

REGULATIONS FOR SUBSPECIALTY POSTGRADUATE MEDICAL EDUCATION

(DM, MCh Program)

2017



NEPAL MEDICAL COUNCIL

Bansbari, Kathmandu, Nepal

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SECTION-A:



NEPAL MEDICAL COUNCIL REGULATIONS FOR SUBSPECIALTY POSTGRADUATE MEDICAL EDUCATION (DM/MCh PROGRAMS)



2017

In exercise of the powers conferred by Nepal Medical Council Act, Third Amendment-2056 B.S., Article-33, Binium-2, The Full House Meeting of Nepal Medical Council held on 21st Mangshir-2072, unanimously recommended to amend the existing ***"Regulations for Super Specialty Postgraduate Medical Education (DM/MCh: Doctorate of Medicine/Magister of Chirurgiae) Programs-2011"*** and after several discussions with the concerned subject-specialists, experts, medical educationist, representatives of Universities, Academies, Institutions, Ministry of Health and Ministry of Education of Government of Nepal, recommended to amend the existing Guidelines-2011, which was also unanimously passed from the Full House Meeting of Nepal Medical Council held on Falgun 26, 2073 and also recommended to forward these recommendations to the Ministry of Health, Government of Nepal for the amendment/approval. As per the same act, article and Binium-1 of Nepal Medical Council third amendment-2056 B.S., the Ministry of Health, Government of Nepal sanctioned/approved the recommendations forwarded by Nepal Medical Council on Jestha 19, 2074 and has made the following regulations:

1. Title:

The regulations are titled as ***"Regulations for Subspecialty Postgraduate Medical Education (DM/MCh) Programs-2017"***

2. Objective:

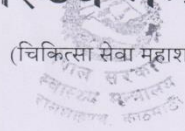
The basic objective of these regulations is to ensure quality assurance in *Subspecialty Postgraduate Medical Education* program in Nepal.

3. Commencement:

They shall come into force immediately.



नेपाल सरकार
स्वास्थ्य मन्त्रालय
(चिकित्सा सेवा महाशाखा)



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रामशाहपथ
काठमाडौं, नेपाल।

पत्र संख्या: ०५२/७४

चलानी नं.: २४४६

मिति: २०७४।२।२९

श्री नेपाल मेडिकल काउन्सिल,
बाँसवारी, काठमाडौं।

विषय: Regulations for Subspeciality Postgraduate Medical Education (DM,MCh Program) 2017
स्वीकृत गरीएको।

तहाँ काउन्सिलको च.नं. ६९६ मिति २०७४।०१।२८ को पत्र सम्बन्धमा तहाँ काउन्सिलद्वारा तर्जुमा गरी स्वीकृतिको लागि पेश
गरीएको Regulations for Subspeciality Postgraduate Medical Education (DM,MCh Program)
2017 लाई नेपाल सरकार (माननीय मन्त्रिस्तर) को मिति २०७४।२।१९ को निर्णयानुसार स्वीकृत गरीएको व्यहोरा अनुरोध छ।
स्वीकृत गरी प्रमाणित गरीएको १ (एक) प्रति यसैसाथ संलग्न गरी पठाईएको छ।

(रामकृष्ण लामिछाने)
उपसचिव

Preface

Considering the respect of a Medical Doctor in the society (from ancient to modern society) and to consolidate, enhance and strengthen this respect, a Doctor must not only be a knowledgeable personal in the field of medical sciences, but also clinically skillful, professionally dedicated, empathic and a continuous research oriented personal.

Moreover, a Subspecialist Doctor must be a sound scholar, professionally enough competent to analyze medical problems critically, lifelong learner; along with leadership qualities, good communication skills, ability to work in a team and having capacity to mobilize the team whenever necessary, community understandable and oriented, health advocate, collaborative and most importantly, socially and ethically responsible towards the patients and members of the society.

In this Revised "Regulations for Subspecialty Postgraduate Medical Education DM/MCh program -2017", emphasis is given to Competency Based Learning, Computer Assisted Learning, Learning in Skill Laboratory and Simulation Based Learning to incorporate all above attributes, to adjust ongoing National, Regional and Global trend in Medical Education and to meet the expectation of patients/people of the society. Likewise, due to the innovations, penetration and utilization of modern technology including information technology in modern medicine, the requirements and criteria which became unrealistic at present time are abolished.

Therefore, the Regulations which are set herein, we hope, will ensure attainment of satisfactory level of all above attributes, expected from the modern medical Subspecialists and will be easily salable not only within the territory of the Nation but also in the Regional and Global market.

Prof. Dharma Kanta Baskota

Chairman, Nepal Medical Council

Bansbari, Kathmandu

SECTION-B:

1. CONCEPTUAL FRAMEWORK

Nepal has made significant progress in assuring quality of medical education. This, in turn, has contributed to the enhancement of the quality of health care services in Nepal. The Nepal Medical Council (NMC) remains committed to learning and benefiting from the national, regional and international experiences and best practices.

