

**MALABAR CANCER CENTRE-POST  
GRADUATE INSTITUTE OF ONCOLOGY  
SCIENCES AND RESEARCH**

*(An autonomous Centre under Health & Family Welfare Department, Government of Kerala)*

**Moozhikkara P.O, Thalassery, Kannur District, Kerala-670103.**

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**INSTITUTIONAL FELLOWSHIP PROGRAMME  
BROCHURE  
JULY-2024**



# **LIST OF FELLOWSHIP PROGRAMMES**

- **Fellowship in High Precision Radiotherapy**
- **Fellowship in Gynaecologic Oncology**
- **Fellowship in Aphaeresis Medicine**
- **Fellowship In Oncoanaesthesiology**
- **Fellowship In Hemat-Oncology And BMT**
- **Fellowship In Head And Neck Pathology**
- **Fellowship In Oncopathology**
- **Fellowship In Molecular Pathology**
- **Fellowship in Solid Tumour Oncology**
- **Fellowship in Psycho-oncology**
- **Fellowship in Oncology Social Work**
- **Fellowship In Oncology Nutrition**

# 1.0 MALABAR CANCER CENTRE, THALASSERY

Malabar Cancer Centre, Thalassery (MCC) is an autonomous institution under Health and Family Welfare Department, Government of Kerala, started with an aim to establish a comprehensive cancer centre, providing the much-required oncology care to the population of Northern region of Kerala and neighboring parts of Karnataka and Tamil Nadu states. The main objective of the centre is not only to provide comprehensive cancer care but also to develop as a Research and Training Centre of international standards. A society named Malabar Cancer Centre Society was registered under Societies Registration Act XXI of 1860 with the above aims and clinical work in MCC started from March 2001 onwards. At present MCC has more than 200 in-patient bed strength. The control and management of the Society are vested in the Governing Body consisting of 23 members with the Honourable Chief Minister of Kerala as the Chairman. The routine activities and functions of the Centre are supervised by the Executive Committee, with the Secretary, Department of Health and Family Welfare, Government of Kerala being the Chairperson of the Committee. The members in the Governing Body and Executive Committee are functioning by virtue of their official positions.

MCC provides a full spectrum of oncological care as an autonomous not-for-profit institution funded by the State Government and other sources. Patients are categorized according to their economic status, and accordingly it is expected that 95-97% of patients will be provided free treatment through various financial assistance schemes of the Government. The main modalities of treatment offered by MCC to patients, presently, include radiotherapy, chemotherapy, onco-surgery and palliative care. The Centre also carries out Community Oncology activities including cancer awareness and early detection programmes. The institute caters to patients from 7 districts of Northern Kerala in addition to the neighbouring states of Tamil Nadu, Karnataka and Mahe (a total population of over 1.5 crores).

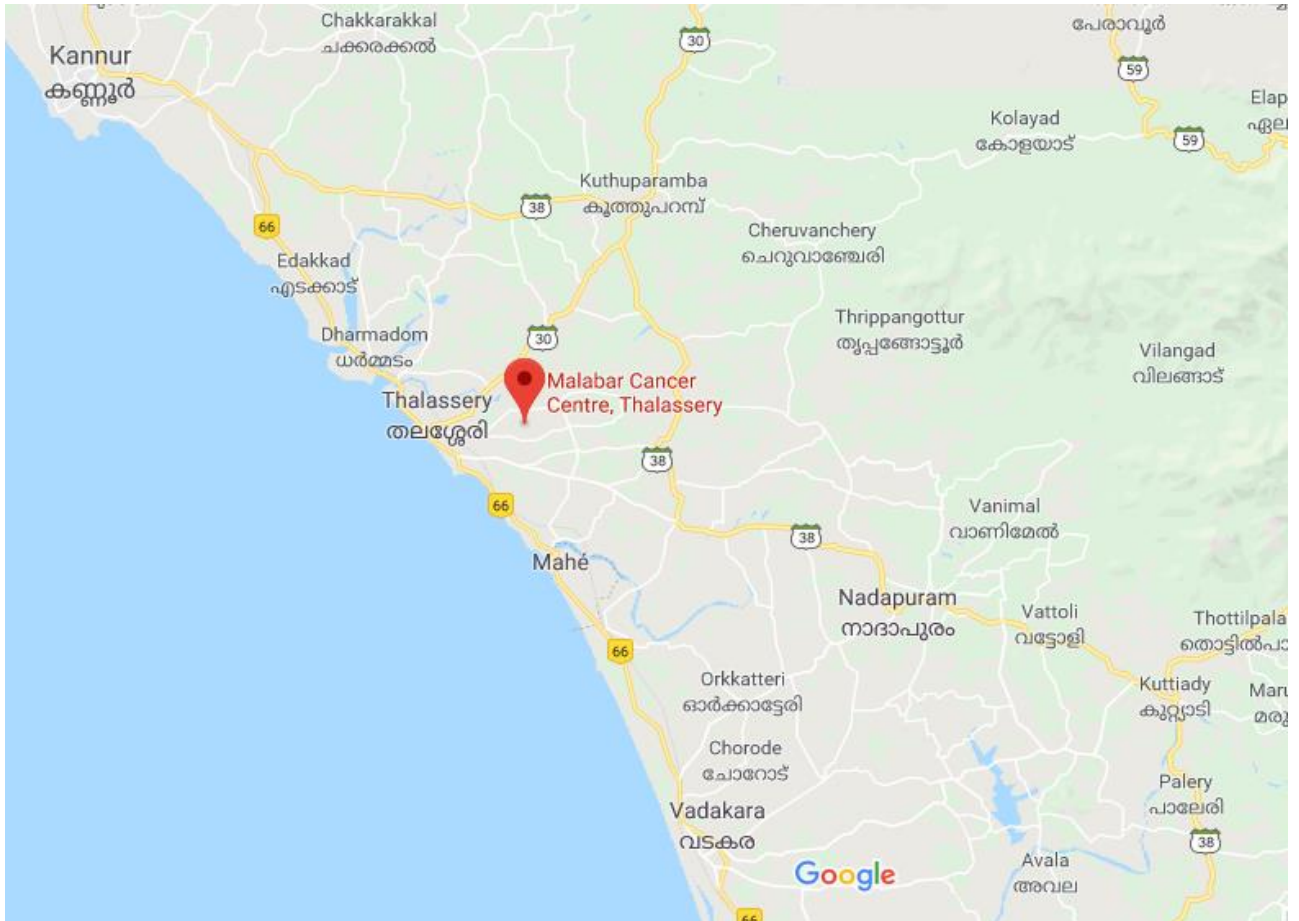
## **Location: Kodyeri, Thalassery, Kannur District, Kerala.**

Thalassery (formerly Tellicherry) is a commercial town on the Malabar Coast in Kannur district, in the state of Kerala, India, bordered by the districts of Mahe (Pondicherry), Kozhikode, Wayanad and Kodagu (Karnataka). The town of Thalassery is historically

renowned for its 3 “C “ s of *Cake, Circus and Cricket*. Thalassery is at times referred to as the city of cricket, cakes and circus. It was a British bastion in the pre-independence era with marked contributions of colonial rule.

It is the second largest populated municipality of North Malabar.. The Europeans nicknamed the town "Paris" or in other words "The Paris of Malabar", as it was the sole French military base in Kerala in that era..Thalassery municipality has a population just under 100,000.and an area of 23.98 square kilometres. It is 22 km south of the district headquarters -Kannur city.

Thalassery municipality was formed on 1<sup>st</sup> November 1866 according to the Madras Act 10 of 1865 of the British Indian Empire, making it the second oldest municipality in the state. At that time the municipality was known as Thalassery Commission, and Thalassery was the capital of North Malabar. G. M. Ballard, the Malabar collector, was the first President of the municipal commission. Later a European barrister, A. F. Lamaral, became the first Chairman of Thalassery municipality. Thalassery grew into a prominent place during European rule, due to its strategic geographic location. Thalassery has played a significant historical, cultural, educational and commercial role in the history of India, especially during the colonial period.



## 2.0 INTRODUCTION

### Global Cancer Burden

Cancer is an umbrella term covering over 40,000 unique disorders characterized by unlimited replicative potential, virtual mitotic immortality and propensity to invade non native tissues. Despite being one of the few curable non communicable diseases, cancer remains a major public health problem worldwide, accounting for over 8 million deaths worldwide. As per Globocan 2018 data, there were 18.1 million new cases of cancer. While cancer has been traditionally viewed as a disease of the affluent world, 65% of the cancer deaths occur in the less developed nations. Cancer is the 4th most common cause of death, accounting for almost 12.5% of all deaths occurring worldwide. Not only does cancer cause suffering in terms of mortality and morbidity, but it also has a significant socio-economic impact. As per the Global Economic Cost of Cancer Report (American Cancer Society), the total economic impact of premature death and disability from cancer worldwide was \$895 billion in 2008. This figure, which does not include direct costs of treating cancer, represents 1.5 percent of the world's GDP. Cancer causes the highest economic loss of all of the 15 leading causes of death worldwide. The economic toll from cancer is nearly 20 percent higher

than heart disease, the second leading cause of economic loss (\$895 billion and \$753 billion, respectively).

### **Burden of Cancer in India**

As per the estimates provided by Globocan 2018, worldwide the age standardized incidence of all cancers including non melanoma skin cancers, were 218 per 100,000 in males and 182.6 per 100,000 in females. In India it is around 90 per 100,000 population in males and females. In India the five most common cancers are cervical cancer, Breast Cancer, Head Neck Cancers, Lung and Colorectal cancers. This is also unlike the case in the USA where Prostate, Breast, Lung, Colorectal cancers and melanomas are the 5 most common cancers. It should be remembered that this data probably represents a gross under-representation of the true burden as the NCRP data that is the basis for this report has a single rural based cancer registry, where 70% of the Indian population is known to reside. As per Globocan 2018 there are 1.15 million new cancer cases annually. Perhaps more worrisome is the fact that the burden of cancer will nearly double in the next two decades with an estimated 1.7 million new cases and 1.2 billion cancer deaths occurring annually by the year 2035.

As India's population ages and the deaths attributable to infectious diseases are reduced, the burden of mortality due to non communicable diseases will experience an upsurge. Deaths caused by cancer are projected to increase from 730 000 in 2004 to 1.5 million in 2030, and those attributable to cardiovascular causes from 2.7 million in 2004 to 4.0 million in 2030 as per the Global Burden of disease study.

