Breast07).
Jagdish Prathepa, Mrs	A study to assess the effect of pelvic floor muscle strengthening exercises on urinary incontinence in patient with cervical cancer undergoing radiation therapy at a tertiary cancer center
	A study to assess the effectiveness of pelvic floor muscle strengthening exercises on erectile dysfunction in rectal cancer survivors at tertiary cancer hospital, TMH, Mumbai.
	Induction Related Mortality Score in Acute Myeloid Leukemia: Prospective Validation Study
Jain Hasmukh	Evaluation of the safety and efficacy of generic low-dose Dasatinib for frontline therapy in chronic phase chronic myeloid leukemia–A multi-center phase II single arm study.
Janu Amit	Prospective Study of Value Addition of ORP (Ortho Radio pathology) Clinics in Management of Bone Tumor Cases.
Jiwnani Sabita	Frailty indices for predicting postoperative complications after esophagectomy.

Prinicpal Investigator (PI)	IEC–I
Joshi Malini	Utility of Modified frailty Index (mFI) for predicting postoperative complications after Cytoreductive Surgery with Hyperthermic Intraperitoneal Chemotherapy.
Kulkarni Atul	TMH IRIS: Proposal for participation of TMH ICU in the Indian Registry of IntenSive care (IRIS).
Kulkarni Ajeeta, Ms	Physiotherapy Interventions in cancer patients infected with COVID- 19 in ICU-Retrospective Analysis.
Kulkarni Suyash	Evaluation of AI performance in detecting lung opacities in chest radiograph and characterizing them into different subgroups (atelectasis, calcification, cardiomegaly, fibrosis, mediastinal widening, nodule, and pleural effusion)
	Safety and efficacy of image guided thermal ablation in treatment of lung metastasis in a tertiary care centre.
Laskar Siddhartha	Exploring Texture analysis in osteosarcoma, chondrosarcoma and chordoma.
Maheshwari Amita	Perioperative morbidity and survival outcomes in geriatric patients operated for gynaecological malignancies.
Menon Nandini	Protocol NoD133HC00003: A prospective, multicenter, Phase-IV clinical trial to assess safety of Durvalumab in Indian adult patients with locally advanced, unresectable non-small cell lung cancer (NSCLC) and urothelial cancer.
Mhatre Sharayu	Obesity and non-communicable disease in India: an imaging study of 10,000 adults in the Indian Study of Healthy Ageing (ISHA cohort study).
Nair Deepa	Primary Surgery versus Primary Chemo-radiation for Oropharyngeal Cancer (SCOPe trial)–A Phase II/III Integrated Design Randomized Control Trial.
Nair Nita	Changing trend in access to trastuzumab therapy among patients with breast cancer at a tertiary care centre in India.
Narula Gaurav	An Observational Study for Evaluating Prescription Pattern of drugs Adverse drug reactions in Paediatric Acute Lymphoid Leukaemia in a tertiary care Hospital.
Nayak Lingaraj	Febrile Neutropenia in the oncological setting: A prospective observational study (FN-ONE STUDY)
	COVID-19 with Hematological Cancers Registry of India (CHCRI).
Nayak Prakash	Validation of patient reported outcome measure TESS (Toronto extremity salvage score) for benign and malignant extremity tumors.

Prinicpal	IEC–I
Investigator (PI)	Validation of the EORTC QLQ-C30 with young people aged 12–17
Nookala Manjunath	years with cancer An international Phase 4 field study to analyse the psychometric properties of the updated module on assessing quality of life of patients with breast cancer (EORTC QLQ-BR23 Update- EORTC QLQ BR45)
	Phase 2 and 3 development of an Adolescent and Young Adult module for 14–39 year olds
	Pilot testing of Hindi and Marathi translations of an EORTC patient- reported outcome questions set to be used for evaluating the inter- rater reliability of CTCAE ratings (CTCAEplusPRO).
	A Phase III, Randomized, Double-Blind, Placebo-Controlled, Multi- center Study of Durvalumab Monotherapy or in Combination with Bevacizumab as Adjuvant Therapy in Patients With Hepatocellular Carcinoma Who Are at High Risk of Recurrence After Curative Hepatic Resection or Ablation (EMERALD-2)
Ostwal Vikas	A Phase 2 Basket Study of the Oral TRK Inhibitor larotrectinib in Subjects with NTRK Fusion-Positive Tumors (NAVIGATE)
	An Open-label, Multicenter, Randomized Phase 3 Study of First line Encorafenib Plus Cetuximab With or Without Chemotherapy versus Standard of Care Therapy with a Safety Lead-in of Encorafenib and Cetuximab Plus Chemotherapy In Participants with Metastatic BRAF V600E Mutant Colorectal Cancer.
Pai Prathamesh	Clinical implications of delayed/missed/aborted/prolonged adjuvant radiotherapy in oral cavity squamous cell carcinomas - A retrospective analysis
	Management of post-operative Chyle Leak following neck dissection in head and neck cancers - A systematic review.
Parambil Badira	A Phase 3 Study of Active Surveillance for Low Risk and a Randomized Trial of Carboplatin vs. Cisplatin for Standard Risk Pediatric and Adult Patients with Germ Cell Tumors.
Patil Prachi	A prospective pilot study to assess the effect of Resveratrol-Copper on the viral load in patients with Chronic Hepatitis B and C virus infection.
Patil Vijay	Protocol No 73841937NSC3003: A Phase 3, Randomized study of Amivantamab and Lazertinib Combination Therapy Versus Osimertinib Versus Lazertinib as First-Line Treatment in Patients with EGFR- Mutated LocallyAdvanced or Metastatic Non-Small Cell Lung Cancer.
Patil Asawari	Sinonasal Squamous Cell Carcinoma and Its Relation to Schneiderian Papilloma: A Clinicopathological Study