The NMC believes that the valuable lessons learned so far should be incorporated in its guiding principles in order to further improve the quality of medical education in Nepal. In light of the continuing mismatch between health system needs and the responses of medical institutions and the rising public aspiration for better health care, it is imperative that the NMC keeps on taking appropriate measures to address the emerging challenges in the area of quality assurance in medical education in the country. There is a big mismatch in rural and urban human resource for health.

In this revision NMC has taken into consideration the revised 2012 World Federation of Medical Education (WFME) Global Standards Guideline for quality improvement, as well as recent guidelines recommended by South East Asia Public Health Education Institutes' Network (SEAPHEIN) and South East Asia Regional Association of Medical Education (SEARAME). The Second Long Term Health Plan -2017 (SLTHP-2017) of the Government of Nepal, global policy recommendations of World Health Organization (WHO) for increasing access to health workers in remote and rural areas through improved retention, Global Consensus for Social accountability in Medical Education and other innovations taking place in medical education.

Every country needs to adjust medical education to changing needs in the world but based on reality of the need of the country and the resources available in the country. WFME Guidelines are also flexible in this.

In line with the SLTHP-2017 focus on disparities in healthcare, assuring gender sensitivity and equitable community access to quality healthcare services NMC will facilitate and encourage the medical schools to fulfill these objectives of SLTHP-2017.

As education is the foundation for producing competent health workers, it is therefore important to select the “right” students i.e., those who are more likely to practice in remote and rural areas, and to train them in locations and using methods and curricula that are more likely to influence their future practice location. It is also important to support health workers' need to continue learning throughout their careers. Few of the education related recommendations of global policy documents like selection of students from rural backgrounds, health professional schools outside of major cities, clinical rotations in rural areas during studies, curricula that reflect rural health issues and continuous professional development are incorporated in this revision.

In line with this imperative, the NMC has revised accreditation document to make the underlying principles of the accreditation of undergraduate medical education as objective, coherent, explicit and transparent as possible. The remaining part of this document is devoted to that very end. The fundamental purpose of medical education is to produce high quality medical practitioners who are willing and able to meet the existing and emerging challenges of the national health care system.

In order to meet this goal all the medical colleges in Nepal should adopt the contemporary global trends and implement innovative approaches in medical education such as SPICES(*Student Centered, Problem Based, Integrated, Community Based, Electives, Systematic*), PBL (*Problem Based Learning*),CPC(*Clinical Presentation Curriculum*) etc. The DM/MCh curriculum should reflect the core principles advocated by the World Federation for Medical Education (WFME), International Institute of Medical Education (IIME), SEAPHEIN, SEARAME, General Medical Council (GMC)–UK, Association of American Medical Colleges (AAMC) and the Network of Medical Council of SEAR Countries including Nepal Medical Council. In this revision emphasis is given to utilization of skill lab, Computer assisted teaching learning and Simulation based learning (whenever practicable).

Rationale for Revision:

- Standards should function as a lever for change and reform.
- Standards should be formulated in such a way as to acknowledge national need in the educational program like equity, universal health coverage, rural urban mismatch etc.
- Standards should recognize the dynamic nature of development in the field of medical education i.e. innovations in medical education, utilization of Information Technology in medical field.
- Standards must be clearly defined, and be meaningful, appropriate, relevant, measurable, achievable.
- Standards should be formulated as per national, regional and global need and it must address the undergoing changes of the medical education in the recent world.

2. OVERVIEW OF SUBSPECIALTY POSTGRADUATE MEDICAL EDUCATION PROGRAM

2.1 General principles regarding Subspecialty Postgraduate Medical Education Program:

- ♦ The Subspecialty Postgraduate Medical Education Program should be conducted by the University/Institution/Academy recognized by the Nepal Medical Council (NMC).
- ♦ It should be competency based.
- ♦ It should encourage independent and self-directed learning.
- ♦ A modular approach to the course curriculum is essential for achieving a systemic exposure to various branches of Subspecialty.
- ♦ Teaching learning in ambulatory settings should be planned in the curriculum.
- ♦ There shall be a combination of formative and summative assessments with remedial measures during the course.
- ♦ Thesis shall be a mandatory part of the program.
- ♦ There should be 3 months "Peripheral Health Facility Posting"(Community posting) of the Subspecialty post graduate residents in their relevant specialty for exposure to the peripheral hospitals, either run by Government or Semi Government or Institutes of Nepal; however the posting should be educationally and professionally meaningful.
- ♦ There shall be publication of one original research work (thesis related or other) in national or international journal before appearing for final examination.