### **Challenges to Cancer Care in India**

In a well publicised position paper in Lancet Oncology, Professor Mallath et al, have highlighted several challenges facing our nation in ensuring adequate and equitable cancer care. Despite the substantial socioeconomic progress made over the past 5 decades since Independence, our per capita purchasing power is only 5-10% of that of the Western nations. If we take the example of Trastuzumab, a monoclonal antibody that has proven to have significant benefits in a subgroup of breast cancer patients, the annual cost of treatment for an average Indian female works out to be \$20,000. This represents ~ 30% of the cost incurred for the same drug in the USA (\$70,000). As can be appreciated in terms of relative purchasing power, the same drug, although retailed for a lesser price, extracts a far more severe economic penalty on Indians. This economic burden is aggravated by the fact that use

of such life saving drugs is associated with a net societal economic benefit in terms of quality adjusted life years (QALY) saved. As estimated by Lopes et al, the mean societal cost benefit due to herceptin in Singapore is \$4300. Given the central role that a woman plays in the family in India the socio-economic impact of lives lost, due to inability to afford this medication is likely to be higher. This is not only the case for new drugs but also for existing drugs and devices.

India is also experiencing a slower demographic transition in terms of disease burden. While the burden of chronic disease is increasing, a high burden remains for acute infectious diseases and accidents. As a result formulating an effective health policy remains a challenge. India thus requires a health care policy that combats malnutrition while emphasizing prevention of obesity at the same time. Till date the national cancer control program has focussed its efforts on enhancing and upgrading infrastructure at select cancer centres along with emphasizing education as the primary modality for prevention. We lack dedicated screening programmes for most cancers as till date the population prevalence for most cancers is below 5 per 100,000.

As highlighted in the report by Professor Mallath et al, India invests less than 1.5% of its GDP on central government-funded and state-funded health care, out of a total public plus private spend of little more than 4% of GDP. No other comparable nation spends as small a proportion of its national resources on public health care. The situation is further complicated by factors such as poor fiscal governance; sub-optimum (health sector-related) relationships between the federal and state governments; poor public health expertise (compounded by inadequate medical and other health professional education); substantial regional variations; and gross education, caste, and class-related inequalities in income and access to services.

Although Indian society places strong emphasis on familial bonds, there is an absence of a corresponding emphasis on ensuring adequate funding for service requirements in the community. As a result majority of the treatment costs are borne out of pocket resulting in further exacerbation in the disparities in cancer care.

Perhaps the biggest problem faced by the policymakers in India today is the inadequate infrastructure available for training and education for professionals. While 60% of specialist

facilities are located in regions to the south and the west of India, 50% of the population lives in the Central and Eastern parts of the country. The regional disparity in cancer care is even more apparent when we consider the imbalance in availability of therapy facilities. In addition to the disparity among regions, there is an imbalance in the availability of services in rural and urban areas. As a result of this disparity patients with cancer often have to travel long distances and stay in suboptimal conditions to access appropriate cancer care which they can afford.

### **Challenges to Cancer Research in India**

Even more worrisome is the state of cancer research in India. India, which has about 17% of the world population, is involved in only about 1.5% of all clinical trials worldwide. The amount of ongoing research activities can be gauged from the number of clinical trials ongoing in the nation. In this respect a search of the Clinical Trial Registry of India reveals that there are only 331 registered trials in Cancer of which only 141 are actively recruiting participants. Of the 57 clinical trials being conducted in Kerala none are open to recruitment at present. In contrast, a search of the clinical trial registry database of the National Cancer Institute reveals 1518 active clinical trials dealing with various aspects of cancer research. As can be easily appreciated, the number of trials being conducted in India on Cancer at this point of time is less than 10% of what is being conducted in the USA. Perhaps more worrisome is the fact that there is a dearth of investigator initiated research with less than 3% of the registered trials being investigator initiated studies.

Another metric to gauge the research output is the number of publications in peer reviewed journals. In this regard also India is far behind that of the USA. In a bibliometric analysis of publications related to cancer research reported by Patra et al, only 648 publications were identified in Pubmed as originating from India in contrast to the 1,53,341 publications from India. Of the total number of publications, India contributed to only 0.4% of the available publications. The authors found that most of the publications were in low impact factor journals and there was a marked regional disparity with Kerala accounting for only 6.5% of the national research output.

We conducted a search of Pubmed using the same filters and found that 25,047 articles were identified from India. However during the same time period, the total number of publications from the USA was 3, 80,771. In the year 2012, 2122 articles were published from India as



compared to 25,364 articles from the USA. Thus over the period of the last decade while some increase in research activities has been observed the total research output of India remains less than 10% of that in the USA.

Hence from the above it can be easily concluded that Cancer research is at a nascent stage in India. Given the dearth of manpower and high patient load at most cancer centres it is not difficult to imagine the reasons behind the lack of research activities. Further impediments in conducting research activities in India include the phenomenon of “brain drain”, lack of appropriate training and infrastructure to conduct research, absence of incentives for conducting research and less funding available for research. Other problems that have been highlighted in a publication by Saini et al and Thatte et al include:

1. Shortage of trained staff well versed in GCP norms.
2. Lack of formal training in bioethics and research methodology
3. Heavy burden of clinical duties
4. Sub-optimal administrative support
5. Absence of oversight of functioning of ethics committees
6. Lack of mechanisms for ensuring quality of ethics review heightens societal concerns about safety of participants.

The current socioeconomic reality of the Indian health care system is that very few patients are able to get access to innovative drugs and treatments. The per capita total spending on health is \$132 for India versus \$3480 for the United Kingdom (currency assumed to be international dollars as per purchasing power parity). 70.8% of all healthcare expenditure in India is borne by private spending, compared to only 16.1% for the United Kingdom. As a result there is no incentive for international pharmaceutical companies to market the latest products in India. This, coupled with an adverse intellectual property environment, results in the large majority of the innovative drugs reaching the Indian market very late in their development. The need of the hour is to develop a robust mechanism to conduct clinical trials that have relevance to the cancer burden in India in the country itself. In this regard availability and continuous training of manpower assumes paramount importance.

### 3.0 FELLOWSHIP PROGRAMMES

ALL FELLOWSHIP PROGRAMS CONDUCTED BY MCC ARE INSTITUTIONAL FELLOWSHIP PROGRAMS. THESE PROGRAMS DO NOT HAVE THE RECOGNITION OF REGULATORY BODIES OR UNIVERSITIES.

THE PROGRAMS ARE STRUCTURED SO THAT CANDIDATE WILL GET ADEQUATE EXPOSURE AND PRACTICAL KNOWLEDGE IN RESPECTIVE FIELDS

Fellowship Programme in	Duration	Vacancy	Eligibility
<b>High Precision Radiotherapy</b>	<b>1 year</b>	<b>One</b>	<ul style="list-style-type: none"> <li>The candidate should possess an MD/DNB degree in Radiotherapy/ Diploma in Medical Radiation Therapy (DMRT)</li> <li>Candidate should have valid MCI registration certificate</li> <li>Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Gynaecologic Oncology</b>	<b>2 years.</b>	<b>Two</b>	<ul style="list-style-type: none"> <li>MS/DNB (OBG), MS/DNB (General Surgery)</li> <li>Candidate should have valid MCI registration certificate</li> <li>Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Aphaeresis Medicine</b>	<b>1year</b>	<b>Two</b>	<ul style="list-style-type: none"> <li>M.D. Transfusion Medicine/DNB Transfusion Medicine/M.D. Pathology/ DNB Pathology</li> <li>Candidate should have valid MCI registration certificate</li> <li>Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>

<b>Oncoanaesthesiology</b>	<b>1 year</b>	<b>Two</b>	<ul style="list-style-type: none"> <li>• MD/DNB in Anaesthesiology or Diploma in Anaesthesiology</li> <li>• Candidate should have valid MCI registration certificate</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Hemato-Oncology &amp; BMT</b>	<b>1year</b>	<b>Two</b>	<ul style="list-style-type: none"> <li>• MD/DNB degree in General Medicine or Pediatrics or MD(Transfusion Medicine) or MD Pathology</li> <li>• Candidate should have valid MCI registration certificate</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Head and Neck Pathology</b>	<b>1 year</b>	<b>One</b>	<ul style="list-style-type: none"> <li>• MDS in Oral Pathology</li> <li>• Candidate should have valid DCI registration certificate</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Onco Pathology</b>	<b>1 year</b>	<b>One</b>	<ul style="list-style-type: none"> <li>• MD/DNB degree in Pathology</li> <li>• Candidate should have valid MCI registration certificate</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Molecular Pathology</b>	<b>1 year</b>	<b>One</b>	<ul style="list-style-type: none"> <li>• MD/DNB degree in Pathology</li> <li>• Candidate should have valid MCI registration certificate</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>

<b>Solid Tumour Oncology</b>	<b>1 year</b>	<b>Two</b>	<ul style="list-style-type: none"> <li>• The candidate should possess DM /DNB in Medical Oncology OR MD/DNB degree in Radiotherapy OR MD/DNB in General Medicine</li> <li>• Candidate should have valid MCI registration certificate</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Psycho-oncology</b>	<b>1 year</b>	<b>One</b>	<ul style="list-style-type: none"> <li>• The candidate should possess a regular post graduate degree in MA/M.Sc Psychology (Clinical Psychology, Counselling Psychology, Health Psychology or Applied Psychology -Clinical) with a minimum of 60% marks.</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Oncology Social Work</b>	<b>1 year</b>	<b>One</b>	<ul style="list-style-type: none"> <li>• The candidate should possess a regular post graduate degree in Master of Social Work (Medical &amp; Psychiatry/ Clinical Social Work) with a minimum of 60% marks.</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>
<b>Oncology Nutrition</b>	<b>1 year</b>	<b>Two</b>	<ul style="list-style-type: none"> <li>• The candidate should possess a post graduate degree or Diploma in Nutrition &amp; related subjects with a minimum of 60% marks.</li> <li>• Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.</li> </ul>

## **4. FELLOWSHIP IN HIGH PRECISION RADIOTHERAPY**

### **Introduction**

The Department of Radiotherapy Malabar Cancer Centre intends to start a one year structured fellowship in high precision radiotherapy. Over the last decade there have been significant improvements in radiotherapy technology. Improvements have been occurring in all fields involved in the treatment planning and delivery. However these technological improvements are expensive to implement and require know-how for safe delivery. The high doses used in several of these technologies along with the minimal margins employed leave little room for errors. Unfortunately majority of Government centres in India do not have access to these high precision techniques in Radiotherapy. The present fellowship is designed to meet this lacuna in the training of radiation oncology students in the country. The structured nature of the fellowship will ensure time bound training with regular and rigorous evaluation at defined time points. In addition the program aims to foster research in these technologies as the fellows will be required to take up a research project they can complete within the span of one year. About 40% of the time will be reserved for research and 60% will be for clinical assignments and classes in this programme. After completion of this fellowship, the fellows will be having a sound knowledge of the theoretical as well as practical aspects of these technologies in addition to having a good idea about the intensive quality assurance required for safe implementation of these technologies.

