

**Curriculum and Syllabus**  
**for**  
**Post Graduate Fellowship in Surgical Oncology**

*Offered by*  
**Dr B Borooah Cancer Institute (RCC)**  
**Guwahati - 781016**

Name of the specialty : Post Graduate Fellowship In Surgical Oncology

Duration : Two Years (24 months)

Number of seats : 2 (two) per batch

Requisite Qualification : MD / DNB in General Surgery or Orthopaedics

Name of the Faculty :

1. Dr. Amal Chandra Kataki, M.D.,
2. Dr. Bhabesh Kumar Das, M.S.,
3. Dr. Bibhuti Bhusan Borthakur, M.S.
4. Dr. Joydeep Purkayastha, M.S.
5. Dr. Abhijit Talukdar, M.S.
6. Dr. Ashok Kumar Das, MS
7. Dr. Raj Jyoti Das, MS
8. Dr. Tasneen Rahman, MS
9. Dr. Simanta Kumar Medhi, MS
10. Dr. Kishore Das, MS
11. Dr. Anupam Das, MS
12. Dr. Debabrata Barmon, M.D.,
13. Dr. Pankaj Deka, M.D.,
14. Dr. Apurba Kumar Kalita, M.D.,
15. Dr. Mouchumee Bhattacharyya, MD,
16. Dr. Vikash Jagtap, MD
17. Dr. Rubu Sunku, MD
18. Dr Toufiq Borbora, MD
19. Dr. Jagannath Dev Sharma, M.D.,
20. Dr. Anupam Sarma, M.D.,
21. Dr. Shiraj Ahmed, M.D.,
22. Dr. Tapan Kumar Sharma, M.D.
23. Dr. Shaumik Das, MD,
24. Dr. Rashmi Snata Barman, MD,
25. Dr. Chidananda Bhuyan, M.D.,
26. Dr. Bhargav Jyoti Saikia, M.D.,
27. Dr. Munlima Hazarika, M.D.,
28. Dr. Partha Sarathi Roy, M.D., D.M.
29. Dr. Binoy Kumar Choudhury, M.D.
30. Dr. Geetanjali Barman, MD
31. Dr. Kabita Bujarbarua, MD
32. Dr. Shrabona M. Bhagabaty, M.D.,
33. Dr. Roshanara Begum, M.D.,
34. Dr. Anupam Das, M.D.,
35. Dr Minoti Barua, MD
36. Dr. Kabindra Bhagabaty, M.B.B.S, Dip.Pal.Med.,
37. Dr Avdesh Kumar Rai, M.Sc, Ph.D.
38. Mr. Shachindra Goswami, MSc., DRP

39. Ms. Mithu Borthakur, M.Sc., DRP

**Visiting & Guest Faculty:**

**Padmashree Dr. Rajendra Kumar Badwe, MS.**  
Director,  
Tata Memorial Centre, Mumbai

**Dr. C. Pramesh, M.S.**  
Prof. & Head, Thoracic Surgical Oncology,  
Tata Memorial Centre, Mumbai

**Professor Arnie Purushotham**  
Director, King's Health Partners Cancer Centre (KHPCC),  
Chair, Breast Cancer, King's College London (KCL)  
Consultant Surgeon, Guy's & St Thomas NHS Foundation Trust (GSTFT)

**Dr. Hemant B. Tongaonkar, M.S.**  
Prof. & Head, Uro-Gynae Oncology,  
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**1. Goal**

To train a General Surgeon or Orthopaedic Surgeon to become a Surgical Oncologist.

A *Surgical Oncologist* is a specialist in General Surgery or Orthopaedics, who has completed a formal two year fellowship / training programme in Surgical Oncology and has been assessed as being competent in the comprehensive management of patients with cancers i.e. prevention, early detection, diagnosis, research and all effective forms of cancer therapy – curative, palliative, pain relief, and complications resulting thereof, has acquired necessary skills of required surgical and therapeutic procedures, and is capable of total care of the patient – physical, psychological and social.