2.2 Goal of the Subspecialty Postgraduate Medical Education Program:

The goal of DM/MCh program is to develop human resources and personnel in the fields of respective subspecialties who shall:

- Provide the Subspecialty Medical care to the needy people.
- Teach and train undergraduate students and postgraduate residents in the subspecialty.
- Carry out research to improve the practice of the art and science of that specialty.
- Support health teams to provide care during natural or man-made calamities.

2.3 Objectives of the Subspecialty Postgraduate Medical Education Program:

❖ *General Objectives:*

At the end of the Subspecialty Postgraduate Program the candidate shall be able to:

- Acquire adequate theoretical knowledge and practical skills in the subject of study;
- Demonstrate sufficient understanding of the basic sciences relevant to the concerned Subspecialty;
- Diagnose and manage the conditions/problems in the Subspecialty concerned on the basis of clinical assessment and appropriate investigations;
- Practice the Subspecialty concerned ethically;
- Review scientific literature and undertake critical analysis; Undertake research activity in the subject concerned;
- Educate members of his/her team;
- Use the recent methods of learning including information and communication including Tele-Medicine technology;
- Recognize the importance of the national health needs in the concerned sub specialty;
- Demonstrate skills in documentation of individual case in detail as well as compile morbidity and mortality data relevant to the assigned tasks;
- Demonstrate empathy and humane approach towards patients and their families and exhibit appropriate interpersonal behavior in keeping with the norms and expectations of the society;
- Develop skills as a self-directed learner, recognize continuous educational needs, and, select and use appropriate learning resources;
- Develop skills in using appropriate education methods and techniques as applicable to the teaching of medical and other categories of health science students;
- Function as an effective leader/member of a medical team engaged in medical care, research, education and training and to learn creative skills.
- Advocate for appropriate policy changes required to improve the equitable access to quality care and protect the public health.

❖ *Specific Objectives:*

• *Service:*

At the end of the training program, the candidate should be able to:

- Discuss the past and current literatures on relevant aspects of basic, investigative and clinical field.
- Diagnose, plan and interpret investigations and manage various related ailments by standard therapeutic methods.
- Perform various diagnostic and therapeutic procedures and interventions.
- Besides acquiring thorough knowledge of internal medicine/general surgery and allied general and clinical disciplines, also understand the specialty to ensure appropriate and timely referrals.
- Acquire adequate knowledge of patient safety.
- Deliver preventive and rehabilitative care.

- **Research:**

At the end of the training program, the resident should be able to plan, conduct/carry out and derive conclusions/outcomes of the conducted research as well as guide research works in their Subspecialty.

- **Education:**

At the end of the course, the candidate should be able to provide basic as well as advanced educational training in the field of study.

2.4 Statement of competencies:

Keeping in view of the general and specific objectives of Subspecialty Postgraduate Medical Education Program, each University/Institution/Academy which is involved in the program shall define specific competencies together with learning objectives to be acquired by the Subspecialty Postgraduate resident and should be spelt out in clear terms in the curriculum.

The statement of competencies shall be brought to the notice of Subspecialty Postgraduate residents at the beginning of the program through orientation workshops so that they are aware of achieving the competencies expected of them in a given time period.

2.5 Components of Subspecialty Postgraduate Curriculum:

The major component of Subspecialty Postgraduate curriculum shall be:

- Theoretical knowledge (applied basic sciences & clinical sciences)
- Practical and clinical skills
- Thesis/medical research/medical writing
- Knowledge in research methodology/biostatistics
- Communication skills, professional attitudes, interprofessional relationships, behavioral studies including ethics and human values.
- Information technology including medical informatics
- Basic understanding of the pharmaco-economics and health economics

2.6 Nomenclature of Subspecialty Postgraduate Medical Degrees:

The award of Subspecialty Postgraduate degrees shall include ***Doctorate of Medicine (DM)*** and ***Magister of Chirurgiae (MCh)*** in the related Subspecialty of medical sciences. The awarded degrees by different Universities/Institutions/Academy of Nepal, throughout the country shall remain the same. Nepal Medical Council has recognized the following degrees of subspecialties till date:

A. Medical Subspecialties(*Doctorate of Medicine, DM*):

1. Cardiology
2. Nephrology
3. Medical Gastroenterology
4. Hepatology
5. Neurology
6. Medical Oncology
7. Pulmonology, Critical Care and Sleep Medicine
8. Endocrinology
9. Critical Care Medicine
10. Emergency Medicine
11. Neonatology

B. Surgical Subspecialties (*Magister of Chirurgiae, MCh*):

1. Cardiac Surgery
2. Thoracic and Vascular Surgery
3. Cardiothoracic and Vascular Surgery(CTVS)
4. Surgical Gastroenterology (GI- Surgery)
5. Neuro Surgery
6. Plastic Surgery
7. Urology (Urogenital Surgery)

Nepal Medical Council keeps the right to add further Subspecialty degrees in above mentioned list, as per request from the Universities/Institutions/Academy of Nepal, to start any new Subspecialty programs as per need of the country.