### **Eligibility**

- Candidates should have completed their MD / DNB in Radiotherapy or Diploma in Medical Radiation Therapy (DMRT)
- Candidate should have valid MCI registration certificate
- Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.

### **Fellowship Objectives**

- 1) To gain an understanding behind the theoretical basis of high precision radiotherapy techniques.
- 2) To understand the practical aspects of modern radiotherapy treatment planning including immobilization, simulation, image acquisition and volume delineation.

- 3) To gain an understanding of the latest protocols of image segmentation including both organs and target volumes in accordance with the ICRU guidelines.
- 4) To gain an understanding of the methods and principles behind image registration.
- 5) To gain practical as well as theoretical experience in planning of 3DCRT/IMRT/4DRT/SBRT and Adaptive IMRT.
- 6) To understand and apply the various methods of image guidance and verification available in modern radiotherapy practice.
- 7) To participate in the development of clinical and translational research protocols aiming at improving the therapeutic ratio of radiotherapy through the application of these high precision radiotherapy techniques.

### **Fellowship structure**

The fellowship will be comprised of the following:

1. **Project Work:** Fellows will be expected to take up one or more projects to be completed within a span of 1 year. Acquiring extramural funding for these projects will be encouraged and fellows are expected to have a submitted publication prior to completion of the fellowship in the project concerned. In addition to this conference presentations are recommended and encouraged. Projects should ideally be prospective and should involve some aspect of High precision radiotherapy. Fellows will be expected to complete the project prior to getting completion certificate. The fellows will be encouraged to prepare a project proposal prior to joining the fellowship which they can pursue during the tenure of their fellowship.
2. **Didactic Teaching:** Didactic teaching will be provided by the Faculty of Malabar Cancer Centre according to the schedule given below. The aim of the didactic teaching is to have one to one sessions where the fellows can get to interact with the teaching faculty on various topics related to high precision radiotherapy.
3. **Practical Demonstration Session:** Practical demonstration sessions will be conducted on the topics mentioned below to enforce the learning imparted in didactic teaching sessions. These sessions will be tailored according to the existing level of training of the fellowship candidate and will be designed to demonstrate the full workflow involved in the treatment of patients with these techniques. A suggested list

of practical demonstration classes is given below. The candidate will be expected to work with the faculty and members of the department for scheduling of these demonstration classes.

4. **Journal Club:** Candidates will be expected to conduct at least one Journal Club each month. Each Journal Club will be on a specific journal article that has important implications for practice in the department and will include a short presentation of the main paper followed by a structured discussion on the merits and demerits. The aim is to help ensure that the fellow learns to appraise scientific articles critically as per the guidelines proposed by JAMA. It is expected that the fellows will be discussing the existing evidence behind the application and use of various high precision radiotherapy technologies during this Journal Clubs.
5. **Chart Rounds:** The fellowship candidate will be expected to lead and conduct chart rounds on Saturdays with the radiotherapy team on Saturdays to critically analyse the plans being delivered as well as to correct any errors.
6. **Treatment Planning:** The fellows will be expected to participate in the treatment planning process of patients being treated in the department. During the process the fellow should familiarize themselves with the principles and methods involved in immobilization, image acquisition, image registration, image segmentation, treatment planning, verification and quality assurance as well as treatment delivery. Fellows are encouraged to participate in all aspects of the treatment planning process in order to gain the maximum benefit.
7. **Multi-speciality Board Meetings:** The candidates will be expected to participate in the discussions conducted in the Multispeciality board meetings conducted in the hospital between Tuesdays to Fridays.
8. **Performance Review:** The fellows will be part of a 3 monthly performance review in the department. The review will be conducted in a friendly environment in order to appraise the progress of the project(s) the fellow may be undertaking as well as review the problems that the fellow may be facing. Attendance in the performance review meetings will be considered compulsory for the fellows. The fellows are expected to maintain an upto date logbook to present at these review sessions.
9. **End of Fellowship Examination:** An end of fellowship examination will be conducted to evaluate the candidate in terms of the knowledge gained from the fellowship (both theoretical and practical). The examination will be mandatory for

passing the fellowship and for grant of the fellowship completion certificate along with completed project work mentioned above.

### **Didactic Teaching**

The following are the suggested topics for didactic teaching. The total duration of didactic teaching sessions will be 30 hours over a period of 12 months. Didactic teaching will be conducted through presentations and bed-side demonstrations. Attendance in teaching classes is considered mandatory.

<b>Suggested Topics</b>
<b>Introduction to High Precision Radiotherapy</b>
History of conformal radiotherapy, Rationale behind high precision Radiotherapy, Potential advantages and limitations of high precision radiotherapy
<b>Imaging for High Precision Radiotherapy</b>
Basics of patient positioning and immobilization, Various Imaging Modalities in Use in High Precision Radiotherapy, Special points to note while imaging, MRI and special MRI sequences for treatment planning, PETCT and basics of PETCT based target delineation, Introduction to DICOM and DICOM-RT standards
<b>Image Manipulation for High Precision Radiotherapy</b>
Importing and exporting Images for treatment planning, Creating 3D and 4D image datasets, Image registration principles and methods. Deformable and non deformable image registration, introduction to image registration algorithms
<b>Volume delineation in High Precision Radiotherapy</b>
Revision of the ICRU concepts in Radiotherapy treatment planning, Review of important ICRU reports - 50, 64 and 78, Tools for image segmentation, Choosing the appropriate window and MRI sequence for image delineation, Target volume and Organ at risk delineation protocols and guidelines, How to create a PTV
<b>Practical Radiotherapy Treatment Planning</b>
Preliminary steps and checks to be made prior to starting treatment planning, Image manipulation prior to treatment planning, Use of accessories and treatment aids (e.g. bolus), Fluence and intensity, Techniques for obtaining a modulated fluence in a treatment field, Concept of the Beams Eye View, Principles of optimization in radiotherapy, Inverse planning and optimization algorithms, Dose calculation algorithms, plan evaluation techniques, Understanding the Dose Volume Histogram, Understanding Rapidarc treatment delivery and VMAT optimization, 4 D radiotherapy planning
<b>Quality Assurance of High Precision Radiotherapy</b>
Machine Quality Assurance Procedures for IMRT/3DCRT, Understanding principles and basics of patient specific Quality Assurance, Absolute Dosimetry versus Relative Dosimetry, Gamma Analysis, Various Dosimetry Equipments for implementing patient QA in IMRT, AAPM guidelines for IMRT quality assurance, Verification of patient treatment and motion management, Understanding adaptive and image guided radiotherapy delivery
<b>Starting a High Precision Radiotherapy Programme</b>



Drawing up specifications for a machine, Regulatory approvals required for setting up a machine, Potential bottlenecks and pitfalls, Negotiating the contract and how to get the best out of the vendors, Designing and optimal workflow for successful implementation of the programme
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### **Practical Demonstration Classes**

A suggested list of practical demonstration classes to be taken during the fellowships is given below.

Patient selection for High Precision Radiotherapy, Explaining the cost benefits of High Precision Radiotherapy, Explaining the Risks of High Precision Radiotherapy
Patient immobilization and positioning - demonstration of how to make a thermoplastic cast and immobilization with vaccum cushions.
Creating a 2D compensator
Obtaining a 4D CT scan and importing it into the treatment planning system
Image registration of a CT with CT and CT with MRI for one or more sites (eg. brain, head neck, pelvis)
Contouring the Target volumes and Organs at Risk for common situations following Guidelines: Brain, Nasopharynx, Oropharynx, Postoperative Oral Cavity, Larynx, Lung, Breast - Post Mastectomy, Breast - Post Lumpectomy, Esophagus, Stomach and GE Junction, Rectum, Cervix, Bladder, Extremity Soft Tissue Sarcoma.
Contouring on a 4 D CT scan for 4 D treatment planning
Complete IMRT and Rapidarc treatment planning from start to finish including optimization
Plan export and creating a plan for Quality Assurance
Participating in patient Specific Quality Assurance
Patient setup verification using Electronic Portal images, KV Xray and Cone beam CT
Respiratory gated radiotherapy using RPM camera
Adaptive Radiotherapy planning on Cone beam CT for lung and on repeat planning CT for head neck cancers

### **Journal Club**

A journal club will have to be conducted by each candidate every alternate week. During the Journal Club a scientific article will be critically appraised and presented to the faculty. The session will be conducted over a period of 1 hour and the candidate is expected to make a short presentation on the article. The critical appraisal should be patterned on the recommendations of JAMA on critical appraisal of scientific articles. It is expected that the fellow will notify the faculty regarding the paper to be appraised at least 2 weeks in advance so that the paper can be studied in greater detail. Preference would be given to papers that deal with high precision radiotherapy including the clinical and physics aspects of the techniques. The selection and the appraisal will be the responsibility of the fellowship candidate who is free to seek the help of the faculty.

### **Chart Rounds**

The fellowship candidate is also expected to lead the chart rounds that will be conducted every Saturday in the department. During the chart round the candidate will be checking the charts of the patients undergoing treatment in the department. The radiation charts along with the plans will be reviewed in the presence of at least two faculty members, one physicist and one technologist to critically analyse the plan in terms of target volume coverage, organ at risk sparing etc. Verification imaging performed during the period will also be reviewed to identify setup and motion related errors. In addition, toxicity of the patients will be reviewed in order to find out patients having atypical patterns of toxicity.

### **Fellowship Examination**

The examination will have an 100 marks theory paper and a 100 mark practical examination. The theory examination will have 10 short answers and 5 clinical vignette questions with 5 marks and 10 marks each. The practical examination will include 2 treatment planning sessions where the candidates will be expected to plan two different patients with a given technique. Special emphasis will be given to image registration, target volume delineation and plan evaluation which the candidate is expected to perform independently. In addition 100 marks are given in the performance reviews and candidates are expected to pass all three independently in order to qualify for the fellowship. The pass percentage in all three will be 50%.