**2. General Description of the Programme:**

Cancer is one of the most challenging health problems to our country and the world. Presently around 50% of patients attending a general surgery OPD present with malignancy. The management of cancer involves besides Surgery, many other disciplines - like radiotherapy, chemotherapy, hormonal manipulation, targeted therapy, histopathology, radio-imaging, immuno-histochemistry, molecular diagnosis, regional interventions etc. The surgeon today is required to have adequate and comprehensive knowledge and skill to integrate all these areas for managing the cancer patient.

Surgical Oncology involves procedures which are usually extensive and mutilating. Such operations entail high morbidity and residual disabilities. Under certain circumstances the justification of surgery needs to be reviewed. Interventional procedures if skillfully performed can at times obviate disfigurement, disability and minimise risk of death. Integration of adjuvant treatment requires meticulous and wise planning in order to obtain desired result. Rehabilitation, both physical and psychosocial, should be an important concern for the Surgical Oncologist.

The approach to management of a cancer patient should be based on evidence which is relevant and current. The surgeon should be able to critically evaluate the benefits of a treatment and its possible outcome, and the influence of any modification tailored to an individual. He should have a deep concern for the safety of the patient, and his approach should be ethical and humane. He should be able to inculcate scientific approach to oncologic problems, and be able to relate his experiences and findings scientifically for the benefit of others.

### **3. Need for the training programme :**

1. There is an over all rising trend in cancers in our country, as well as globally. Northeast India has the highest cancer incidences within India.
2. The facilities for treatment of cancer are concentrated in only a few tertiary care centres. The physical and economic burden on patients are compounded by the distance to the tertiary care centre, which causes delay, dropouts and failures, and contributes to poverty.
3. For equitable distribution of resources for cancer care, it is imperative that treatment facilities are available at the doorstep as far as possible.
4. While treatment of cancer has varied dimensions, it is well recognised that a major part like diagnosis, staging, surgery, chemotherapy and management of complications, palliative and terminal care etc can be distributed and delivered away from tertiary centres making available close to the patient's place of residence, which will reduce physical and economic burden on the patient, and improve care and outcome. This requires appropriate and timely care by skilled caregivers with a high degree of coordination.
5. It is envisaged that these needs can be fulfilled through surgeons who are knowledgeable and skilled in cancer care, who will then be able to incorporate these activities properly into their professional conduct.

### **4. Aims:**

The programme of Fellowship in Surgical Oncology aims to train a general surgeon or a surgeon from allied specialties in the principles and evidence-based practice of Surgical Oncology, so that he acquires the knowledge and skills required to effectively and correctly manage cancer patients in a general hospital. He will also develop an insight into clinical research, cancer prevention, ethics and palliative care. The programme is designed to equip the surgeon with highly developed skills and techniques of modern management of cancer, which are recent and continuously updated, and promote human values, ethics and communication abilities..

The trainee should achieve such knowledge during the training period that he/she after qualification can independently provide surgical care as well as a holistic management of a cancer patient. He can also become a responsible surgical member of an Interdisciplinary Oncology Team.

## 5. Objectives

At the end of the training programme the candidate :

- i. should be able to function as an independent consultant clinician in surgical oncology.
- ii. have an understanding of the aetiology, epidemiology, screening, detection and prevention of malignant diseases.
- iii. acquire the necessary knowledge and skill to perform radical operations, reconstructive procedures for restoration of function, and manage complications.
- iv. Must acquire in-depth knowledge of a wide range of investigative procedures – both invasive and non-invasive, required to correctly diagnose, stage, treat and monitor cancer patients.
- v. have a sound knowledge of parenteral nutrition and intensive care management of the perioperative patient.
- vi. develop skills in the management of pain relief and the care of the terminally ill patient.
- vii. be well informed in the principles, methods and techniques of radiation treatment. The candidate must be capable of participating in the planning of radiation treatment and must acquire an understanding of the principles of radiobiology and radiation physics. The candidate must develop skill in the management of the side effects and complications of radiotherapy.
- viii. should acquire knowledge of cancer chemotherapy and clinical pharmacology of chemotherapeutic and related agents. He /she should develop skills in the selection of patients for chemotherapy and proper administration of the different drugs and acquire a wide knowledge of the use of these agents, sufficient to administer them in an independent capacity. The candidate should develop skills in the management of toxic side effects.
- ix. should acquire required skills for cancer screening, and the management of pre-invasive and micro-invasive site specific lesions.
- x. should develop a sound knowledge of gross and microscopic pathology and cytology of tumours. This knowledge must be sufficient for the candidate to interpret the details of reports concerning the histopathology and to use pathological findings effectively in making decisions regarding treatment and prognosis.
- xi. be able to coordinate adjuvant treatment, follow up, management of recurrences and palliative care.
- xii. should develop skills in the planning, conduct and reporting of research in oncology. The candidate in addition, must develop a high level of skill in the interpretation and evaluation of research reports and understand the principles of ethics in research and good clinical practices.
- xiii. be acquainted with the current literature on relevant aspects of basic, clinical and therapeutic oncology, and be capable of staying up-to-date.
- xiv. develop an insight into burden and psycho-socio-economic-cultural problems of cancer in the relevant regional context.