3. MINIMUM REQUIREMENT FOR SUBSPECIALTY POSTGRADUATE INSTITUTIONS

3.1 General requirements for a Subspecialty Postgraduate Institution:

- ♦ Prior to starting each Subspecialty Postgraduate Medical Education Program, an institute should obtain the accreditation/approval from Nepal Medical Council.
- ♦ An institution conducting both undergraduate and postgraduate program shall satisfy the minimum requirements for undergraduate (MBBS) and Post Graduate (MD/MS) medical education program as well as fulfill additional requirements necessary for Subspecialty program as determined by the NMC. ***But for that public Academy, Specialty Center sand Institutions which are established by the Act of Parliament of Nepal, for the promotion of Specialty services and Post graduate medical education in the country, conduction of undergraduate program will not be mandatory.***
- ♦ University/Institution/Academy should be running the post graduate program in related discipline and **third batch** of MD/MS residents should have passed out before the commencement of DM/MCh program in that specialty.
- ♦ The institutions must have faculties of technical/medical/health science sub specialists in required numbers as per the NMC guidelines.
- ♦ The institutions must fulfill all requirements in terms of physical infrastructure, (seminar room with audio-visual facility, library with required number of books, journals, periodicals, internet facility with on-line journals, duty doctor's room in the hospital for duty, and museums specific to the concerned Subspecialty), academic and administrative manpower, equipment and materials required for the education program.
- ♦ The institution must have different protocols for the proper patient care, residents' training, patients safety and treatment providers safety, whenever or wherever applicable:
 - Admission protocol
 - Discharge / follow up protocol
 - Nutrition/Dietary protocol
 - Emergency (patients attending emergency) protocol
 - Infection control protocol
 - Protocols for management of unconscious patients
 - Antibiotic protocol(rational use)
 - Protocol for patients under CPAP & Ventilator
 - Protocol for medico legal cases
 - Protocol for common Subspecialty diseases

- ♦ The maximum number of residents that can be enrolled in a Subspecialty Postgraduate program in any recognized postgraduate institutions shall be determined by the facilities available in terms of infrastructure, faculties and other criteria as per the NMC norms.
- ♦ To increase the existing admission capacity of the Subspecialty Postgraduate residents, an institution must take prior approval from the Nepal Medical Council.
- ♦ If some University/Academy/Institute proposes to conduct Subspecialty program directly after the MBBS, they can conduct the program; provided all the criteria, curriculum, evaluation and duration of both postgraduate degree program (MD/MS) and Subspecialty Postgraduate program (DM/MCh) are fulfilled.

3.2 Minimum requirements for a Subspecialty Postgraduate Institution:

- ♦ An institution conducting both undergraduate and postgraduate program shall satisfy the minimum requirements for undergraduate (MBBS and postgraduate (MD/MS) medical education program as well as fulfill additional requirements necessary for Subspecialty Postgraduate program as determined by the NMC. ***But for those public Academy, Specialty Centers and Institutes which are established by the Act of Parliament of Nepal, for the promotion of Specialty services and Post graduate medical education in the country, conduction of undergraduate program will not be mandatory.***
- ♦ An institution conducting Subspecialty postgraduate program must have multidisciplinary, tertiary care referral hospital which must have an individual Department/Division/Unit along with all supportive/ancillary departments. If the tertiary referral hospital is a single specialty hospital, the hospital must have provision of back up of multidisciplinary hospital, which should be closed to the specialty hospital.
- ♦ An institution imparting only Subspecialty Postgraduate program shall:
 - a. Provide facilities consistent with the all-round academic program including exposure in ***applied basic medical sciences and other related subjects/areas*** as prescribed by the NMC.
 - b. Must have faculties of related subspecialties and have own or appropriate arrangement with other institutions for imparting teaching/learning in basic sciences in required number as per the NMC guidelines.
 - c. Must avail facilities of ancillary departments such as Emergency, ICU, Post-operative ward, Radiological and imaging, pathology, advanced diagnostic facilities, Blood Bank etc. related to the concerned Subspecialty subjects as per the requirement of the curriculum.
- ♦ The Postgraduate institution should possess basic infrastructure required for resident's teaching learning. These include seminar room with audio-visual

facility, library with required number of books, journals, periodicals, internet facility with on-line journals, duty doctor's room in the hospital for duty, and departmental laboratories and museums specific to the concerned Subspecialty.

- ♦ For the deficient infrastructure and equipment facilities for Subspecialty requirement, an institution can share with another institution and or facility provided that there is a written MoU with the provider (inside the country or outside). However, within **three years** of starting the program the institutions should have their own facilities.