## **5. FELLOWSHIP IN GYNAECOLOGIC ONCOLOGY**

### **Objective of the Programme**

The aim is to provide the training foundation for those individuals who want to pursue their professional career in the field of Gynaecologic oncology through training in the areas of basic as well as interdisciplinary management, complex oncologic procedures and research. This additional expertise emphasises critical analysis of clinical problems and development of additional skills in the performance of techniques required for the practice of this subspecialty, including consultation skills and multidisciplinary treatment planning, with emphasis in basic and clinical research methodologies.

It has another great vision of providing more expert cancer specialists to the society in order to provide a better quality management of disease for the people even in the lower levels of the community.

### **Academic Eligibility**

- The candidate should possess **MS/DNB (OBG), MS/DNB (General Surgery)**
- Candidate should have valid MCI registration certificate
- Candidates should not cross 45 years as on 1<sup>st</sup> January of the current year.

### **Duration of the program**

The proposed duration of the course will be 2 years.

### **Educational Objectives**

The goals of this fellowship are to provide comprehensive, multidisciplinary training to individuals who are committed to a career in s Gynaec oncology. The fellowship training will provide a broad exposure to a multidisciplinary management in basic oncological concepts including the Surgical aspects, Radiotherapy and Medical Oncology. Upon completion of fellowship, the surgeon may aim to possess the following:

- a) Expertise in the multidisciplinary management of patients with gynaec cancers .
- b) Oncological aspects of Surgery in Gynaec cancers
- c) Broad knowledge and comprehension in principles of: radiation oncology, medical

oncology, oncopathology, diagnostic radiology/nuclear medicine, robotic surgery and research

- d) Judgment and ability to perform complex tumor resections and an understanding of the technical limitations of the procedure
- e) Appreciation of scientific methodology, study design, clinical trials and data analysis
- f) Ability to practice effectively in an academic, tertiary care setting and to participate in medical education and translational research.

### **Fellowship Curriculum**

The fellowship must provide clinical and/or didactic exposure to the following

- a) Gynecology
- b) Breast oncology
- c) Gastrointestinal oncology
- d) Urooncology
- e) Reconstruction in oncology
- f) Oncopathology
- g) Research
- h) Community Oncology

### **Evaluation**

**A] Internal assessment of the candidates by the faculty.** (100 marks)-every 6 months.

An overall assessment with objectives of the course, and specifically with respect to their operating skills, time spent with patients in Surgical wards, planning Radiotherapy & Chemotherapy, seminars, journal club & tumour board presentations.

**2) Final examination – at the end of the course conducted according to MCI norms**

- a) 2 theory papers (100 x 2 =200 marks)
- b) Clinical case discussion – Total of 4 cases (1 Long case + 3 short cases [60 + 90(30x3)]= 150 marks
- c) Viva – 50 marks

Total of 200 marks each for Theory and Practical. Aggregate of 50% (separate for both theory as well as for practical) is mandatory for passing the examination.

A pass mark is necessary for getting the certificate of fellowship. The certificate will be issued in an institutional function after successful completion of 24 months of training, thesis work, research studies and the required exams.

## **6. FELLOWSHIP IN APHAERESIS MEDICINE**

### **Objective of the Programme**

1. Gain deep knowledge in the subject, both practical and theoretical aspects
2. Learn fundamentals of apheresis and the various application of apheresis
3. Orientation toward Clinical Transfusion Practice
4. To actively take part in research activities of the department
5. To learn interpersonal communication skills and communication skill towards donors, patients and their relatives.

### **Eligibility**

- M.D. Transfusion Medicine/DNB Transfusion Medicine/M.D. Pathology/ DNB Pathology
- Candidate should have valid MCI registration certificate
- Candidates should not cross 45 years as on 1<sup>st</sup> January of the current year.

### **Duration of the program**

The duration of the course is 1 year.

### **Educational Curriculum**

#### **Fundamental Components of the Fellowship**

##### **1. Laboratory:**

This would involve rotation in the various sections –

- Donor apheresis, Therapeutic apheresis, Cryopreservation of Stem cells, HLA Lab, Flow cytometry Lab, Microbiology and Cellular Therapy lab
- Reporting on laboratory tests performed
- Maintaining all tests/ activities / processes and records as per Drug control and NABH requirements.

## **2. Clinical:**

The post holder would be expected to perform daily clinical rounds, interact with clinical colleagues regarding blood transfusion needs for patients, suspected transfusion reactions and safe transfusion practices, and responds to queries on these issues. Targeted apheresis component therapy for hemo-oncology patients, BMT patients and patients with suspected transfusion reactions.

## **3. Management responsibilities:**

The post holder would be expected to write / help other laboratory staff to write standard operating procedures, drafting policy documents, carrying out external Quality control, hemovigilance and timely audit.,

Participation in equipment calibration, maintenance, and quality control activities and assessments undertaken by Drug Controllers and the NABH is also expected.

## **4. Academic responsibilities:**

- **Journal Clubs and Seminars:** The post holder would be expected to attend / present seminars and findings from recent scientific publications, in departmental and allied speciality meetings. Candidates should actively participate in the daily academic activity of the department/institution without any fail.
- **Audit and Research:** The post holder would be expected to be involved in laboratory work, present papers in scientific conferences, and write articles for publication in indexed journals.
- **Teaching:** The post holder would be expected to teach clinical, laboratory, and nursing staff, as and when required.

The learning process will be facilitated by;

- 1) Clinical expertise gained by working alongside experienced faculty
- 2) Participation in daily Multi-speciality tumor boards.
- 3) Teaching sessions, which would include interdisciplinary seminars, Journal clubs, and case presentations.
- 4) Project work in the form of at least two publication in any transfusion medicine/hematology/oncology journal
- 5) Lectures by experts in the field of basic sciences, tumor registry, molecular biology & cancer genetics.

## **Evaluation**

**Final examination – at the end of the course conducted**

- d) 1 theory papers (100 marks)
- e) Case discussion – Total of 4 cases (1 Long case + 3 short cases)= 150 marks
- f) Viva – 50 marks

## 7.Fellowship in Oncoanaesthesiology

### Objective of the programme

The purpose is to provide training for Aspirant Anaesthesiologist in the field of Oncoanaesthesia and Research. This additional expertise emphasizes critical analysis of clinical problems and development of additional skills in the performance of techniques required for the practice of this subspecialty. The trainees will be allowed to administer Anaesthesia for therapeutic and diagnostic procedures in surgical oncology.

### Academic Eligibility

- MD/DNB in Anaesthesiology
- Diploma in Anaesthesiology

### Duration of the program

- The duration of the course will be 1 year

### Educational Objectives

- Anaesthetic care in the operating theatres for all types of surgical, diagnostic and therapeutic procedures. Hands-on experience of advanced techniques such as thoracic epidural, ultrasound guided nerve blocks; ultrasound guided difficult vascular access, difficult airway management techniques such as fibre-optic intubation/ video-laryngoscopy and advanced haemodynamic monitoring.
- Training in anaesthetic management of critical and complex long duration surgeries such as free flap reconstruction surgeries, advanced hepato-pancreaticobiliary surgeries, video Assisted thoracoscopic surgeries, HIPEC surgery and cytoreductive surgeries
- Non-operating room anaesthesia (NORA): training in anaesthesia outside Operating room like MRI, CT, Radiotherapy (RT), PET-CT and Radiofrequency Ablation
- Postoperative Care Unit: Postoperative critical care of complex surgeries will also be part of the training.
- Pain management:

Providing pre- and post-operative pain management procedures like Epidural block, Patient controlled analgesia, Transdermal patch and regional nerve blocks.  
Pain Clinic: Providing inpatient and outpatient chronic pain management.

- Academic activities include Topic discussions, Journal club, morbidity & mortality meetings and lectures in biostatistics. Appreciation of scientific methodology, study design, clinical trials and data analysis. Fellows have the opportunity to participate in the workshops/conferences for national and international audience

### **Number of seats allotted**

Two seats will be allotted per year

### **Fellowship Curriculum**

1. Organization and functioning of operating theaters
2. Digital hospital information network and data processing
3. Pre-anaesthesia evaluation
4. Patient assessment in Post-anaesthesia care unit
5. Anaesthesia for Gastro-intestinal oncological surgery
  - a. Anaesthesia considerations in gastro-intestinal and hepatico-pancreatico-biliary surgeries
  - b. Advanced hemodynamic monitoring and fluid management
6. Anaesthesia for gynaec-oncological surgery
  - a. Perioperative considerations for debulking and cytoreductive surgery
  - b. DVT prophylaxis- mechanical and pharmacologic methods
7. Anaesthesia for uro-oncological surgery
  - a. Perioperative management of major radical uro-surgical procedures
8. Anaesthesia for breast and plastic surgery
  - a. Management of LD flap and TRAM flap surgeries-
9. Anaesthesia for head and neck oncological surgery
  - a. Head and neck free flap reconstructions
  - b. Difficult airway management- algorithm
10. Anaesthesia for thoracic oncological surgery
  - a. One lung ventilation
  - b. Introduction to double lumen tubes and bronchial blockers



- c. Introduction to fiberoptic bronchoscopy
11. Anaesthesia for Ocular oncological surgery
  12. Post Operative pain management
    - a. Patient controlled analgesia: machines, drugs, regimes
    - b. Post-operative epidural analgesia
  13. Chronic pain management
    - a. Pharmacological management of chronic pain
  14. Onco-critical Care
    - a. Post-operative ventilation
    - b. Weaning from ventilation strategies
    - c. CLABSI, VAP, CAUTI bundles
    - d. Fungal infections in ICU
    - e. Enteral feeding: when to start, how?
    - f. Sepsis guidelines

### **PRACTICAL TECHNIQUES IN ONCO-ANAESTHESIA**

1. Arterial cannulation: catheter over needle (Jelco) and Seldinger technique (Leadercath): Radial, femoral and dorsalis pedis artery cannulation.
2. Central venous cannulation- internal jugular, subclavian, femoral veins.
3. Regional anaesthesia techniques:
  - a. Sub arachnoid block
  - b. Epidural anaesthesia: lumbar and thoracic
4. Airway management devices:
  - a. LMA- Classic, proseal, supreme
  - b. I-gel
  - c. Flexo-metallic tubes
  - d. RAE tubes
  - e. MLS tubes
5. Difficult airway management techniques
  - a. Awake fiberoptic intubation
  - b. CMAC video laryngoscope
  - c. Cook- airway exchange catheters
  - d. Percutaneous cricothyrotomy (PCT)
  - e. Trans tracheal jet ventilation device

6. Advanced haemodynamic monitoring: Estimated Continuous Cardiac Output (ESCCO) technology.
7. Depth of Anaesthesia Monitoring-ENTROPY, BIS (Bispectral index)
8. Neuromuscular monitoring-TOF, DBS

### **Evaluation**

#### **A] Internal assessment of the candidates by faculty. (100 marks)**

This will be done on a continual basis with respect to the overall objectives of the course, based on the prescribed textbooks and study materials.