**6. Type of Training :**

The training shall be of residency pattern with graded delegation of responsibilities in patient care and management. The course will be covered through didactic lectures, participatory training in the relevant departments and services through postings, participation in seminars, journal reviews, grand rounds, case presentations, multidisciplinary meetings, joint tumour board meetings etc.

**7. Posting schedule:**

The student will be posted through various departments where he will participate in all the departmental activities for durations as below :

- i. **Surgical Oncology** for at least 22 months.  
During this period, the Institute will explore the possibilities for a 4 weeks' placement at a reputed cancer centre in the country.
- ii. **Medical Oncology** for orientation for one week;
- iii. **Radiation Oncology** for orientation in radiotherapy planning and radiation treatment for one week.
- iv. **Intensive care unit** for one week;
- v. **Histopathology and cytology** for two weeks;
- vi. **Molecular biology department/laboratory, Radio imaging and Nuclear medicine** one week;
- vii. **Anaesthesiology** for one week;
- viii. **Palliative medicine, pain relief and home care** one week;
- ix. **Community based cancer screening and early detection program** as per activity schedules and programs of the Institute.

The course shall also include as part of the training wherever possible:

- cadaver dissection for surgical anatomy.
- participation in clinical research trials as investigator

**8. Theory topics to be covered for the Fellowship Programme****A) Fundamental**

- i) Cancer Biology, Epidemiology, Prevention and Clinical trials
- ii) Principles of Chemotherapy and Chemotherapeutic agents
- iii) Principles and methods of Radiotherapy
- iv) Principles of Surgical Oncology and multi disciplinary cancer management.
- v) Principles of Endocrine Therapy, tumour immunology and bio-therapeutics
- vi) Radio-Imaging, Interventional radiology, Radionuclide imaging and therapy.

- vii) Rehabilitation, Palliative care and pain management
- viii) Surgical anatomy for the cancer surgeon

**B. Thoracic**

- i) Neoplasms of Lung and Bronchus, Principles of lung resection and peri-operative care
- ii) Tumours of the Oesophagus, Principles of oesophageal reconstruction
- iii) Tumours of Chest wall and Mediastinum

**C. Breast**

- i) Staging and management of Breast Cancer
- ii) Breast conservation and Reconstruction.
- iii) Sentinel Lymphnode Biopsy.

**D. Gastro-intestinal and hepatobiliary cancers**

- i) Gastric Cancer
- ii) Pancreatic, Small bowel and appendiceal neoplasms
- iii) Cancer of the Colon, Rectum and Anus
- iv) Hepatocellular Carcinoma, Carcinoma of the Gall Bladder and Biliary tree, Metastatic liver

**E. Genito-Urinary malignancies :**

- i) Adult and Paediatric Tumours of Kidney, Renal Cell Carcinoma
- ii) Urothelial Carcinoma of Bladder and upper Urinary tracts
- iii) Carcinoma of Prostate
- iv) Testicular Tumours, Cancer of the External Genitalia.