Prinicpal Investigator (PI)	IEC–I
Patkar Shraddha	Incidence of SAR-CoV2 infection among ASymptomatic patients undergpoing PrEoperative Covid Testing prior to cancer surgery: ASPECT study.
Pimple Sharmila	A retrospective cohort study on the prevalence and determinants of Human Papilloma Virus (HPV) infection and Cervical Intraepithelial Neoplasia (CIN) and comparative evaluation of visual inspection with acetic acid, cytology and HPV testing as screening methods to detect CIN among women living with HIV/AIDS (WLHA) in Mumbai, India.
	Protocol No D9106C00001: A Phase III, Double-blind, Placebo- controlled, Multi-center International Study of Neoadjuvant/Adjuvant Durvalumab for the Treatment of Patients with Resectable Stages II and III Non-small Cell Lung Cancer (AEGEAN)
	Postoperative chylothorax in patients undergoing esophagectomy for cancer: Incidence, risk factors and outcomes
Pramesh CS	A Phase III, Randomised, Controlled, Multi-centre, 3-Arm Study of Neoadjuvant Osimertinib as Monotherapy or in Combination with Chemotherapy versus Standard of Care Chemotherapy Alone for the Treatment of Patients with Epidermal Growth Factor Receptor Mutation Positive, Resectable Non-small Cell Lung Cancer (NeoADAURA)
	Impact of COVID-19 on stage migration in newly-diagnosed patients with cancer
	Developing precision immunotherapy for value-based treatment of lung cancer in India.
Purandare Nilendu	68Ga DOTA-NOC PET/CT in Head-Neck Paragangliomas.
Puranik Ameya	Yttrium-90 Transarterial Radioembolization (TARE) With and Without Sorafenib in Unresectable Hepatocellular Carcinoma
	Utility of Ga-68-DOTANOC PET/CT based parameters in prediction of response to Lu-177 DOTATATE PRRT.
Rajadhyaksha Sunil	Study of adverse transfusion events at a tertiary care oncology centre: A step towards patient hemovigilance
	Platelet recruitment in donors undergoing plateletpheresis procedures on two cell seperators: A study from tertiary care oncology centre.
Ramaswamy Anant	Angiotensin receptor blockade with losartan plus mFOLFIRINOX versus mFOLFIRINOX alone in advanced Pancreatic AdenoCarcinomas - a two arm open label prospective Phase III parallel design randomized superiority clinical trial (AFPAC)

Prinicpal Investigator (PI)	IEC-I
	A phase I study of oral metronomic capecitabine with cyclophosphamide as maintenance therapy in patients with chemotherapy responsive advanced colorectal cancers.
Rane Swapnil	Oral Cavity Quantitative Histomorphometric Risk Classifier (OHbIC) in Oral Cavity Squamous Cell Carcinoma (OC-SCC).
Rangarajan Venkatesh	Prognostic utility of metabolic parameters on 18 F FDG PETCT in patients with follicular lymphoma.
Rath Sushmita	A retrospective analysis of metastatic or recurrent cervical cancer patients treated with palliative systemic therapy and their outcomes: single centre real world data from India.
Dalchi Dharat	Clinicopathological features of Cervical adenocarcinomas: A study for a tertiary cancer referral center from 2010-2015
Rekhi Bharat	Evaluating Immunohistochemical and Molecular Landscape of Select Osteoclastic Giant Cell Rich Tumors of the Bone.
Sable Nilesh	Diffusion Weighted MRI For Detecting Myometrial Invasion In Carcinoma Endometrium.
Sahay Ayushi	Invasive Breast Carcinoma Associated with Microglandular Adenosis: A Retrospective Analsysis.
Sahu Arpita	Multi-parametric Approach for Differentiating High-Grade Glioma, Primary Central Nervous System Lymphoma and MEtastasis by Using Perfusion and Diffusion Techniques on MRI.
Saklani Avanish	Surgical and patient-entered experiences following urinary reconstruction after pelvic exenteration for locally advanced and recurrent rectal cancer.
Sali Akash	Interobserver variability in identifying the corporal bodies in penile squamous cell carcinoma resection specimens: Implications for AJCC pT2/pT3 staging.
Sarin Rajiv	Developing a 3D-printed Humanoid Phantom for Breast Cancer Radiotherapy Dosimetry and Quality Assurance.
Sawakare Sandeep	To Study the Perception, Effectiveness, and Barriers to Providing Care through Teleconsultation Facility at a Tertiary Cancer Centre.
Sengar Manju	A prospective, multi-centre, phase IV clinical trial to assess the safety and efficacy of Acalabrutinib capsules in Indian adult patients with chronic lymphocytic leukemia and relapsed and refractory mantle cell lymphoma.

Prinicpal Investigator (PI)	IEC–I
Shah Sneha	To correlate volume of computed tomography (CT) and metabolic tumor volume (MTV) of bulky Hodgkin's disease in pediatric patients with outcomes.
Shetmahajan Madhavi	A Single Arm Pilot Study To Determine Whether An Early Creation Of Pneumothorax In The Non-Ventilated Lung Improves The Quality Of Lung Collapse During One Lung Ventilation.
Shrikhande Shailesh	Impact of Covid-19 on Gastrointestinal and Hepatobiliary Cancer Surgeries: A National Survey.
Singh Vikas	Neurosurgical Oncology Practice During COVID 19 Pandemic - Experience From a Tertiary Neurosurgical Oncology Centre.
Solanki Sohan	Enhanced recovery in cytoreductive surgeries with or without HIPEC-A prospective multicentre observational study.
Swain Monali	Contralateral nodal relapse (CLNR) in well lateralized oral cavity cancer treated ipsilaterally with surgery and adjuvant radiotherapy with or without concurrent chemotherapy: A Retrospective Audit
	Ambispective registry of oligometastaic and oligorecurrent head and neck cancer patients treated at Tata Memorial Hospital.
Shylasree TS	Surgical Route and Pathological risk factors in Early Cervical cancer- Node Positive(SURPEC-N1): A Retrospective study
	Mucinous tumours of ovary: A retrospective analysis of clinico- pathological features, management and survival outcomes.
Tembhare Prashant	A retrospective analysis of flow cytometric immunophenotypic characterization and T-cell clonality determination in T cell non-Hodgkin's lymphoma.
Thiagarajan Shiva Kumar	Upfront surgery followed by adjuvant treatment versus chemoradiotherapy (CCRT) in Head and Neck Squamous Cell Carcinoma of Unknown Primary with neck node metastasis: A phase III randomized controlled trial. (SCCoUP Trial)
	A prospective cross-sectional study to assess the cervical scar satisfaction among patients and surgeons following conventional (open) thyroidectomy.
Vagal Manjusha, Ms	Occupational therapy specific rehabilitation protocol for treating trismus in head and neck cancer patients-A pilot study.
Wadasadawala Tabassum	Assessment of the Breast Cosmesis using Deep neural networks: an exploratory study (ABCD).