#### **B] Final examination –by both internal & external examiner.**

It will consist of 2 theory papers (50 x 2 = 100 marks)

Clinical case discussion (50 x 2 = 100 marks)

Viva Voce

OSCE

A pass mark is necessary for getting the certificate of fellowship. The certificate will be issued in an institutional function after successful completion of 24 months of training, thesis work, research studies and the required exams.

## **8.FELLOWSHIP IN HEMATO-ONCOLOGY & BMT**

### **Objective of the Programme**

1. Gain deep knowledge in the subject, both practical and theoretical aspects
2. Learn fundamentals of BMT and the application of BMT in various hematological disorders.
3. Orientation toward basic and advanced cancer research activities
4. To actively take part in research activities of the department
5. To learn interpersonal communication skills and communication skill towards patients and their relatives.
6. To learn about the applied laboratory aspects of the subject

The aim is to provide the training foundation for those individuals who want to pursue their professional career in the field of hematooncology . This additional expertise emphasizes

critical analysis of clinical problems and development of additional skills required for the practice of this specialty, including consultation skills and multidisciplinary treatment planning, with emphasis in basic and clinical research methodologies.

It has another great vision of providing more expert hematology specialists to the society in order to provide a better quality management of disease for the people even in the lower levels of community.

### **Eligibility**

- The candidate should possess **MD/DNB (General Medicine/Pediatrics/Transfusion Medicine/Pathology)**
- Candidate should have valid MCI registration certificate
- Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.

### **Duration of the program**

The proposed duration of the course will be 1 year.

### **Fundamental Components of the Fellowship**

- The fellow must participate in the evaluation, decision making and management of hematological cancers.
- Candidates will have BMT, Outpatient, Intensive chemotherapy and other inpatient chemotherapy postings. This should be followed strictly.
- Candidates will require to learn the basics in peripheral smear reporting and bone marrow aspirate reporting which are essential parts of learning the subject.
- In addition they will have postings in the blood bank to learn the basics of stem cell collection and preservation techniques.
- Candidate will have exposure to Flow cytometry evaluation of hematologic disorders and stem cell enumeration
- Candidates should actively participate in the daily academic activity of the department/institution without any fail.
- An attendance of 90% is mandatory for the completion of the course.

- A log book should be maintained. This has to be submitted at the end of course
- Candidate should preferably have publications in an indexed journal- two case reports or a prospective study- in his/her account for completion of the course

### **Duties and Responsibilities**

The candidates will be full time residents of the institution and will perform the duties and responsibilities of a full time physician in the department of Clinical Hematology.

- Patient care – BMT, Intensive chemotherapy unit, inpatient chemotherapy rounds, Outpatient clinic, maintenance of case records, preparation of case summary, discharge card and summary. Letters to local doctors with instructions, patient education, Consent preparation, all intervention procedures and patient counselling.

The learning process will be facilitated by;

- 1) Clinical expertise gained by working alongside experienced faculty
- 2) Active participation in daily Multi-speciality tumor boards.
- 3) Teaching sessions, which would include interdisciplinary seminars (involving radiation, medical and palliative care besides the parent unit.), Journal clubs, and case presentation.
- 4) Project work in the form of at least two publication in any hematology/oncology journal
- 5) Lectures by experts in the field of basic sciences, tumor registry, molecular biology & cancer genetics.

### **A] Internal assessment of the candidates by the faculty- (100 marks)**

This will be done on a continual basis with respect to the overall objectives of the course, and specifically with respect to their clinical skills, management of patients, seminars, journal club & tumor board presentations.

### **B] Final examination - by both internal & external examiner.**

It will consist of

I theory papers (100 marks)

Clinical case discussions (40×2 = 80 marks)

Ward rounds (10 marks)

Pathology spotters (10 marks)

**Selection process:**

Candidates found eligible after initial screening of application will have a MCQ-based test paper. This will be followed by an interview on the same day for those clearing the test paper.

## **9.FELLOWSHIP IN HEAD AND NECK PATHOLOGY**

**Objective of the Programme**

1. Gain deep knowledge in the subject, both practical and theoretical aspects
2. To learn the current practices and recent advances in oncopathology.
3. To learn about fundamentals of molecular pathology and flow cytometry.
4. Orientation toward basic and advanced cancer research activities
5. To actively take part in research activities of the department
6. To learn interpersonal communication skills and communication skills towards patients and their relatives.

The aim is to provide the training foundation for those individuals who want to pursue their professional career in the field of oncopathology. This additional expertise emphasises development of additional skills required for the practice of this specialty, including consultation skills and multidisciplinary treatment planning, with emphasis in basic and clinical research methodologies. It has another great vision of providing more expert pathology specialists to the society in order to provide a better quality management of disease for the people even in the lower levels of the community.

**Eligibility**

- The candidate should possess MDS in Oral Pathology
- Candidate should have valid DCI registration certificate
- Candidates should not cross 45 years as on 1<sup>st</sup> January of current year.

**Duration of the program**

The duration of the course will be 1 year

## **Educational Objectives**

The goals of these fellowships are to provide comprehensive, multidisciplinary training to individuals who are committed to a career in onco-pathology. The fellowship programme will be a one year course. Upon completion of a one-year fellowship, the onco-pathologist will possess the following characteristics

1. Gain deep knowledge in the subject, both practical and theoretical aspects
2. To learn the current practices and recent advances in oncopathology.
3. To learn about fundamentals of molecular pathology and flow cytometry.
4. Orientation toward basic and advanced cancer research activities
5. To actively take part in research activities of the department
6. To learn interpersonal communication skills and communication skills towards patients and their relatives.

## **Fellowship Curriculum**

The fellowship will provide exposure to the following:

- 1) Grossing, microscopic evaluation and diagnostic decision making in surgical materials of biopsies and radical excision specimens of Head & Neck.
- 2) Training in frozen sections
- 3) Training in immunohistochemistry
- 4) Journal clubs and topic presentations
- 5) Multispeciality board meetings
- 6) Clinical research methodologies

## **Evaluation**

- 1) Internal assessment of the candidates by the faculty (100 marks). This will be done on a continual basis with respect to the overall objectives of the course, and specifically with respect to their diagnostic skills, seminars, journal club & tumour board presentations.
- 2) Final examination – at the end of the course conducted by both internal & external examiner. It will consist of
  - a) One theory Paper(100 marks)
  - b) Slide reporting and case discussion (50 x 2 = 100 marks)
  - c) Vivavoce on Dissertation
  - d) Evaluation of Log book

### **Peripheral Posting of fellows**

- The aim of each fellowship programme is to provide the training foundation for those individuals who want to pursue their professional career in the concerned specialty
- This additional expertise emphasizes the development of additional skills required for the practice of respective specialty

For getting adequate exposure and comprehensive training in areas of concerned specialty, a fellow can be posted in other institutes/centre/hospital within the state of Kerala or outside Kerala provided adequate exposure of the same is not available in the concerned department.

## **10.FELLOWSHIP IN ONCO PATHOLOGY**

### **Objective of the Programme**

1. Gain deep knowledge in the subject, both practical and theoretical aspects
2. To learn the current practices and recent advances in oncopathology.
3. To learn about fundamentals of molecular pathology and flow cytometry.
4. Orientation toward basic and advanced cancer research activities
5. To actively take part in research activities of the department
6. To learn interpersonal communication skills and communication skills towards patients and their relatives.

The aim is to provide the training foundation for those individuals who want to pursue their professional career in the field of oncopathology. This additional expertise emphasises development of additional skills required for the practice of this specialty, including consultation skills and multidisciplinary treatment planning, with emphasis in basic and clinical research methodologies. It has another great vision of providing more expert pathology specialists to the society in order to provide a better quality management of disease for the people even in the lower levels of community.

### **Eligibility**

- The candidate should possess MD/DNB degree in Pathology
- Candidate should have valid MCI registration certificate
- Candidates should not cross 45 years as on 1<sup>st</sup> January of the current year.

### **Duration of the program**

The duration of the course will be **1 year**.

### **Educational Objectives**

- a. The fellow must participate in the diagnostic works which includes morphologic evaluation and decision making of hematological and solid cancers.
- b. Candidates will have postings in the central laboratory division of Clinical Biochemistry, Haematology & Microbiology. This should be followed strictly.
- c. Candidates will be oriented in the techniques of transfusion medicine including component separation and apheresis.
- d. Candidates will require to learn the basics in Molecular and genetic methodologies as essential parts of learning the subject.
- e. In addition they will have postings in the division of bone marrow transplant to learn the basics of stem cell collection and preservation techniques.
- f. Candidate will have exposure to Flow cytometry evaluation of hematologic disorders and stem cell enumeration
- g. Candidates should actively participate in the daily academic activity of the department/institution without any fail.
- h. An attendance of 90% is mandatory for the completion of the course.
- i. A log book should be maintained. This has to be submitted at the end of course
- j. Candidate should preferably have publications in an indexed journal- two case reports or a prospective study- in his/her account for completion of the course

### **Fellowship Curriculum**

The fellowship will provide exposure to the following

- 1) Grossing, microscopic evaluation and diagnostic decision making in surgical materials of biopsies and radical excision specimens of solid organ malignancies.
- 2) Training in frozen sections
- 3) Training in immunohistochemistry
- 4) Journal clubs and topic presentations
- 5) Multispecialty board meetings
- 6) Clinical research methodologies

### **Evaluation**



- 1) Internal assessment of the candidates by the faculty (100 marks). This will be done on a continual basis with respect to the overall objectives of the course, and specifically with respect to their diagnostic skills, seminars, journal club & tumour board presentations.
- a) Final examination – at the end of the course conducted by both internal & external examiner. It will consist of
  - a) One theory paper (100 marks)
  - b) Slide reporting and case discussion (50 x 2 = 100 marks)
  - c) Vivavoce on Dissertation
  - d) Evaluation of Log book

### **Peripheral Posting of fellows**

- The aim of each fellowship programme is to provide the training foundation for those individuals who want to pursue their professional career in the concerned specialty
- This additional expertise emphasizes the development of additional skills required for the practice of respective specialty

For getting adequate exposure and comprehensive training in areas of concerned specialty, a fellow can be posted in other institutes/centre/hospital within the state of Kerala or outside Kerala provided adequate exposure of the same is not available in the concerned department.