**F. Melanoma and carcinoma of the Skin**

**G. Endocrine Malignancies**

**H. Bone and Soft tissue Sarcoma**

**I. Neoplasms of the Brain and Meninges**

**J. Lymphomas and hematologic malignancies**

**K. Cancers of the Head and Neck**

- i) Carcinoma of Nasopharynx, Oral Cavity, Oropharynx, Hypopharynx, Larynx, Skull Base Surgeries
- ii) Carcinoma Parotid
- iii) Carcinoma Thyroid
- iv) Reconstruction in Head & Neck

**L. Gynaecologic Oncology**

- i) Surgical anatomy of the female reproductive organs
- ii) Carcinoma Endometrium
- iii) Cancer and precancerous lesions of cervix
- iv) Cancer Ovary

- v) Vulval Cancer

**M. Miscellaneous**

- i) Neoplasms in Children and their Surgical Management.
- ii) Metastases of Unknown Origin.
- iii) Management of Complications of Cancer Treatment and Oncologic Emergencies
- iv) Reconstruction and Restorative Techniques in Oncologic Surgery
- v) Vascular access in Cancer Patients
- vi) Minimal access and Ablative approaches in Cancer Surgery
- vii) Communication, Physical and Psychological Rehabilitation
- viii) Audit in Surgical Oncology

**9. Desired skills to be achieved by the candidates:**

**Patient care:** The student will learn and gain competence in all outpatient and ward procedures of physical examination, assessment and investigations including biopsies, and perform minor surgical procedures independently. The candidate will learn principles of management which will involve diagnosis, staging, treatment planning, prevention and management of complications, follow up, palliative and terminal care etc.

**Theory:** The student will acquire knowledge and understanding of oncogenesis, principles of management of the disease, and recent advances. He will learn about evidence based surgery and ethics. He will acquire an in-depth knowledge about organ specific malignancies and their management.

**Surgical Skills :** The student will be trained in different surgical procedures in a graded manner, under direct supervision of trainers. He will learn preoperative preparations, post operative care, intensive care and will be progressively assigned responsibilities of management. He will learn all endoscopic procedures and do them independently. He will also learn interventional procedures like ultrasound guided biopsies, PTBD, embolisations, tracheostomy and vascular access procedures etc. He will assist the consultant in all major surgical procedures, and will be guided to independently do these procedures. He will acquire skills in laparoscopic and other minimally invasive surgeries. He will learn planning, execution and care of stomas, prosthesis, and implantable devices like stents.

**Research :** The candidate will choose a research topic within 6 weeks and present the same including aims, objectives, literature review, methodology, proposed method of analysis and data management at the Institutional Ethics Committee and commence work after obtaining clearance. A progress report will be submitted to the head of the department every three months.

**10. Surgical Procedures :**

The student will acquire knowledge and skills to perform radical resections, diagnostic procedures, lymph node dissections and appropriate palliative procedures. Following procedures will be covered:

**A] Breast :**



- i. Modified Radical Mastectomy
- ii. Breast Conservation Surgery
- iii. Breast Reconstruction and Oncoplastic Surgeries
- iv. Sentinel Node Biopsy
- v. Local Excision of Recurrences and Cover.

**B] Thoracic**

- i. Oesophagectomy : 3-stage, Ivor Lewis, Thoracoabdominal, Trans Hiatal, VATS
- ii. Lung Resections
- iii. Resection of Pleura and Chest Wall Tumours, with Reconstruction.
- iv. Mediastinoscopy / Thoracoscopy
- v. Resection of pulmonary metastases

**C] Gastrointestinal and Hepatobiliary**

- i) Gastrectomy – Radical, Total, D2, Palliative
- ii) Intestinal Resections and Restoration of Continuity
- iii) Radical Hemicolectomy
- iv) Total Mesorectal Excision of Rectum and Low Anterior Resection (LAR), Abdomino-Perineal Resection (APR), Ultra Low Anterior Resection (ULAR).
- v) Radical Cholecystectomy
- vi) Hepatic Resections
- vii) Whipple's Pancreatoduodenectomy with and without pylorus preservation
- viii) Distal Pancreatectomy
- ix) Palliative Biliary Bypass Operations.
- x) Palliative Enterocutaneous Stomas.
- xi) Abdominal wall Excisions and Reconstructions.