3.3 Subspecialty Postgraduate Faculty/Teacher requirement:

- ♦ A clinical department or its unit for Subspecialty Postgraduate program shall have a minimum of 3 (three) fulltime faculty members belonging to the related subspecialty subject, of whom one shall be a Professor, one Associate Professor/Reader, and one Assistant Professor/Lecturer, possessing the qualification and experience as prescribed by the Nepal Medical Council.
- ♦ To be recognized as a Subspecialty Postgraduate program faculty, one must have a minimum of **Subspecialty** Postgraduate qualification in the Subspecialty concerned (DM/MCh/) and be a Professor/Associate Professor.

OR,

- ♦ To be recognized as a Subspecialty Postgraduate program faculty, one must have a minimum of **ten years** of teaching experience in Postgraduate program concerned after the Postgraduate qualification (MD/MS) and be a Professor.

OR,

- ♦ To be recognized as a Subspecialty Postgraduate program faculty, one must have a minimum of **five years** of teaching experience in the Postgraduate program concerned after being the Professor.
- ♦ After starting of DM/MCh program in any institution, faculty enrolment in that particular Unit/Division/Department of the institution, must be with the qualification of DM/MCh, so that after **Maximum of seven years** of running the program, each institution shall have faculties with DM/MCh qualification if they do not have at the beginning.
- ♦ Only Professor will be eligible to become a preceptor (guide) for Subspecialty Postgraduate resident, if criteria two are not fulfilled. If criteria two are fulfilled, **Professor as well as Associate Professor will be eligible to become a preceptor. Priority to become preceptor must be given to those faculties who have met the criteria two i.e. with DM/MCh qualification.**

3.4 Physical requirement of Subspecialty Postgraduate Institutions:

1. The Postgraduate institutions must fulfill all requirements in terms of physical infrastructure, clinical and administrative facilities required for the education

program.

2. The institution should provide residential facility and avail related extra-curricular/recreational facilities for all round development of the resident.
3. The Postgraduate Medical Institutions should comprise of both academic and administrative infrastructure of its own required for education and administrative purpose.

3.4.1 The academic section should comprise of the following:

- a) Lecture/Seminar rooms
- b) Discussion/ Postgraduate resident room
- c) Examination hall: *desirable*
- d) Library/Departmental Library/Computer assisted learning facility
- e) Clinical Laboratory
- f) Research Laboratory
- g) Out-patient Department
- h) In-patient Department
- i) Medical Education Department
- j) Skill laboratory as and where required

3.4.1 The administrative section should comprise of the following:

- a) General administration
- b) Personnel administration
- c) Finance
- d) Medical record section
- e) Store/Procurement
- f) Meeting Hall
- g) Planning & evaluation
- h) Maintenance
- i) Social welfare & counseling

3.4.2 Out-Patient Departments:

- ♦ Every out-patient department preferably should have a separate teaching room with the facilities. Such departments should preferably avail the facilities for internet search and related books for reference in the outpatient departments.
- ♦ There should be special clinics relevant to the Subspecialty concerned, if the faculty is offering general care also.

3.4.3 Bed strength in Clinical Departments:

- ♦ A Department to be recognized for Subspecialty Postgraduate academic program shall have not less than **30 dedicated beds** each for the concerned Subspecialty.
- ♦ A Unit/division to be recognized for Subspecialty Postgraduate academic program shall have not less than **20 beds** each for the concerned Subspecialty.

- ◆ Departments having large number of day care patients (e.g. Radiation Oncology, Medical Oncology), need of sharing beds (Plastic surgery, Endocrinology), perform large number of minimally invasive major day care surgeries and for the departments which have to manage maximum no of critically ill patients, may get relaxation of dedicated beds in **individual department** basis.
- ◆ Department having 30 dedicated beds can enroll maximum two Subspecialty residents per academic year where as unit having 20 dedicated beds can enroll only one Subspecialty resident. But for the departments getting relaxation of dedicated beds as per clause No-3 criteria and have 20 dedicated beds, these departments can enroll only one Subspecialty resident per academic year. They can enroll another one Subspecialty resident; if the department will increase another 10 dedicated beds on top of the existing 20 dedicated beds.
- ◆ Institutes starting Subspecialty program should have individual departments as early as possible.
- ◆ For the requirements mentioned above under Clause 1 and 2, only the number of beds of the main Postgraduate institution running the program will be counted for Subspecialty Postgraduate program. ***Other hospital(s) can be used for clinical placement and exposure of the Postgraduate residents, which however shall not be counted by the NMC.***
- ◆ If there are any deficits in any of the areas, it can be compensated by giving elective posting, which in no way should be more than 6 (six) months, in any Institute (inside or outside the country) having formal MOU, where hands on training should be available and the log book of the posting should be maintained (NB: the duration of elective posting with no hands on training should not be more than three months, in the whole of three years).
- ◆ If "Peripheral Health Facility Posting"(Community posting) is not mentioned in rotation of any Subspecialty program, the time period of Peripheral Health Facility Posting (***three months***) is deducted either from the core posting or the elective posting or from both of that particular Subspecialty program.