## **11.Fellowship in Molecular Pathology**

### **Objective of the Programme**

The Fellowship in Molecular Pathology offers a unique opportunity for the trainee to acquire practical experience in cutting edge technology vital for successful pursuit of an academic career in molecular pathology. Fellows will provided with grounding in molecular biology, experience with high level diagnostics, and opportunities to pursue research projects with a variety of investigators covering a broad range of oncology

### **Academic Eligibility**

MD/DNB in Pathology

## **Duration of the program**

The duration of the course will be 1 year

## **Educational Objectives**

During the course, in addition to performing regular diagnostic cytogenetic and molecular tests, the fellow will have to learn custom made test development in translational research. They will be guided in the preparation of study projects and resultant manuscript acceptable for publication in a peer-reviewed journal.

The fellows will attend regular series of didactic lectures and seminars and present their work in national conferences. Fellows will also engage in teaching activities and offer didactic lectures to the laboratory technicians and medical technology students.

Flexibility is allowed to encourage the development of special interests

## **Fellowship Curriculum**

The fellowship will provide exposure to the following

- A) **0-3 months-** Lab work experience
  - 1) Techniques in Biochemistry and Cell biology
  - 2) Human Genetics & Molecular Biology
  - 3) Ethics & lab accreditation
  - 4) DNA and RNA isolation and PCR
  - 5) Sanger Sequencing
  - 6) FISH
  
- B) **4- 6 months**
  - 7) Molecular hematology
  - 8) Project in molecular diagnosis
  
- C) **6- 9 months**
  - 9) Molecular diagnosis in solid tumor

## **D) 10-12 months**

10) Overview of NGS and Proteomics

### **Evaluation**

A. Internal assessment of the candidates by the faculty. (100 marks)

This will be done on a continual basis with respect to the overall objectives of the course, and specifically with respect to their operating skills, management of patients, seminars, journal club & tumour board presentations.

B. Final examination –by both internal & external examiner.It will consist of

- a) 3 theory papers (50 x 3 =150 marks)
- b) Basics of lab techniques
- c) Molecular hematology
- d) Molecular Diagnosis of solid tumor
- e) Practical 100 marks
- f) Project evaluation - 50 marks

## **12.Fellowship in Solid Tumour Oncology**

### **Objectives of the Programme**

1. To provide expert clinical training in the diagnosis,evaluation, and treatment of adult solid tumours
2. To learn about the multidisciplinary approach in the management of solid tumours
3. Orientation toward basic and advanced cancer research activities
4. To actively take part in research activities of the department including clinical trials
5. To learn interpersonal communication skills and communication skills towards patients and their relatives.

6. To learn about the applied laboratory aspects of the subject including the basics of molecular oncology related to solid tumors

The aim of the program is to offer state-of-the-art training in the diagnosis and management of adult solid tumors. This will provide the foundation for the multidisciplinary management of solid tumors and in the use of systemic agents in various solid tumors. This additional expertise emphasizes critical analysis of clinical problems and the development of additional skills required for the practice of this specialty, including consultation skills and multidisciplinary treatment planning, with an emphasis in basic and clinical research methodologies. As solid tumors constitute the majority of the cancers in our country and the world, to have professional training in the newer developments in the specialty and the comprehensive management of solid tumours will improve the cancer care and control activities in our country.

### **Eligibility**

- The candidate should possess DM /DNB in Medical Oncology or MD/DNB degree in Radiotherapy ,MD/DNB in General Medicine
- Candidate should have a valid MCI registration certificate
- Candidates should not cross 45 years as of 1st January of the current year

Duration of the program

The proposed duration of the course will be 1 year.

Fundamental Components of the Fellowship

- The fellow must participate in the evaluation, decision making and management of various solid tumours
- Candidates will have Outpatient, Intensive chemotherapy unit, and other inpatient and day care chemotherapy unit postings. This should be followed strictly.
- Candidates will require to attend multidisciplinary tumor boards regularly
- Candidates have to gain expertise in the baseline evaluation, administration and monitoring of chemotherapy/Targeted therapy/hormonal therapy and immunotherapy.

- Candidates should actively participate in the daily academic activity of the department/institution without any fail.
- The candidate will be involved in the clinical research activities including the clinical trials conducted in the department
- Candidates will have posting in rotation in the surgical oncology, radiation oncology, pathology , molecular oncology departments, radiology and palliative medicine to have adequate exposure in the multidisciplinary care
- An attendance of 90 % is mandatory for the completion of the course.
- A log book should be maintained. This has to be submitted at the end of course
- Candidate should preferably have publications in an indexed journal- two case reports or a prospective study- in his/her account for completion of the course and at least one presentation in a national or international conference

### **Duties and Responsibilities**

The candidates will be full-time residents of the institution and will perform the duties and responsibilities of a full-time physician in the department of Clinical hematology and Medical oncology including night duties

- **Patient care** – Day care chemotherapy unit , Intensive chemotherapy unit, inpatient chemotherapy rounds, Outpatient clinic, maintenance of case records, preparation of case summary, discharge card and summary. Letters to local doctors with instructions, patient education, Consent preparation, all intervention procedures and patient counselling.

The learning process will be facilitated by;

- 1) Clinical expertise gained by working alongside experienced faculty
- 2) Active participation in daily multi-speciality tumor boards.
- 3) Teaching sessions, which would include interdisciplinary seminars (involving radiation, medical and palliative care besides the parent unit.), Journal clubs, and case presentation.
- 4) Project work in the form of at least two publications in any oncology journal

5) Lectures by experts in the field of basic sciences, tumor registry, molecular biology & cancer genetics.

## **EVALUATION OF THE CANDIDATES**

### **A] Internal assessment of the candidates by the faculty- (100 marks)**

This will be done on a continual basis with respect to the overall objectives of the course, and specifically with respect to their clinical skills, management of patients, seminars, journal club & tumor board presentations.

### **B] Final examination - by both internal & external examiner.**

It will consist of

I theory papers (100 marks)

Clinical case discussions (40×2 = 80 marks)

Ward rounds (10 marks)

Pathology spotters (10 marks)

#### **Selection process:**

Fellowship in Solid Tumour Oncology will have a MCQ-based test paper, followed by which candidates scoring minimum 50 % marks in the same will be asked to appear for an interview on the same day.

## **13. FELLOWSHIP IN PSYCHO-ONCOLOGY**

### **Objective of the Programme**

Psycho-oncology is a highly specialized stream under the branch of Psychology and Oncology, managing the behavioural, emotional, cognitive and social aspects of cancer patients and their families. It focuses on providing psycho-social interventions for patients and families from cancer diagnosis till survivorship and palliation, thereby improving their Quality of Life. The division of Psycho-oncology has been functioning in this Centre since July 2017. The division also provides alcohol and tobacco de-addiction counselling for the patients. Apart from this, the division also manages the stress management and recreation

activities of the staff dealing with cancer patients. The division combines Psychiatry, Psychology and Medical Social work aspects into Cancer care.

Though there is an increase in need of mental health professionals in oncology, only few institutions are offering courses in Psycho-oncology across India. It is important to have trained professionals in this field to cater the needs of people and family dealing with cancer.

Psycho-oncology division is working with all the Inpatient and Outpatient care departments and divisions in the hospital, including Surgical, Medical, Radiation, Pain & Palliative care, Community Oncology, and Pediatric Oncology along with research and academic aspects of the hospital. This ensures that the trainee can be trained thoroughly so that he/she can work as a qualified Psycho-oncologist.

### **Objectives**

1. To develop a regular full time academic program with extensive theoretical inputs and rigorous clinical experience in the area of Psycho-oncology.
2. To prepare the trainee to be qualified Psycho-oncologist to improve the psychological well-being and Quality of Life of cancer patients by diagnostic, therapeutic, rehabilitative, and administrative methods in psychology.
3. To conduct short-term research in Psycho-oncology along with real clinical experience.
4. To start and run a Psycho-oncology unit in a cancer hospital.

Upon completion of a one-year fellowship, the Psycho-oncologist is expected to possess the following characteristics:

- a) Expertise in the multi – professional team working, giving psychological support for people with cancer in a variety of settings, throughout their cancer journey.
- b) Ability to manage psycho-social concerns of the cancer patient and their families.
- c) Ability to participate in the training of health care professionals and students about the importance of psychological well-being during cancer diagnosis and treatment.
- d) Ability to promote evidence based practice through research and audit.

### **Eligibility**

Eligibility of Admission: Minimum 60% marks in Regular MA/MSc Psychology (Clinical Psychology, Counselling Psychology, Health Psychology, Applied Psychology - Clinical)

### **Duration of the program**

The duration of the programme is 1 year

### **Fellowship Structure**

One year full time clinical training divided into four parts

#### I. Theoretical Learning

- a. Psycho-oncology
- b. Research Methodology & Biostatistics

#### II. Clinical & Practical hours

- a. Practical Assessments
- b. Case study & Case reports

#### III. Research Dissertation

- a. Viva-voce

#### IV. Internship (outside, if required)

- a. 2 weeks
- b. Institutional visit

### **PART I THEORETICAL LEARNING**

The total duration of didactic teaching sessions will be 60 hours. Theoretical learning will be conducted through presentations, demonstrations and case discussions. Attendance in teaching classes is considered mandatory.

**Paper1: Psycho-oncology**



Unit 1: Introduction to Psycho-oncology
Unit 2: Psycho-social concerns in view of Adaptation to cancer diagnosis and treatment – Prevention, Diagnosis, Treatment, Survivorship, Palliation (Case study: 3)
Unit 3: Psycho-social interventions and psychotherapeutic methods for management (Case study: 5)
Unit 4: Pediatric Oncology – Dealing with Adolescents, Parents, Family-Concerns, interventions, Rehabilitation (Case study: 2)
Unit 5: Psycho-Social Assessments In Psychology And Oncology Care
<b>Paper 2: Research Methodology</b>
Unit I: Introduction to Research
Unit II: Research Designs, Methods and Tools  Unit III: Statistics
Unit IV: Inferential Statistics
Unit V: Epidemiological Studies

Lecturing, discussions, seminar presentations, participating in workshops, webinars, conferences to understand the concepts of Psycho-oncology theory and practice based on the syllabus. Research methodology and Biostatistics theory and practice also will be covered for theoretical learning and research purposes.

**PART II CLINICAL & PRACTICAL HOURS:** The fellow has to do clinical work including OP and IP consultation with patients and families as individual or group sessions. Every day ward rounds are mandatory. They need to do case discussions and presentations in the division for management and follow up plans. They may need to be involved in Multispecialty Tumor Board (MSB) and grand rounds with other Oncology departments. Different psycho-social assessments used for cancer patients are also part of practical hours. The fellow has to submit a minimum of 10 cases in the whole course from case history, screening and assessment to management. The log has to maintain a log book for the fellowship.