**D] Genitourinary**

- i. Radical Nephrectomy
- ii. Partial Nephrectomy
- iii. Cysto-urectomy
- iv. Radical Prostatectomy
- v. Penectomy with Inguinal/Pelvic Lymph Node Dissection

- vi. Retroperitoneal Lymph Node Dissection

**E] Melanoma and Sarcoma:**

- i. Excision of Melanoma
- ii. Regional Node Dissection
- iii. Surgery of Abdominal Sarcomas
- iv. Surgery of Soft Tissue Sarcomas
- v. Limb Preservation Surgeries for Skeletal Tumours
- vi. Amputations

**F] Endocrine Surgery**

- i. Thyroidectomy procedures with Regional Lymph Node Dissection
- ii. Adrenalectomy

**G] Vascular Access**

- Venous Port Systems

**H] Laparoscopic Surgery**

- i. Staging Laparoscopy for GI and other Cancer
- ii. Laparoscopic Resection of Malignant Tumours

**11. Assessment :**

**Log Book :** Candidate will maintain a work diary/log book as per the protocol of Surgical Oncology Department and record all participation in the training program and activities. The Log-book has to be endorsed by the Head of the Department periodically, and by the Head of the Institution before completion of the course.

**Internal assessment :** The student will be assessed at the end of six months on staging, surgical anatomy, diagnostic procedures, basic principles of oncogenesis and cancer biology, epidemiology and preventive oncology.

At the end of 12 months he will be assessed on pathology, general and specific pre and post-operative care, endoscopic, interventional and emergency procedures, radio-imaging.

At the end of 18 months the student will be assessed on his research work, medical and radiation oncology, ethics, audit and good clinical practices.

**Final Examination : Theory Examination** shall be held at the end of the course consisting of four theory papers each with a duration of three hours and 100 marks – total of 400 marks. There will be following types of questions in each paper:

- (a) Case based questions ( 4 questions of 15 marks each, 6 options )
- (b) Short structured questions (4 questions of 5 marks each, 6 options )

(c) Very short questions ( 10 questions of 2 marks each, no options )

The details of the subjects to be covered in respective papers are as follows. Some degree of overlapping of the subjects is expected in relevant areas:

**Paper 1**

*Basic sciences and principles of oncology:*

Aetiology and pathology of Cancers  
Tumor Biology, genetics and Molecular Biology  
Tumor Immunology  
Cancer Epidemiology, Indices and Registry  
Cancer control  
Infections and cancer  
Haematological complications of cancer, Oncologic emergencies.  
Cancer Chemotherapy and Chemotherapeutic agents  
Radiation therapy and radiobiology  
Principles of Nuclear Medicine  
Principles of endocrine therapy  
Diagnostic and interventional radiology  
Complications of cancer therapy and their management.  
International Classification of Disease – Oncology  
staging of cancer  
Experimental design of clinical trials  
Development of new drugs

**Paper 2**

*Systemic Surgical Oncology :*  
Thoracic, Gastrointestinal, Hepatobiliary, Genito-urinary,

**Paper 3**

*Systemic surgical oncology :*  
Bone and soft tissues, skin, Endocrine, Brain, Lymphomas.

**Paper 4**

Breast, Paediatric malignancies, Recent advances in surgical oncology.

The theory examination will be followed by **practical examination and viva voce** of 200 marks, and will aim at examining the skills and competence of candidates for undertaking responsibilities as an independent Surgical Oncologist. The pattern of the examination will be case presentations, assorted items of images, instruments, surgical specimen etc., and viva voce, in the following format:

**Day 1**

1. At least three typical cases are to be discussed and the student will be assessed on:

- history taking
- demonstration of physical findings
- ability to reach a logical diagnosis
- ability to formulate a plan for work up and management of each case
- ability to modify management according to the results of various investigations made available by the examiner

2. Spot diagnosis

Imaging, histopathology slides, instruments, spot cases

### **Day 2**

Bedside rounds and viva

Grand Viva - Questions involving surgical oncology syllabus

Viva Voce related to (a) The Research Project (b) The Daily Record log book

**Criteria of Pass :** A candidate shall have to complete all required activities, and shall have to obtain minimum 50% marks individually in theory, practical and viva-voce, to pass the final examination.