3.4.4 Academic expertise to be developed during three years DM/MCh program:

- ◆ At the end of the three years DM/MCh academic program, the candidate should be academically sound in the related Subspecialty and should also acquire thorough knowledge/practical skills of internal medicine/general surgery/related applied basic science disciplines; advise appropriate investigations for diagnosis; discuss the past and current literatures on relevant aspects of basic, investigative, clinical field to confirm the diagnosis; able to analyze them critically and plan to manage the clinical conditions/problems on the basis of clinical assessment and related investigations by standard therapeutic methods/interventions; deliver preventive and rehabilitative care; able to plan, conduct/carry out and derive conclusions/outcomes of the

conducted research as well as guide research works in the Subspecialty and be able to provide basic as well as advanced educational training in the field of Subspecialty. Likewise, the candidate should be able to establish himself/herself as a competent Scholar, Professional, Communicator, Collaborator, Leader and Health Advocate.

3.4.5 Specific requirements of individual Subspecialty Postgraduate programs:

1) DM, Cardiology:

- 1) Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a) Fundamental Department/Division/Unit: Cardiology
 - b) Supportive Departments/Ancillary Departments: well-equipped ICU & CCU with bed side monitor Cathlab, non-invasive cardiac lab, cardiac rehabilitation and preventive cardiology section, along with Pediatric Cardiology, Electrophysiology and Nuclear Cardiology. It must have all other departments required for MBBS and Postgraduate MD/MS academic program.
 - c) Departmental protocols, specifying treatment guidelines.
- 2) Dedicated beds: 30 beds
- 3) Equipment(minimum):

▪ Well-equipped Cath Lab (with facility of Angio, PTCA, Valvulopalsty, Pericardiocentesis, TPI, PPI, ICDs facility)	1
▪ Echocardiography (TTE, TEE, Stress echo)	2
▪ Holter-	5
▪ TMT -	2
▪ ABPM-	5
▪ EKG Machine:	4
▪ Temporary Pace maker-	2
▪ Cardiac Defibrillator-2 , SPO2 machine-4, Ventilators-2, ABG machine-1	
▪ Portable echo machine-1	
- 4) Patients' turnover:

▪ Cardiac emergency attendance: Minimum 1500/year
▪ Cardiac OPD load: Minimum 7500/year (new and old)
▪ Cardiac In patient load: Minimum 70% occupancy in dedicated beds.
- 5) Academic and clinical expertise to be developed during three years training:
 - a) Academic: As mentioned above in academic expertise.
 - b) Clinical: At the end of the 3-years training program, the resident should be able to perform the following:
 - I). Number of cardiac procedures:

▪ EKG Interpretations:	500
▪ Number of Echocardiography done (TTE):	300
▪ Number of Echocardiography done (TEE):	25
▪ Number of TMT procedures:	50
▪ Number of Holter analysis:	50

- Number of Temporary Pacemaker done: 15
 - Number of Permanent pacemaker/ICDs assisted/ done: 5
 - Pericardiocentesis: 10
 - Right heart Catheterization: 5
- II). Number of cardiac cath procedures including interventions(Assisted or done):
- Coronary angiography: 100
 - Devices closure(assisted) 5
 - Balloon angioplasty: 5
 - PTCA(coronary angioplasty): 25
 - Valvuloplasty independent or first assist: 5
 - Rt.Heart catheterization: 50
 - Electrophysiology study independent or assisted: 10
 - RF ablations (assisted): 5

(The head of Department of Cardiology should certify the fulfillment of the requirements).

- 6) Training schedule/Postings/Rotations: During entire training program the resident should be posted in each of the following service areas:

- Ward 10 months
- Cath Lab 6 months
- CCU 6 months
- Noninvasive cardiac lab (Echo/ TMT/Holter/ABPM etc) 6 months
- Electrophysiology/Pacemaker 2 months
- Cardiothoracic Surgery 1 month
- Pediatric Cardiology 3months
- Nuclear Cardiology 1 month
- Elective 1 month

(The time duration of rotation among each service area should be such that they can acquire needed skills as outlined in the competency list of clause 5)

- 7) Entry criteria:

- MD Internal Medicine
- MD Cardiology
- MD Pediatrics

2) DM, Neonatology:

1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:

- a) Fundamental Department/Division/Unit:

I)An Obstetric unit as follows:

- The obstetric unit should have infrastructure, facilities and faculty as per NMC requirements for a Postgraduate course
- Minimum of 2500 deliveries annually
- Facilities for management of high risk pregnancy and deliveries
- Antenatal intrapartum fetal surveillance
- Fetal Doppler and sonography

II) Neonatal Unit as follows:

- Normal newborn care unit

- Neonatal resuscitation facilities with:
 - Radiant warmer in delivery room and operation theatre
 - Resuscitation equipment
- ✓ Neonatal transport facility:
 - Transport team [doctor and nurse]
 - Transport vehicle
 - Transport - incubator with monitoring equipment
 - Ventilation during transport desirable

III) Neonatal Intensive care unit as follows:

- Admission to NICU, Neonatal ward and intermediate care ward
- minimum of 500 per year
- Bed occupancy (Level I to IV care) minimum 50 %
- Total beds: 20
 - ✓ Intensive Care beds – Level-IV 3
 - ✓ Intermediate care beds – level-III 4
 - ✓ Level-II 5
 - ✓ Stable beds–level-I 8

b) Supportive Departments/Ancillary Departments: Blood bank (component therapy), Radiology, Laboratory, Ophthalmology – ROP screening, ENT – OAE screening/ BERA (desirable), Cardiology – ECHO/Cath lab/, Non-invasive procedures (desirable), orthopedics, psychology, physiotherapy, Cardio thoracic-cardiac surgery [desirable], Biomedical department, Pharmacy including parenteral nutrition, Social worker, Pediatric Surgery – neonatal surgery facility or referral policy and agreement with such centre, PMR (physical medicine and rehabilitation) department- stimulation therapy-desirable.

c). Departmental protocols: specifying treatment guidelines:

Following Protocols are mandatory in NICU:

- Admission policy
- Nutrition policy
- Infection control policy
- Protocols for management of common neonatal problem
- Discharge / follow up policy
- Antibiotic policy
- Protocol for CPAP & Ventilator

2). Dedicated beds: NICU= 20 (as per clause 1- III)

3). Equipments (minimum):

Basic equipments:

- Radiant warmer / Incubator 10
- Infusion pump/ Syringe infusion pump 15
- Multisystem monitor 8 (At least one with IBP)
- Pulse oximeter 4
- Ventilator 4
- Bubble CPAP 2
- HFV 1
- Phototherapy unit 5
- Portable X-ray 1

- Portable Ultrasound¹(with cranial and cardiac transducer)
- Transcutaneous/ microbilirubinometer (desirable)
- Cold light source 1
- ECMO (desirable)
- NO (desirable)
- Oxygen analyzer 1
- Fluxmeter 1
- Electronic weighing machine 2 (preferably digital)
- Glucometer 4
- Human milk banking (desirable)
- Vein viewer 1
- Oxygen concentrator 1-2
- Infantometer 2
- ABG Machine 1

Physical facilities in NICU:

- Mother's room / feeding room
- Scrub area
- Counseling area
- Isolation facility
- Resuscitation area in labour room / delivery room
- Seminar room
- Office space
- Library
- Side laboratory facilities (desirable)
 - Microcentrifuge
 - Microscope
 - Micro ESR
 - Blood counts - facility at the institute lab can be acceptable
 - PCV - facility at the institute lab can be acceptable
 - Bilirubin - facility at the institute lab can be acceptable
 - CRP- facility at the institute lab can be acceptable
 - ABG- facility at the institute lab can be acceptable
 - Hematology - facility at the main institute lab can be acceptable
 - Biochemistry- facility at the main institute lab can be acceptable
 - Microbiology - facility at the main institute lab can be acceptable
- **Facility of:**
 - Portable Ultrasound, CT scan and or MRI
 - ECHO cardiography [portable]
 - EEG, ENMG (Electroneuromyography), BERA (Brain stem evoked response audiometry) , VEP(Visual evoked Potential)
 - Pediatric blood bag
 - Genetic and metabolic workshop [desirable]
 - High Risk Neonatal Follow up/well baby clinic
 - Multi-disciplinaryfollowup:
 - Neonatologist / Pediatrics
 - Physiotherapy

- Occupational therapy
- Orthopedics
- Psychology
- ENT
- Ophthalmology
- Lactation counselor
- Social worker

4). Patients' turnover:

- Minimum of 2500 deliveries per year
- Admission to NICU, Neonatal ward and intermediate care ward
 - minimum of 500 per year

5). Academic and clinical expertise to be developed during three years training:

- a) Academic: As mentioned above.
- b) Clinical: As per curriculum.