- a. Practical Assessments
- b. Case study & Case reports

**PART III RESEARCH DISSERTATION & VIVA:** Fellows will be expected to take up one research study, to be completed within a span of one year. Acquiring extramural funding for these projects will be encouraged and fellows are expected to have a submitted publication prior to completion of the fellowship in the project concerned. In addition to this conference presentations are recommended and encouraged. Fellows will be expected to complete the project prior to getting a completion certificate. Viva voce will be conducted for the fulfilment of the fellowship to get a certificate.

**PART IV INTERNSHIP (if required):**

1. Internship (2 weeks)
2. Institution visit

### **Evaluation**

An end of fellowship examination will be conducted to evaluate the candidate in terms of the knowledge gained from the fellowship. The examination will be mandatory for

passing the fellowship and for grant of the fellowship completion certificate along with completed project work mentioned above.

Fellow has to attend two theory examinations – Psycho-oncology and Research methodology and Biostatistics – for the completion of the course. Each theory exam will carry 80 marks for written theory paper and 20 marks for internal/practical examination. The research dissertation viva voce and clinical viva will be conducted by an external faculty. The maximum mark for the same is 100. The pass percentage in all three will be 50%.

## **14.Fellowship in Oncology Social Work**

### **Objective of the Programme**

Medical social work is a field that focuses on meeting the various needs of individuals, families and communities navigating challenges in health and wellness. When people are sick, in addition to physical care, they may also need support for the emotional, financial and social needs that can arise. They may feel overwhelmed when dealing with the health care system, need help planning their after-care transition or want counselling support to help them process the changes in their lives.

Oncology social work is a discipline that provides psychosocial services to patients, families and significant others facing the impact of diagnosis of cancer. The scope of oncology social work includes clinical practice, education, advocacy, administration, policy, and research. In India the social work education programmes are limited to the health social work perspective. So there are no specialised programmes in the area of oncology social work available in the country. At the same time there is a significant skill gap in the healthcare system which can be filled by a professional trained in oncology social work only.

Psycho-oncology division of MCC is working with all the Inpatient and Outpatient care departments and divisions in the hospital, including Surgical, Medical, Radiation, Pain & Palliative care, Community Oncology, and Paediatric Oncology along with research and academic aspects of hospital. This ensures that the trainee can be trained thoroughly so that he/she can work as an Oncology Social Work professional.

## **Objectives**

1. To develop a regular full time academic program in oncology social work
2. To promote excellence in psychosocial care to oncology patients, families, caregivers and their community through the process of oncology social work.
3. To prepare the fellow to be a specialised oncology social worker to improve the psycho-social well-being and quality of life of cancer patients through various methods of social work
4. To conduct short-term research in Psycho-social oncology along with real clinical experience.

Upon completion of a one-year fellowship, the Oncology social work professional is expected to possess the following characteristics:

- a) Expertise in the multi – professional team working, caring for people with cancer, in a variety of settings, throughout their cancer journey.
- b) Ability to manage psycho-social concerns of the cancer patient and their families.
- c) Ability to participate in the training of health care professionals and students to improve awareness about the importance of oncology social work.
- d) Ability to promote evidence based practice through research and audit.

## **Eligibility**

Minimum 60% marks in Regular MSW (Medical and Psychiatry/Clinical Social work )

## **Duration of the program**

The duration of the programme is 1 year

## **Fellowship Structure**

One year full time clinical training divided into four parts

- I. Theoretical Learning
  - a. Oncology Social work

- b. Research Methodology & Biostatistics

## II. Clinical & Practical hours

- a. Practical Assessments
- b. Case work, Group work & Case studies

## III. Research Dissertation

- a. Viva-voce

## IV. Internship ( outside, if required)

- a. 2 weeks
- b. Community posting (Preventive and social medicine)

# **PART I THEORETICAL LEARNING**

## PAPER 1: ONCOLOGY SOCIAL WORK

Unit 1: Oncology Social Work-Past, Present and Future

Unit 2: Psycho-social concerns in view of Adaptation to cancer diagnosis and treatment – Prevention, Diagnosis, Treatment, Survivorship, Palliation

Unit 3: Complex Issues Affecting Quality of Life and Quality of Care

Unit 4: Psycho-social interventions in patients, Families and Caregivers

Unit 5: Assessment and Interventions with Children and Adolescent Cancer Patients-The Unique Challenges of Paediatric Oncology social work

Unit 6: Patient- And Family- Centred Care: Social Work Role and Organizational Models for Psychosocial Services

Unit 7: Health Care Advocacy: Legal and Ethical Issues in Oncology

## Paper II RESEARCH METHODOLOGY & BIOSTATISTICS

Unit I: Introduction to Research

Unit II: Research Designs, Methods and Tools

Unit III: Statistics

Unit IV: Inferential Statistics

Unit V: Epidemiological Studies

## **PART II CLINICAL & PRACTICAL HOURS**

The fellow has to do clinical work including OP and IP consultation with patients and families as individual or group sessions. Every day ward rounds are mandatory. They need to do case discussions and presentations in the division for management and follow up plans. They may need to be involved in Multispecialty Tumor Board (MSB) and grand rounds with other Oncology departments. Different psycho-social assessments used for cancer patients are also part of practical hours. The fellow has to submit a minimum of 10 cases in the whole course from case history, screening and assessment to management. The log has to maintain a log book for the fellowship.

- a. Practical Assessments
- b. Case study & Case reports

## **PART III DISSERTATION & VIVA VOCE**

This provides an opportunity for the fellow to practice research using the knowledge acquired. Fellows will be expected to take up one research study, to be completed within a span of one year. Acquiring extramural funding for these projects will be encouraged and fellows are expected to have a submitted publication prior to completion of the fellowship in the project concerned. In addition to this conference presentations are recommended and encouraged. Fellows will be expected to complete the project prior to getting a completion certificate. Viva voce will be conducted for the fulfilment of the fellowship to get a certificate.

## **PART IV INTERNSHIP**

- a. 2 weeks (outside, if required)

- b. Community posting (Preventive and social medicine)

### **Evaluation**

An end of fellowship examination will be conducted to evaluate the candidate in terms of the knowledge gained from the fellowship. The examination will be mandatory for passing the fellowship and for grant of the fellowship completion certificate along with completed project work mentioned above.

Fellow has to attend two theory examinations – Oncology Social Work and Research methodology and Biostatistics. Each theory exam will carry 80 marks for written theory paper and 20 marks for internal/practical examination. The research dissertation, viva voce and clinical viva will be conducted by an external faculty. The maximum mark for the same is 100. The pass percentage in all three will be 50%.

## **15.FELLOWSHIP IN ONCOLOGY NUTRITION**

### **Objective of the Programme**

The aim of this unique Fellowship programme is to establish and encourage good nutrition practice and standards as an integral part of the cancer care provided. This is also expected to provide direction and leadership for quality oncology nutrition practice through education and research. The practice of oncology nutrition covers research, prevention, treatment, recovery, palliative care and hospice.

The goals of these fellowships are to provide comprehensive, multidisciplinary training to individuals who are committed to a career in Nutrition & Oncology. **The fellowship programme will be a one year course.**

The fellowship training will provide a broad exposure to the full range of clinical/nutritional problems in oncology. Upon completion of a one-year fellowship, the Nutritionist is expected to possess the following characteristics:

- a) Expertise in the multi – professional team working, caring for people with cancer, in a variety of settings, throughout their cancer journey.
- b) Expertise to manage or advice regarding eating difficulties and the use of dietary supplements
- c) Ability to participate in the training of health care professionals and students to improve awareness about the importance of nutrition and cancer.

- d) Ability to promote evidence based practice through research and audit.
- e) Appreciation of scientific methodology, study design, clinical trial & data analysis.
- f) Ability to prescribe dietary charts for cancer patients.

### **Eligibility**

The candidate should possess a post graduate degree or Diploma in Nutrition & related subjects with a minimum of 60% marks.

### **Duration of the program**

**The duration of the programme is 1 year**

### **Didactic Teaching**

The following are the suggested topics for didactic teaching. The total duration of didactic teaching sessions will be 30 hours. Over a period of 12 months. Didactic teaching will be conducted through presentations and demonstrations. Attendance in teaching classes is considered mandatory.

<b>Suggested Topics</b>
<b>Introduction to the basis of Cancer</b>
Cancer development, etiology, cancer and nutrition status, oncological treatment modalities
<b>Nutritional screening and Assessment in oncology</b>
Nutrition care process, nutrition requirement, nutrition screening, nutrition assessment tool
<b>Nutritional Implementation Guidelines and Practice</b>
Evidence-based Practice Management in Cancer Prevention ,Treatment and survivors
<b>Nutrition support for oncology patients</b>
Enteral nutrition, parenteral nutrition, enteral and parenteral nutrition access, formulations for enteral and parenteral nutrition, indication, contraindication and complication of feeding practices
<b>Nutrition and cancer prevention</b>
Role of diet, role of physical activity, role of body weight, cancer survivorship
<b>Basics of Surgical oncology</b>
Peri operative and postoperative assessment, screening, nutrition support, nutrition issues in head and neck, gastrointestinal, reproductive malignancies, special feeding practices in surgical oncology, post surgical nutritional issues management
<b>Basics of Medical Oncology</b>



Overview of medical oncology, nutrition implications, nutritional management of chemotherapy related side effects
<b>Basics of Radiation oncology</b>
Overview of radiation oncology, nutrition implications, nutritional management of radiation therapy related side effects
<b>Hematology</b>
Basis of hematological malignancies, Pediatric oncology nutrition, special dietary regimens in bone marrow transplantation, nutrition for intensive chemo patients
<b>Palliative care</b>
Basis of palliative care, nutritional impacts in palliative patients and its managements, artificial nutrition and hydration
<b>Integrative oncology</b>
<b>Bio statistics.- Basic of Biostatistical methodology, usage of SPSS software</b>

### **Fellowship Structure**

The fellowship will be comprised of the following:

1. **Project Work:** Fellows will be expected to take up one project, to be completed within a span of one year. Acquiring extramural funding for these projects will be encouraged and fellows are expected to have a submitted publication prior to completion of the fellowship in the project concerned. In addition to this conference presentations are recommended and encouraged. Fellows will be expected to complete the project prior to getting completion certificate. The fellows will be encouraged to prepare a project proposal prior to joining the fellowship which they can pursue during the tenure of their fellowship.
2. **Didactic Teaching:** Didactic teaching will be provided by the Faculty of Malabar Cancer Centre according to the schedule given below. The aim of the didactic teaching is to have one to one sessions where the fellows can get to interact with the teaching faculty on various topics related to nutritional oncology.
3. **Basic Biostatistics:** Measures of Central tendency & dispersion, Types of data & Data representation methods, Sampling Technique (Simple random sampling techniques, Stratified & Cluster sampling), Correlation & Regression, Testing of Hypotheses

(Basic Concept, t-tests, Chi-square test, variance test), Analysis of Variance (ANOVA).