Prinicpal Investigator (PI)	IEC–II
Achrekar Meera, Mrs	Effect of topical coconut oil application versus standard supportive care on xerostomia related quality of life among patients with radiation induced xerostomia in H& N cancer patients in tertiary care cancer center- A randomized control trial.
Agarwal Vandana	Enhanced Recovery Pathway in Head and Neck Cancer Surgery.
Bakshi Ganesh	Prospective study to assess the impact of patient's knowledge, attitude and practices about cancer on the stage at presentation for seeking cancer treatment at the hospital, among patients registered with the out patient department of the uro-oncology disease management group at Tata Memorial Hospital (KAP-SAP study).
	A prospective observational study to assess the incidence of neuropathic pain after bone and Soft tissue tumor cancer surgery
Bakshi Sumitra	Students perspective of the 'WhatsApp and Video conference based educational program'
	DISTRACT Trial: A single centre, single blinded randomised trial evaluating the role of DISTRACTion therapy in pain management following major abdominal surgeries in adult cancer patients.
Del Munite	Clinicopathological Study of Sebaceous Carcinoma of the Head and Neck region
Bal Munita	SMARCB1 (INI-1)-deficient Head And Neck Carcinomas - A Clinico- pathologic Study.
Bhargava Prabhat	A two-arm randomized phase III, open-label prospective non- inferiority study of irinotecan versus oxaliplatin / 5-FU based chemotherapy (mFOLFOX/CAPOX) for patients with locally advanced/ metastatic biliary tract cancers (BTC) previously treated with gemcitabine-cisplatin based chemotherapy (BTC-SELECT).
Budukh Atul	To Study the Challenges in implementing the government funded health schemes for the treatment of cancer patients in Tata Memorial Centre, Mumbai.
	Postoperative Coagulopathy and Epidural Catheter Removal Practices: An Audit
Chatterjee Aparna	Incidence, type and severity of pain with quality of life following deep inferior epigastric perforator (DIEP) flap surgery.
Chaturvedi Pankaj	A prospective evaluation of the association between sensory alterations and perineural invasion/ other adverse pathologic factors in oral tongue cancers.

Prinicpal Investigator (PI)	IEC–II
	Safety and Feasibility of Staging Para Aortic Lymphadenectomy and Tailored Radiotherapy in Locally Advanced Cervical Cancer
Chopra Supriya	Pilot testing of Hindi and Marathi translations of the European Organization for the Research and Treatment of Cancer (EORTC) module, assessing quality of life in patients with primary vulva cancer (EORTC QLQ VU34)
	Development and comparison of different training methods for gynecological brachytherapy skills development: A skills and training methodology development and assessment initiative.
Choudhari Amitkumar	IVIM of Brain Tumors.
D Souza Anita, Mrs	Evaluation of the effect of foot bathing on peripheral neuropathy in patients receiving oxaliplatin containing chemotherapy for GI cancer at Tata Memorial Hospital.
Daptardar Anuradha	Cross-cultural adaptation of the gynaecological Cancer lymphedema questionnaire (GCLQ) in two Indian languages–Hindi and Marathi.
Dash Biswajit	Gynecological cancer surgery following recovery from COVID-19 infection: An Observational study (COSGO).
	Palliative Care Consultation in Emergency Department: A Single Centre Retrospective Analysis
Deodhar Jayita	Characterization and Assessment of Severity of Cancer Inuced Bone Pain and its Impact on Quality of Life: A Prospective Observational Study in a Specialist Palliative Care Setting.
Desai Madhavi	Satisfaction of the parents of children undergoing Bone marrow procedures under general anaesthesia in a busy minor operating room in a tertiary cancer centre
	Quality Indicators of Anaesthesia Practice in Interventional Radiology Suites: A Prospective Audit of Current Practices and Assessment of Impact of Training to Improve Practices, in a Tertiary-care Oncology Set-up.
	Clinicopathological Review of Breast Carcinoma with Lobular Features
Desai Sangeeta	PIK3CA mutation prevalence and clinico-pathological association in breast carcinomas.
Dhamne Chetan	A prospective observational study to establish the duration of persistence of replication-competent SARS-CoV-2 in oncology patients with COVID-19 on chemotherapy

Prinicpal Investigator (PI)	IEC–II
	Prospective Collaborative Study for pulse dexamethasone and lenalidomide in Relapsed / Refractory Langerhans cell histiocytosis (LENDEX-LCH study) INPOG-HIST-19-03.
Engineer Reena	Outcomes of Nonmetastatic Pancreatic Cancers in Indian Sub- population - Clinical Audit.
Epari Sridhar	Large B-cell lymphoma with IRF4 gene rearrangement: Clinico- pathological audit of 8 cases.
Gaikwad Sheetal	Survey of impact of COVID 19 vaccination on compliance to preventive measures and mental well being of specialist doctors in India: A Prospective Observational Survey.
Ghosh Jaya	Prospective study to evaluate which method of estimated GFR best predicts for measured GFR in patients with ovarian cancer undergoing carboplatin based chemotherapy.
Ghosh Kinjalka	National Quality Assurance (NQA) program in Biochemistry for Electrophoresis, Immunofixation and Tumor markers in centers of the National Cancer Grid
	Prostate Health Index (PHI) - Is it a Master Key for Diagnosis of Prostate Cancer?
Guha Amrita	Retrospective study of MR imaging features of Anorectal Melanomas.
Gupta Sudeep	D9311C00001 "A Randomised, Multicentre, Double-blind, Placebo- controlled, Phase III Study of First-line Carboplatin and Paclitaxel in Combination with Durvalumab, Followed by Maintenance Durvalumab with or without Olaparib in Patients with Newly Diagnosed Advanced or Recurrent Endometrial Cancer (DUO-E)
	Retrospective and prospective observational study to evaluate the outcome of patients with metastatic hormone-positive breast cancer treated with a combination of chemotherapy and endocrine therapy.
Gurav Sandeep	Study on analysis of factors affecting the quality of life in cancer patients with medication related osteonecrosis of jaw.
Joshi Amit	A Phase 4 Study of Nivolumab in Combination with Ipilimumab in Patients with PreviouslyUntreated Advanced Renal Cell Carcinoma and Intermediate- or Poor-risk FactorsConducted in India
	A randomized, double-blind, placebo-controlled Phase 3 study of Darolutamide in addition to androgen deprivation therapy (ADT) versus placebo ADT in men with metastatic hormone-sensitive prostate cancer (mHSPC).