**12. Recommended Text And Reference Books :**

1. CANCER Principles & Practice of Oncology : Devita, Hellman and Rosenberg
2. Text Book of Surgical Oncology : Graeme J Poston & Others
3. Surgical Oncology : David Krag
4. Oxford Hand book of Oncology : Jim Cassidy & Others
5. The MD Anderson Surgical Oncology Handbook : Barry W Feig and C Denise Ching
6. MD Anderson Cancer Care Series on
7. Breast Cancer 2<sup>nd</sup> edition
8. Gastrointestinal Cancer
9. Lung Cancer
10. Paediatric Oncology
11. Tumors of the brain and Spine
12. Oxford textbook of Oncology : Souhami
13. Lippincott Manual of Clinical Oncology : Dennis A Casciato
14. Handbook of Cancer Chemotherapy.: Roland T Skeel and Samir N Khleif
15. Washington Manual of Oncology : Govindan
16. AJCC Cancer Staging Manual
17. Principles and Practice of Paediatric Oncology : Phillip A Pizzo
18. Prostate Cancer Principles and Practice : Kantoff
19. EBM books Published by TMH
20. Textbook of Uncommon Cancer : Derek Raghavan
21. Oxford Textbook of Surgery : Morris
22. Shackelford's Surgery of the Alimentary Tract
23. Atlas of Breast surgery : Jatoi, Kaufman and Petit
24. Surgical Oncology : Allen Merch TG
25. Surgical Anatomy : Skandalakis
26. Smith's General Urology

27. Glenn's Urologic Surgery
28. Campbell's Urology : Walsh
29. Grabb Smith's Plastic Surgery
30. Sleisenger and Forrdtran's Gastrointestinal and Liver Disease
31. Schwartz Textbook of Surgery
32. Current Surgical Diagnosis and Treatment
33. Mastery of Surgery : Nyhus, Lloyd m. and baker, Robert J.
34. Mercer's Orthopedic Surgery : Duthie, Robert B
35. Surgery of the Oesophagus : Smith, R. Abbey and Smith RE
36. Fundamentals of General Surgery : Gius, John Armes
37. Practical Management of the Acute Abdomen : Keddie, Nigel C.
38. Pye's Surgical Handicraft : Kyle, James
39. Farquharson's Text book of Operative Surgery : Rintoul,RF
40. Principles and Practice of Modern Surgery : Som, Asita lal and Dr. Roy, BC
41. A Text book of Surgical Pathology : Illingworth, Sir Charles and Bick, Bruce M.
42. Atlas of General Surgery : Dudley, Hugh & Others
43. Text Book of Surgery : Sabiston, David C.
44. Out line of Orthopedics : Adams, John Crawford
45. Pathways in Surgical Management : Michael Hobsley
46. Immunological Approaches to the Diagnosis and therapy of Breast Cancer : Ceriani, Roberto
47. Surgery of the Anus Rectum & Colon : Goligher, John
48. Essential of General Surgical Oncology : Taylor, Irving
49. Maingot's Abdominal Operations : Ellis, Harold
50. Diagnostic Bronchoscopy (A teaching Manual) : Stradling, Peter
51. Advanced Oncologic Surgery : Roh, Marks
52. Aesthetic Plastic Surgery : Romo, Thomas

53. Hamilton Bailey's Demonstrations of Physical Signs in Clinical Surgery
54. Bailey and Love's Short Practice of Surgery: Harding Rains, AJ & Mann, Charles V
55. Recent Advances in Plastic Surgery :Jackson, Ian T.
56. Recent Advances in Surgery : Taylor, I

**[B] Recommended Journals :**

1. Indian Journal of Surgical Oncology
2. Journal of Surgical Oncology
3. European Journal of Surgical Oncology (EJSO)
4. The Cancer Journal
5. CA A Cancer Journal for Clinicians
6. Indian Journal of Cancer
7. British Journal of Cancer
8. Seminars in surgical Oncology
9. The Lancet
10. International Journal of Radiation Oncology, Biology & Physics
11. Journal of Palliative Medicine
12. New England Journal of Medicine
13. Cancer Epidemiology, Biomarkers & Prevention
14. International Journal of Radiation Oncology, Biology & Physics