4. **Chart Rounds:** The fellowship candidate will be expected to participate in chart rounds on Saturdays with the surgical oncology team to understand the plans being delivered as well as to modify dietary patterns accordingly.
5. **Special postings:** The candidate will have postings in the Department of Radiation oncology, Medical Oncology , Surgical oncology , Community oncology , Hematology, Palliative care and division of Speech and Swallowing for a period of two week each.
6. **Performance Review:** The fellows will be part of a 3 monthly performance review in the department. The review will be conducted in a friendly environment in order to appraise the progress of the project(s) the fellow may be undertaking as well as review the problems that the fellow may be facing. Attendance in the performance review meetings will be considered compulsory for the fellows. The fellows are expected to maintain an uptodate logbook to present at these review sessions.
7. **End of Fellowship Examination:** An end of fellowship examination will be conducted to evaluate the candidate in terms of the knowledge gained from the fellowship (both theoretical and practical). The examination will be mandatory for passing the fellowship and for grant of the fellowship completion certificate along with completed project work mentioned above.

### **Evaluation**

The examination will have a 80 marks theory paper and a 20 mark practical examination. The theory examination will have 10 short answers and 3 clinical vignette questions with 5 marks and 10 marks each. In addition 100 marks are given in the performance reviews and candidates are expected to pass all three independently in order to qualify for the fellowship. The pass percentage in all three will be 50%.



## **16.0 SUBMISSION OF APPLICATION**

### **Online Application:**

The applications should be submitted ONLINE through our website [www.mcc.kerala.gov.in](http://www.mcc.kerala.gov.in).

### **Application Fee:**

Application fee is **Rs.2,500/-** (Rupees Two Thousand Only) except Fellowship in Psycho-oncology, Oncology Social Work, Nutritional Oncology. The application fee for fellowship in Psycho-oncology, Oncology Social Work, Nutritional Oncology is **Rs.1,500/-** (Rupees One Thousand Five hundred only). The application fee shall pay online through the payment gateway system provided in the online application

### **Selection process:**

The selection will be based on an online screening test and/or personal interview.

## **17.0 FEES AND STIPENDS**

### **For all fellowship programmes except Fellowship in Psycho-oncology, Oncology Social Work and Nutritional Oncology**

Fellowship fees of **Rs.50,000/- per annum** with alumni fee of **Rs. 750/-** will be levied and **Rs.10,000/-** will be the refundable caution deposit( Total 60,750/- in first year and 50,000/- in second year). Stipend of **Rs.53,000/- per month** will be given in the first year and **Rs.54,000/- per month** in second year. For sponsored candidates, the institution may decide on the fee structure as appropriate. Annual fees once remitted will not be refunded, if the candidate leaves without course completion.

### **For Fellowship in Psycho-oncology, Oncology Social Work and Nutritional Oncology**

Fellowship fees of **Rs.15,000/- per annum** with alumni fee of **Rs. 750/-** will be levied and **Rs.5,000/-** will be the refundable caution deposit (Total 20,750/- ). Stipend of **Rs.12,000/- per month** will be given for non sponsored candidates. For sponsored candidates and candidates from other countries the institution may decide on the fee structure as appropriate.

## 18.0 FACULTIES

<b>SURGICAL ONCOLOGY</b>	Dr.Satheesan Balasubramanian, M.S. M.Ch. (Surgical oncology) Director & Professor, HoD in Surgical oncology.
	Dr.Nizamuddin.M.P (MS, MCh.), Additional Professor and HoD, Dept.of Surgical Oncology
	Dr AdarshD . MS (OBG), Assistant Professor in Gyn Oncology
	Dr Sandeep Vijay MS (ENT), Assistant Professor
	Dr Anoop.A MS (ENT), Assistant Professor
	Dr Ashitha MS (OBG), Assistant Professor
	Dr.Bony A Joseph, (MS, MCh.), Assistant Professor Dr. Prasanth P, DrNB, Assistant Professor Dr. Raveena R Nair, Assistant Professor
<b>CLINICAL HEMATOLOGY AND MEDICAL ONCOLOGY</b>	Dr.Chandran K. Nair, M.D.,DNB(Int. Medicine), D.M. (Clinical Hematology), Fellowship in Bone Marrow/Peripheral blood Stem cell transplantation(Vancouver, Canada) Professor and HOD
	Dr.Praveen Shenoy (MD, DM), Associate Professor
	Dr.Jithin T K (MD, DM), Assistant Professor
	Dr.K G Gopakumar (MD, DM),Assistant Professor
	Dr. Nandini Devi, (MD, DM), Assistant Professor
	Dr. Abhilash Menon, (MD, DM), Assistant Professor
	Dr. Arun Krishnan M P, (MD, DM), Assistant Professor
<b>CLINICAL LABORATORY SERVICES AND TRANSLATIONAL RESEARCH</b>	Dr.Sangeetha K Nayanar MD, DNB (Pathology) Professor and HOD
	Dr.Parthiban R, PhD Professor, Microbiology
	Dr.SitharaAravind MD (Pathology), Additional Professor
	Dr Mohandoss M MD (Transfusion Medicine), Additional Professor
	Dr Aswathy Krishnan M MD,DNB (Pathology), Associate Professor
	Dr Kandathil Philip Joseph MD,DNB (Pathology), PDCC Assistant Professor
	Dr Anand Narayanan MD (Pathology), Assistant Professor
	Dr.Vivek Nair, MD(Pathology), Fellowship in Oncopathology Assistant Professor
	Dr.Deepak Roshan PhD , Associate Professor, Cytogenetics
	Dr.Vipin Gopinath PhD, Associate Professor, Molecular Oncology
	Dr.Sindhu ER PhD, Assistant Professor, Biochemistry
Dr Sarath KE MD, Assisstant Professor, Microbiology	

<b>RADIATION ONCOLOGY</b>	Dr.Geetha M. MD (Radiotherapy),Professor and HOD Dr Vinin N V MD (Radiotherapy), Additional Professor Dr Joneetha Jones MD,DNB(Radiotherapy), Associate Professor Dr Greeshma K E DMRT,DNB (Radiotherapy), Associate Professor Dr Nabeel Yahiya MD (Radiotherapy), Assistant Professor Dr Arun.P.Narendran MD,DNB(Radiotherapy), Assistant Professor Dr Akhil.P.Suresh MD (Radiotherapy), Assistant Professor Dr. Megha Prem, MD (Radiotherapy), Assistant Professor
<b>IMAGEOLOGY</b>	Dr Nrithi P , MD ( Radiodiagnosis) , Assistant Professor Dr. Suryakala, MD ( Radiodiagnosis) , Assistant Professor Dr. Ashish Pavanan, MD ( Radiodiagnosis) , Assistant Professor
<b>PULMONOLOGY</b>	Dr Anu Mariyam , MD (Pulmonology), Assistant Professor
<b>PALLIATIVE MEDICINE</b>	Dr Biji M S, Assistant Professor
<b>COMMUNITY ONCOLOGY</b>	Dr Neethu,MBBS,MPH, Lecturer Dr Phinse Philip, BDS,MPH,PhD,Lecturer
<b>CANCER REGISTRY &amp; EPIDEMIOLOGY</b>	Dr SainaSunilkumar, MBBS,MPH,Lecturer Mr Ratheesan,MSc,MBA,Lecturer in Biostatistics Dr. Bindu, MSc,PhD, Lecturer in Biostatistics
<b>CLINICAL RESEARCH &amp; BIOSTATISTICS</b>	Mrs Maya Padmanabhan,MSc,Mphil, Lecturer in Biostatistics Mr Riyas,MSc,Lecturer in Biostatistics
<b>PSYCHO-ONCOLOGY</b>	Mrs. Jisha Abraham,MSc,Mphil, Lecturer in Psycho-oncology

## 19.0 RULES AND REGULATIONS

- 1) The course is full time. Candidates are expected to perform all types of clinical, research and academic assignments as prescribed by the Academic Council of Malabar Cancer Centre.
- 2) It is a resident program of post-graduate training
- 3) Candidate is expected to wear identity card provided by MCC
- 4) **Dress code:** Lady candidates are expected to put up the hair during working hours. She is permitted to wear any decent dress preferably, Sari and churidhar. Gentleman candidates should wear formal shoes. White apron is compulsory during working hours
- 5) **Attendance:** The candidate should mark the attendance in Biometric punching machine and also sign in the register kept in the department.
- 6) Completion of project work is compulsory for fellowship certification.
- 7) **Leaves:** Candidates will be eligible for 12 days leave during the programme. Not more than 5 days of leave will be granted together. Candidates who avail for more than 12 days of leave will have extension for those additional days of leave. Holiday leave/ holiday duty off will be given as per discretion of the Head of Department.
- 8) **Accommodation:** Accommodation is the responsibility of the candidate. For lady candidates, if available and formally requested in the Request form, shared room accommodation may be provided in the Nurses hostel. This is not guaranteed and it is not a right of the candidate. If accommodation is provided a nominal rent will be deducted from the stipend. A caution deposit of Rs. 1,000/- should be paid. This is refundable when the candidate vacates the hostel. Gentleman candidate is expected to find an accommodation themselves
- 9) Candidates should follow the rules and regulations of MCC.

## 20.0 CONTACTS

**For any clarifications and queries, please feel free to contact;**

- Dr.Sangeetha K Nayanar, Professor & HOD, Department of Clinical Laboratory Services and Translational Research,  
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- Mrs.Jisha Abraham,Division Incharge, Division of Psycho Oncology  
Email:[jishasarah@gmail.com](mailto:jishasarah@gmail.com), Phone:04902399268

Any technical queries regarding online applications please contact System Manager,  
Email: [sm@mcc.kerala.gov.in](mailto:sm@mcc.kerala.gov.in) with application Number (Phone: 0490-2399400, 2359881)





**MALABAR CANCER CENTRE POST GRADUATE  
INSTITUTE OF ONCOLOGY SCIENCES AND  
RESEARCH**

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