Prinicpal Investigator (PI)	IEC–II		
Joshi Malini	Evaluation of plethysmographic variability index as a measure of fluid responsiveness in patients undergoing elective surgeries under general Anaesthesia.		
Kale Shrikant, Mr	To Test the online AI Auto contouring Software for Delineation of Structures to be used for Radiation therapy treatment planning.		
Kulkarni Atul	Development of prediction model for postoperative outcomes in patients undergoing head and neck cancer surgeries and its validation [PRECUT (PRedicting nEck Cancer sUrgery ouTcomes) by ACCEPT (heAd neCk CancEr Perioperative ouTcomes) Study Group].		
Laskar Siddhartha	Texture analysis for prognostication in Pediatric Nasopharyngeal Carcinoma		
	Assessment of Prakriti (Ayurvedic body constitution) of patients with Cervical and Ovarian cancers		
Maheshwari Amita	Endocervical curettage (ECC) histology in women undergoing excisional treatment (LEEP) for cervical intraepithelial neoplasia (CIN): A retrospective analysis		
	Evaluation of tamoxifen related uterine lesions in women with breast cancer		
	Prognostic factors and survivals in endometrioid and clear cell ovarian carcinomas - A retrospective analysis.		
Menon Nandini	A Cross-sectional survey to assess the Oncologists' opinion on need for a comprehensive assessment of Adolescent and Young Adult (AYA) cancer survivors in India.		
Menon Santosh	Immunohistochemical analysis of LLT1 on prostate cancer biopsy samples.		
	Preventing Cervical Cancer in India through self-sampling (PCCIS)		
Mishra Gauravi	Women Empowerment-Cancer Awareness Nexus (WE-CAN): An Implementation Research Study of Cervical Cancer Prevention through HPV Self-Sampling and Education in India.		
Moiyadi Aliasgar	Development of a Prototype Intraoperative Ultrasound Virtual simulator-based training tool for Neurosurgeons		
	The Clinical Value of Ultrasound based Navigation update in cranial resection procedures		
	Evaluation of Baseline Neurocognitive function (NCF), factors affecting it, and the impact of treatment on NCF in patients with supratentorial brain tumours undergoing upfront surgery.		

Prinicpal Investigator (PI)	IEC–II		
	Prophylactic pirfenidone for prevention of radiation induced pneumonitis in patients with Lung cancer (PROPER study)		
Mummudi Naveen	PROspective assessment of TOXicity burden in ESOphageal cancer patients undergoing neoadjuvant chemo-radiation therapy (PROTOX-ESO).		
Nair Deepa	A Retrospective Surgical Audit for Oropharyngeal Cancer.		
Narula Gaurav	Profiling Responses and Toxicities in CD19-Directed Immunotherapies for Pediatric, Adolescent and Young Adult (P-AYA) Lymphoid Malignancies.		
Nayak Lingaraj	An open label phase III randomized clinical trial of pomalidomide cyclophosphamide and dexamethasone versus pomalidomide dexamethasone in relapsed/ refractory multiple myeloma treated with lenalidomide and a proteasome Inhibitor.		
Nookala Manjunath	Phase I-II of the update of the EORTC Quality of Life Gastric module QLQ-STO22		
	A Pretesting study to finalize the provisional survivorship core questionnaire (QLQ-SURV100)		
	Development of an EORTC module for renal cancer patients: Phase I-II		
Ostwal Vikas	A prospective, multicentre, post-marketing phase IV study to assess the safety and efficacy of Lenvatinib as first-line treatment in patients with unresectable hepatocellular carcinoma (HCC)		
	Protocol No ALK19/ENZ137-BEV1: A prospective, multicenter, randomized, double blind, Phase III study to compare the efficacy and safety of Biosimilar Bevacizumab of Enzene Biosciences Ltd. versus Innovator Bevacizumab both in Combination with CAPEOX in Patients with Metastatic Colorectal Cancer		
	A Phase II, Multicenter, Open-label Study to Evaluate the Efficacy and Safety of Trastuzumab Deruxtecan (T-DXd, DS-8201a) for the Treatment of Selected HER2-expressing Tumors (DESTINY-Pan Tumor02).		
Pai Prathamesh	Outcomes of Patients undergoing Salvage Surgery in Recurrent OSCC: Post HOC Analysis of Randomised Control Trial (OCAT).		
Pal Mahendra	Intravesical BCG: is the urinary bladder ready to receive it?		
Parab Swapnil	A Prospective Observational Audit of Anesthesia Practice in Endobronchial Ultrasound-Guided Transbronchial Needle Aspirtion (EBUS-TBNA) Procedures in a Tertiary Care Centre		

Prinicpal Investigator (PI)	IEC–II		
	An observational study to find out the incidence, causes and effects of intra-operative hypothermia during elective esophagectomy at a tertiary care centre.		
Pathak Rima	Can knowledge based planning improve in efficiency and consistency of radiation therapy treatment planning in breast cancer patients?		
Mr Pathuthara Saleem,	Is Conventional Cytology Inferior to Liquid Based Cytology?		
Patil Vijay	Protocol No 61186372NSC3001: A Randomized, Open-label Phase 3 Study of Combination Amivantamab and Carboplatin-Pemetrexed Therapy, Compared with Carboplatin-Pemetrexed, in Patients with EGFR Exon 20ins Mutated Locally Advanced or Metastatic Non-Small Cell Lung Cancer.		
Patil Vijaya	Perioperative Electrolyte Imbalance and Postoperative Complications in Patients undergoing Head and Neck Surgeries: An Audit.		
Pawar Manisha	A Pilot study to assess the feasibility of pomegranate Popsicles for prevention of oral mucositis during administration of high dose methotrexate in children with ALL at TMH		
Pimple Sharmila	Investigating Human Papillomavirus (HPV) Infection and HPV- associated Disease in Indian Men who have Sex with Men who are HIV-positive		
	Training and Technical Validation of Automated Visual Evaluation (AVE) for Cervical Screening		
	PRESCRIP-TEC—Prevention and Screening Innovation Project Toward Elimination of Cervical Cancer.		
Popat Palak	Study for comparison of diagnostic performance of an Abbreviated bi- parametric MRI protocol to Multiparametric MRI protocol for detection and staging of cervical cancer. [Abbreviated protocol for CAncer DEtection and staging on MR Imaging of Cervix (ACADEMIC Study)]		
	Diagnostic accuracy and incremental value of Dual-Energy Contrast- Enhanced Digital Mammography (CEDM) compared to mammography alone and mammography with tomosynthesis.		
Pramesh CS	A Phase III, Randomized, Multicenter, Double-blind, Placebo- controlled Study to Determine the Efficacy of Adjuvant Durvalumab in Combination with Platinum-based Chemotherapy in Completely Resected Stage II-III NSCLC (MeRmaiD-1).		
Purandare Nilendu	Role of FDG PET-CT in predicting expression of driver mutations in non-small cell lung cancer.		

Prinicpal Investigator (PI)	IEC–II	
Qureshi Sajid	Wading Through a Pandemic: Allaying Fears in Surgical Treatment of Paediatric Cancers, Experience from a Covid Hotspot.	
Ranganathan Priya	Assessment of the impact of a structured training programme on knowledge of research methodology among anaesthesiology trainees at a tertiary referral cancer centre	
	An observational study of patients planned for thoracic surgery assessed at a high-risk multi-disciplinary clinic at a tertiary-referral cancer centre	
	The impact of left-handedness: A survey among anaesthesiology professionals.	
Rath Sushmita	Protocol no. CR201-18 A Multicenter, Double-Blind, Randomized Parallel-Group, Active-Controlled, Two Part, Phase III, Global Study t Evaluate the Pharmacokinetics, Efficacy and Safety of BPO (Trastuzumab) in comparison with Herceptin®-EU in Patients wit HER2-Positive Early Breast Cancer (EBC) and HER2-Positive Metastati Breast Cancer (MBC).	
Sahay Ayushi	Histopathological evaluation of tumor infiltrating lymphocytes (TIL) ir brain metastasis–A retrospective analysis.	
Saklani Avanish	ColoRectal cancer in India: catastrOphiC expenDIture and referral pathways infLuencE on presentation and treatment (CROCODILE study).	
Sengar Manju	A phase II study to evaluate the activity of 177-Lu-DOTA Rituximab in adult patients with relapsed/refractory low-grade B-cell lymphomas	
	Early T-cell precursor acute lymphoblastic leukaemia: Unravelling mechanisms of resistance and development of novel therapeutic strategies.	
Shah Sneha	To evaluate role of FDG PETCT in detection of marrow disease at staging rhabdomyosarcoma in pediatric patients and its feasibility as a prognostic marker.	
Shet Tanuja	STRAT 4 mRNA testing for the biomarkers in Breast Cancer - Indian Validation Study.	
Shetmahajan Madhavi	Perioperative acute pain management in patients with median sternotomy incision for thoracic surgery in a tertiary care cancer centre - An observational study.	
Shetty Omshree	Validation of the TataMD CHECK CRISPR SARS-CoV-2 test 1.0 for the diagnosis of COVID-19.	

Prinicpal Investigator (PI)	IEC–II	
Solanki Sohan	Effect of Terlipressin in Patients Undergoing Major Hepatectomies for Liver Cancers: A Prospective Randomized Controlled Phase-III Trial (TerliHep Trial)	
	Correlation between peritoneal carcinomatosis index and postoperative pain after cytoreductive surgeries and hyperthermic intraperitoneal chemotherapy-a retrospective cohort study	
	A prospective observational study to assess the compliance to enhanced recovery protocols among patients undergoing bone and soft tissue cancer surgeries.	
Swain Monali	Head and neck Cancer in Adolescent and Young Adults: Analysis of outcome, prognostic factors and toxicity from a tertiary care centre.	
Shylasree TS	Risk factors affecting oncological outcomes in patients with vulvar cancer undergoing primary surgery: Case series from a tertiary cancer centre	
	SUrgical Route and Pathological risk factors in Early Cervical cancer- Node Negative (SURPEC-NO): A Retrospective Study.	
Thakkar Purvi	Pilot study for measurement of intra-tumoral interstitial fluid pressure in various cancers.	
Thiagarajan Shiva Kumar	Prevalence, predisposing factors and management of Head and Neck Lymphedema in patients following treatment for Head and Neck Cancer. (HeNLy-1 Study).	
Thota Raghu	Role of Telephonic Support Provided During Pandemic, for Alleviating the Death-Related Distress in Family-Caregivers of Children with Advanced Cancers.	
Tibdewal Anil	Locally Ablative Therapy for Oligo-Progressive, Oligo-Recurrent and Oligo-Persistent Non-Small Cell Lung Cancer - An Ambispective Observational Cohort study (OLIGO-CHROME).	
Tuljapurkar Vidisha	A prospective cohort study of frailty in head neck cancer patients & its impact on treatment outcomes.	
Wadasadawala Tabassum	Clinical audit of internal mammary nodal irradiation for initial positive nodes.	
	PROspecTive Study on the use of gEriatriC assessment Tools for validation of 1-year mortality in nonmetastatic breast cancer patients 65 years and older (PROTECT).	
Wajekar Anjana	Incidence and factors associated with non-insertion of epidural catheters in adult onco-surgical patients.	

The Data Safety Monitoring Unit

Secretary: Dr Maya Prasad, Medical Oncologist Joint Secretary: Dr Nehal Khanna, Radiation Oncologist

The Data Safety Monitoring Unit (DSMU), a subcommittee of the Institutional Ethics Committee (IEC) I & II at Tata Memorial Centre, was responsible for monitoring patient safety during the course of research studies in a manner that ensured their scientific and ethical integrity.

The mandate of the Committee:

- Assess and evaluate Serious Adverse Event reports (SAEs) on all trials being conducted at the TMH
- Monitor the overall progress of institutional clinical trials and to ensure adherence to clinical trial and procedural requirements
- Ensure that the safety of participants, validity of data and projected accrual goals were maintained
- Provide regular reports to the Institutional Ethics Committee.

The other members of the DSMU for the year 2020-2022:

Name	Gender	Expertise
Dr Archi Agrawal	Female	Radiologist
Dr Akshay Baheti	Male	Radiologist
Dr Swapnil Parab	Male	Anesthetist
Dr Madhavi Shetmahajan	Female	Anesthetist
Dr Bindiya Salunke	Female	Anesthetist
Dr Anant Ramaswamy	Male	Medical Oncologist
Dr Ameya Puranik	Male	Radiologist

Name	Gender	Expertise
Dr Anuprita Daddi	Female	Physician
Dr Shraddha Patkar	Female	Surgical Oncologist
Dr Gagan Prakash	Male	Surgical Oncologist
Dr. Lavanya G.	Female	Radiation Oncologist
Dr Rima Pathak	Female	Radiation Oncologist
Dr Richa Vaish	Female	Surgical Oncologist
Dr Suman Ankathi	Male	Radiologist
Dr Anuja Damani Member (until October 2021)	Female	Palliative Medicine
Dr Sandeep Gurav	Male	Dental & Prosthetic Surgeon

Service:

The committee conducted 13 meetings from January to December 2021. All SAEs over the past month were reviewed in scheduled monthly meetings. Additionally, SAEs from regulatory trials were continuously evaluated over email by a group of 5 members consisting of the secretary of the respective committee (IEC 1 or 2), the 2 lead discussants assigned to each project and the secretary and Jt-secretary of the DSMU, in order to meet the 30-day timeline.

Meetings of DSMU were conducted on a hybrid mode on the last Friday of every month (with members joining from the IEC meeting Room or via zoom platform).

The four principal functions of the committee were:

- 1. Review of Serious Adverse Event Reports
- 2. Monitoring of institutional (investigator-initiated) trials and for-cause monitoring of other trials as requested by the IECs
- 3. Review of annual Continuing Review Application/ Annual Status Reports
- 4. Review of Site monitoring reports.

Review of Serious Adverse Events (SAEs):

The primary responsibility of the DSMU was to review and address SAE events involving all trials. Each SAE was divided into three reports (initial, follow up and final) and all reports for all SAEs were reviewed and discussed in DSMU meetings. Queries on causality assessment were sent to the PIs and replies to these queries were discussed in the subsequent DSMU meeting. Any unresolved aspects (on both investigator-initiated and pharma-funded/sponsored trials) were discussed by the Secretary and Joint secretary in the Institutional Ethics committee meetings.

A total of **1415** SAE reports (average of 55/month) on **75** investigator-initiated and sponsored clinical trials being conducted at Tata Memorial Centre were received and reviewed by the DSMU from January–December 2021 (see figure below). In addition, the DSMU also received **197** off-site safety reports in 2021 from multi-centre trials, of which, Tata Memorial Centre was a part of.

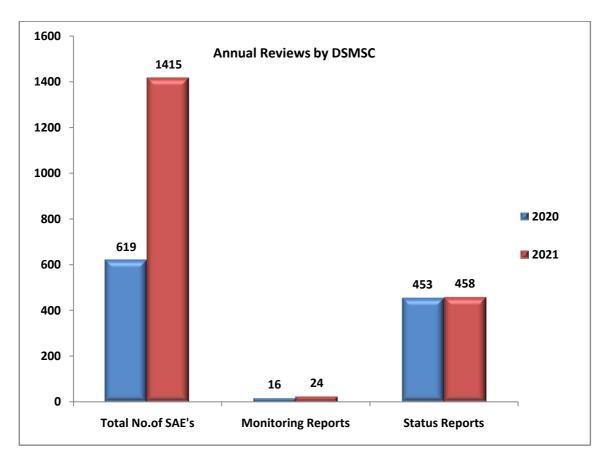
Monitoring of studies and review of Continuing Review Applications (CRA):

An initial, detailed review of CRAs was done by DSMU Member Secretary, and comments from the DSMU were forwarded to the IEC.

A total of 458 status reports were received and reviewed by the DSMU in 2021.

Investigator-initiated interventional studies were routinely monitored by DSMU. The Pharmasponsored studies were not routinely monitored, but could undergo for-cause monitoring.

Of the 24 studies monitored by DSMU in 2021, 21 were 'routine monitoring' and 03 were 'forcause '.



Other Activities by DSMU in 2021:

In addition to the above, the DSMU also sent CRA reminders and SAE queries, reviewed study completion reports and SAE query responses.

Other Activities by DSMU	
CRA Reminder Sent	970
Study Completion/Termination/Suspension	155
SAE Query Sent	338
SAE Query Response received	148

Recent quality improvement processes:

- Revision of the templates of Continuing review form, SAE Reporting form and the Study Monitoring form for more objective documentation of various aspects of the trial
- Constitution of a DSMU monitoring team, whose primary function was to conduct routine monitoring of trials in conjunction with existing members of the DSMU. The current DSMU monitoring team consisted of a medical monitor, Dr Vinod Hande and Mrs Sneha Satpute that was anticipated to greatly streamline the monitoring process.

Future Plans:

- To continue to uphold the standards of the Institutional Ethics Committee at Tata Memorial Centre
- To complete the development and validation of online review form meant to facilitate review of SAEs and CRAs by IEC/DSMU members (in process)
- To develop online form for study monitoring.



Books

	Books
1	Agrawal, A., Rangarajan, V., Puranik, A.D.(Eds.), PET/CT in Non-Hodgkin Lymphoma, Springer. Cham. 2021. ISBN(P): 978-3-030-79006-6
2	Bhattacharjee, A. Bayesian approaches in oncologyusing R and open BUGS, CRC Press. Boca Raton. 2021. ISBN: 9780367350505
3	Kulkarni, A. P., Divatia, J.V., Patil, V.P.(Eds.), Objective Anesthesia Review: A Comprehensive Textbook for the Examinees, 5 th Ed., Jaypee Health Science Publisher. New Delhi. 2021. ISBN (P): 9789390020485
4	Kulkarni, A. P., Kothekar, A. T., Divatia, J.V.(Eds.), Perioperative Critical Care, Jaypee Health Science Publisher. New Delhi. 2021. ISBN (P): 9789390020508
5	Moiyadi, A.V., Chandrani, P., Dutt, A. (Eds.) Evidence Based Management of Cancers in India: NGS data analysis & a live molecular tumour board Vol. XVIII (G), Tata Memorial Centre, Mumbai. 2021. ISBN: 978-93-82963-52-3
6	Moiyadi, A.V., Karimundackal, G., Niyogi, D.M. (Eds.) Evidence Based Management of Cancers in India: surgical oncology Vol. XVIII (A), Tata Memorial Centre, Mumbai. 2021. ISBN: 978-93-82963-59-2
7	Moiyadi, A.V., Krishnatry, R., Agarwal, J.P., Sinha, S., Ghosh-Laskar, S., Ostwal, V., Laskar, S. (Eds.) Evidence Based Management of Cancers in India: technological advances in radiation oncology Vol. XVIII(C), Tata Memorial Centre, Mumbai. 2021. ISBN: 978-93-82963-61-5
8	Moiyadi, A.V., Menon, N., Bhargava, P., Srinivas, S., Nayak, L., Ostwal, V. (Eds.) Evidence Based Management of Cancers in India: precision oncologyVol. XVIII (B), Tata Memorial Centre, Mumbai. 2021. ISBN: 978-93-82963-60-8
9	Moiyadi, A.V., Puranik, A.D., Agrawal, A., Rangarajan, V. (Eds.) Evidence Based Management of Cancers in India: theranostics of neuroendocrine tumors and prostate cancer Vol. XVIII (D), Tata Memorial Centre, Mumbai. 2021. ISBN: 978-93- 82963-62-2
10	Moiyadi, A.V., Shetty, N.S., Kulkarni, S.S., Thakur, M.H., Janu, A., Popat, P.B. (Eds.) Evidence Based Management of Cancers in India: radiology beyond imaging - intertwining imaging with advanced technology Vol. XVIII (E), Tata Memorial Centre, Mumbai. 2021. ISBN: 978-93-82963-63-9
11	Moiyadi, A.V., Shetty, O., Gurav, M., Pai, T., Kumar, R., Yadav, S., Rane, S., Desai, S. (Eds.) Evidence Based Management of Cancers in India: beyond microscopy- pathology informatics Vol. XVIII (F), Tata Memorial Centre, Mumbai. 2021. ISBN: 978-93-82963-64-6

Chapters

	Chapters in Books
1	Agrawal, A., Manikandan M.V., Purandare N.C., Shah S., Puranik A.D., Rangarajan V. (2021) 18F-FDG PET/CT in Treatment Response Evaluation: Gastroesophageal Cancer. In: Fanti S., Gnanasegaran, G., Carrió, I. (eds) Atlas of Clinical PET-CT in Treatment Response Evaluation in Oncology. Springer, Cham. pp. 209-235. ISBN: 978-3-030-68857-8
2	Agrawal, K., Choudhury, S., Suresh, A., Agrawal, A., Gnanasegaran, G. (2021) PET/CT in the Assessment of Treatment Response in Hepatobiliary, Gall Bladder and Pancreatic Malignancies. In: Fanti, S., Gnanasegaran, G., Carrió, I. (eds) Atlas of Clinical PET-CT in Treatment Response Evaluation in Oncology. Springer, Cham. pp.187-207. ISBN: 978-3-030-68857-8
3	Baliga, N., Divatia, J.V. (2021) Biomarkers of sepsis. In: Puneet. Roshanlall Gupta's Recent advances in Surgery Vol17. Jaypee Brothers Medical Publishers Pvt. Limited. New Delhi. pp.1-12. ISBN: 9789390595587
4	Bhosale, S.J., Kulkarni, A.P. (2021). Inhaled Sedation in the Intensive Care Unit. In: Todi, S., Govil, D., Chaudhry, D., Dixit, S.B. (eds) Critical care update 2021(ISCCM), 3rd Ed. Jaypee Brothers Medical Publishers (P) Ltd. New Delhi. pp.270-276. ISBN: 9789390595877
5	D'Cruz, A.K., Dhar, H., Fatehi, K., Vaish, R. (2021) Neoplasms of the Oral Cavity and Oropharynx. In: Al-Qahtani, A., Haidar, H., Larem, A.(eds) Textbook of Clinical Otolaryngology. Springer, Cham. pp. 427-447. ISBN: 978-3-030-54087-6.
6	D'Cruz, A.K., Vaish, R. Dhar, H. (2021) Principles of Management of Head and Neck Cancers. In: Al-Qahtani, A., Haidar, H., Larem, A. (eds) Textbook of Clinical Otolaryngology. Springer, Cham. pp. 409-425. ISBN: 978-3-030-54087-6.
7	Divatia, J.V., Pulinilkunnathil, J.G. (2021) Onco-Critical Care. In: Garg, R., Bhatnagar, S. (eds) Textbook of Onco-Anesthesiology. Springer, Singapore. pp. 439-457. ISBN: 978-981-16-0008-1.
8	Jain, P.N., Bakshi, S.G. (2021) Perioperative Pain Management for Onco-surgery. In: Garg, R., Bhatnagar, S. (eds) Textbook of Onco-Anesthesiology. Springer, Singapore. pp.377-383. ISBN: 978-981-16-0008-1.
9	Jain, P.N., Thota, R.S. (2021) Recent Advances in the Management of Cancer Pain. In: Sehgal, R., Trikha, A. Yearbook of Anesthesiology-10. Jaypee Brothers Medical Publishers (P) Ltd. New Delhi. pp.318-329. ISBN: 9789390595013

10	Kron, T., Dove R., Sobolewski, M., Jamema, S.V., Kanduza, M.M., Whitaker, M. (2021) Medical Physics Services in Radiation Oncology: pandemic Trials and Tribulations. In: Hoong Ng, K., Stoeva, M.S. (eds) Medical Physics During the COVID-19 Pandemic Global Perspectives in Clinical Practice, Education and Research. CRC Press. Boca Raton. pp.4-14. ISBN: 9781003144380.
11	Kulkarni, S.S., Shetty, N.S., Mishra, S., Narayan, D. (2021) Transarterial Therapies for Benign and Malignant Liver Tumors. In: Mukund, A. (eds) Basics of Hepatobiliary Interventions. Springer, Singapore. pp.153-179. ISBN: 978-981-15-6855-8.
12	Mirgh, S., Khattry, N. (2021) Acute Complications in Stem Cell Transplantation. In: Chandy, M., Radhakrishnan, V.S., Sukumaran, R.K. (eds) Contemporary Bone Marrow Transplantation. Organ and Tissue Transplantation. Springer, Cham. pp. 511-544. ISBN: 978-3-030-36358-1
13	Muckaden, M. A (2021) The Role of the Palliative Care Team in Keeping Paediatric Oncology Patients at Home. In: Silbermann, M. (eds) Palliative Care for Chronic Cancer Patients in the Community: global approaches and future applications. Springer, Cham. pp. 497-504. ISBN: 978-3-030-54525-3.
14	Myatra, S.N., Gupta, S. (2021) Anesthesia for Oral Cancer Surgery. In: Garg, R., Bhatnagar, S. (eds) Textbook of Onco-Anesthesiology. Springer, Singapore. pp.119-142. ISBN: 978-981-16-0008-1.
15	Myatra, S.N., Pulinilkunnathil, J.G. (2021) Prevention of HCAIs in Cancer Patients. In: Baveja, U.K., Mehta, Y. (eds) Prevention of Healthcare Associated Infections: infection, prevention and control. Jaypee Brothers Medical Publishers Pvt. Limited. New Delhi. pp.383-392. ISBN: 9789389776461
16	Pai, P.S., Tiwari, N. (2021) Endoscopic resection of sinonasal tumors with endonasal craniectomy. In: Jayashankar, N. Atlas of 360 degree skull base surgery. Thieme, New Delhi. pp.369-384. ISBN: 9789390553136
17	Parmar, V., Chitkara, G. (2021) Inflammatory Breast cancer. In: Puneet. Roshanlall Gupta's Recent advances in Surgery Vol17. Jaypee Brothers Medical Publishers Pvt. Limited. New Delhi. pp.232-243. ISBN: 9789390595587
18	Parray, A., Bhandare, M., Chaudhari, V., Shrikhande, S. (2021). Pathophysiology of Pancreatic Exocrine Insufficiency after Pancreatic Surgery. In: GI Surgery and Pancreatic Exocrine Insufficiency. Kontentworx. pp. 18-27
19	Purandare, N.C., Mathew, B., Puranik, A.D., Shah, S., Agrawal, A., Rangarajan, V. (2021) PET/CT in Treatment Response Evaluation: Lung Cancer. In: Fanti, S., Gnanasegaran, G., Carrió, I. (eds) Atlas of Clinical PET-CT in Treatment Response Evaluation in Oncology. Springer, Cham. pp. 151-158. ISBN: 978-3-030-68857-8
20	Puranik, A.D., Jain, Y. (2021) 18F-FLT/FET PET-CT in Treatment Response Evaluation. In: Fanti, S., Gnanasegaran, G., Carrió, I. (eds) Atlas of Clinical PET-CT in Treatment Response Evaluation in Oncology. Springer, Cham. pp. 481-488. ISBN: 978-3-030- 68857-8

21	Rao, V., Menon, S., Rekhi B., Deodhar, K. (2021) Molecular Markers in Gestational Trophoblastic Diseases. In: Nayak, B., Singh, U. (eds) Gestational Trophoblastic Disease. Springer, Singapore. pp.37-52. ISBN: 978-981-33-4878-3
22	Shrikhande, S.V., Mondal, A., Bhandare, M.S., Chaudhari, V.A. (2021) Surgery for gastric cancer. In: Puneet. Roshanlall Gupta's Recent advances in Surgery Vol17. Jaypee Brothers Medical Publishers Pvt. Limited. New Delhi. pp.13-33. ISBN: 9789390595587
23	Tahlan, S., Paliwal, V., Maheshwari, A. (2021) Placental Site and Epithelioid Trophoblastic Tumours: Rare Varieties of Gestational Trophoblastic Neoplasia. In: Nayak, B., Singh, U. (eds) Gestational Trophoblastic Disease. Springer, Singapore. pp.113-123. ISBN: 978-981-33-4878-3
24	Vidhyadharan, S., Subramaniam, N., Murthy, S.P., Kapahtia, R. (2021) Principles of Oral Cavity Reconstruction. In: Subramaniam, N., Vidhyadharan, S., Murthy, S.P. Comprehensive Management of Head and Neck Cancer. Jaypee Brothers Medical Publishers Pvt. Limited. New Delhi. pp.499-513. ISBN: 9788194709046
25	Vidhyadharan, S., Subramaniam, N., Murthy, S.P., Kapahtia, R. (2021) Principles of Skull Base Reconstruction. In: Subramaniam, N., Vidhyadharan, S., Murthy, S.P. Comprehensive Management of Head and Neck Cancer. Jaypee Brothers Medical Publishers Pvt. Limited. New Delhi. pp.514-519. ISBN: 9788194709046
26	Vidhyadharan, S., Subramaniam, N., Murthy, S.P., Kapahtia, R. (2021) Vascular Malformations of the Head and Neck. In: Subramaniam, N., Vidhyadharan, S., Murthy, S.P. Comprehensive Management of Head and Neck Cancer. Jaypee Brothers Medical Publishers Pvt. Limited. New Delhi.pp 471-478. ISBN: 9788194709046

Publication

International	
1	Agarwal JP, Tibdewa A, Mohanty S, Mummudi N (2021) - Radiotherapy of brain metastasis from lung cancer in limited resource settings. Journal of Thoracic Disease. 13(5):3308-3314. PMID: 34164223
2	Agarwal P, Kinhikar R (2021) - In regard to the article 'Effectiveness of robust optimization in volumetric modulation arc therapy using 6 and 10 MV flattening filter-free beam therapy planning for lung stereotactic body radiation therapy with a breath-hold technique,' Vol. 61, no. 4, 2020. Journal of Radiation Research. 62(4): 740-742. PMID: 34156471
3	Agarwal R, Singhal M, Shankhdhar VK, Chittoria RK, Sahu RK, Singh V, Chandra R (2021) - Plastic surgery practices amidst global COVID-19 pandemic: Indian consensus. Journal of Plastic, Reconstructive & Aesthetic Surgery. 74(1):203-210. PMID: 32878726
4	Agha R, Mathew G, STROCSS Group, Pai P (2021) - STROCSS 2021: Strengthening the reporting of cohort, cross-sectional and case-control studies in surgery. International Journal of Surgery. 96:106165. PMID: 34774726
5	Agrawal A, Shah S, Gnanasegaran G, Rajkotia S, Purandare N, Puranik A, Rangarajan V (2021) - PET/CT Normal Variants and Pitfalls in Pediatric disorders. Seminars in Nuclear Medicine. 51(6):572-583. PMID: 34243902
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Inauguration of a new Mammography machine on the International Women's Day by IPS N. Ambika.



Dr. CS Pramesh, Director TMH acknowledging the various surgical items from The New India Assurance Co. Ltd. as part of their Corporate Social Responsibility (CSR) in February 2021. Dr CS Pramesh is flanked by Ms Jayashree Nair, Chief Manager CSR and Mr. S. Vasudeswaran, Deputy General Manager. Also present are Mr. S. Sood, Director TMC (Admin Projects); Dr Ajay Puri, Head of Surgery; Dr Manju Sengar, Medical Oncologist; and Dr Ashish Gulia, Orthopedic Surgeon.

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