6). Training schedule/ Postings/ Rotations: During entire training program, the resident should be posted as follows:

- Obstetrics unit,
- Neonatal unit,
- NICU,
- Pediatric ward

7). Entry criteria:

- MD Pediatrics

3) DM, Nephrology:

1). Institutional requirements: A multidisciplinary, tertiary level referral hospital which must have:

a) Fundamental Department/Division/Unit: Nephrology along with

- ♦ Hemodialysis service
- ♦ Peritoneal dialysis services (CAPD)
- ♦ Renal transplant service with post-transplant care facilities
- ♦ Renal lab with renal pathologist and immuno florescence service available

b) Supportive Departments/Ancillary Departments: It must have Urology department and all other departments required for MBBS and Postgraduate MD/MS academic program.

c). Departmental protocols, specifying treatment guidelines.

2). Dedicated beds: 30 (including nephrology, transplant and critical care).

3). Equipments/Facilities (minimum):

- Minimum number of functioning dialysis machines must be 4 with installed RO facility with 24 hrs dialysis service.
- Performing at least 15 kidney transplant/year
- Facilities of Peritoneal dialysis service

- Renal Pathological services including Immunology & immuno florescence service
- 4) Patients' turnover:
- Nephrology OPD load: minimum 7500(New and Old patients)/year)
 - Nephrology In patient load: minimum 70% occupancy in dedicated beds.
- 5). Academic and clinical expertise to be developed during three years training:
- a) Academic: As mentioned above in academic expertise.
 - b) Clinical: At the end of the course, the resident will be able to demonstrate his / her proficiency in the following skills:
 - Renal ultrasonography
 - Renal biopsy - native and graft
 - Insertion of peritoneal dialysis catheter
 - Insertion of hemodialysis catheters: femoral, internal jugular
 - Hemodialysis
 - Peritoneal dialysis
 - Plasmapheresis
 - Renal biopsies
 - Hemodialysis
 - Plasmapheresis
 - Renal transplant surgery: (observed)
- 6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:
- | | |
|------------------------------------------------------------------------------------|-----------|
| (1) Indoor services/Out patient Clinics/Consultations | 13 months |
| (2) Dialysis | 6 months |
| (3) Interventional Nephrology | 3 months |
| (4) Renal transplantation | 6 months |
| (5) Critical Care Nephrology + CRRT | 3 months |
| (6) Nephro-radiology (joint meeting, seminar, case discussion etc equivalent to): | 1 month |
| (7) Renal histopathology (joint meeting, seminar, case discussion--equivalent to): | 1 month |
| (8) Urology | 1 month |
| (9) Elective | 2 months |
- (NB. The posting should be arranged such that the residents acquire the mentioned competency skills as outlined above).***
- 7). Entry criteria:
- MD Internal Medicine
 - MD Nephrology

4. DM, Critical Care Medicine:

1). Institutional requirements: A multidisciplinary, tertiary level referral hospital which must have:

- a) Fundamental Department/Division/Unit: Critical Care Medicine
- b) Supportive Departments/Ancillary Departments: as mentioned below
- c) Departmental protocols: specifying treatment guidelines.

2). Dedicated beds:

- To train **one** DM CCM Resident, the hospital **must have at least 8 (Eight)** Dedicated General/Mixed/Multidisciplinary ICU Beds.
- To train **two** DM CCM Resident, the hospital **must have at least 12 (Twelve)** Dedicated General/Mixed/Multidisciplinary ICU Beds.

SUPPORTIVE ICU Beds:

- In case the institution has many Level III ICUs or Specialty ICUs, those Level III-ICU beds will qualify as **Supportive ICU** Beds where the DM CCM residents are rotated for **at least one month** during their training period. (But has to be within the same institution)
- The DM CCM Program can take **One Additional DM CCM Resident per 16 (Sixteen)** Additional Supportive Level III ICU Beds.
- Since ICU is a training unit for residents who are in training in many subspecialties and these patients includes multidisciplinary management with separate role of each specialty, **all** these ICU beds could qualify for training of more than one Subspecialty programs and will be counted. But to be qualified for a supportive ICU Bed also, this **must** be a Level III ICU with minimum 8 staffed and equipped beds as mentioned in Infrastructure requirements above. Examples include (not limited to) following:
 - Neuro ICU for all DM Neurology, MCh Neurosurgery and DM CCM;
 - Cardiac Thoracic Vascular Surgical ICU for both MCh Cardiac Surgery & DM CCM;
 - Pediatric ICU for DM Pediatric Critical Care and DM CCM;
 - Neonatal ICU for DM Neonatology & DM CCM;
- However, Level I and Level II ICU beds or High Dependency Units or High Care Units or Step down Units though are required for DM CCM Program, they **will not** be counted for Dedicated/Supportive ICU Beds for DM CCM program.

3). Equipments/Facilities (minimum):

- a) Should have 24 hours access to arterial blood gas analysis inside the ICU
- b) Should have 24-hour access to Ultrasound Machine with facilities for USG Guided Vascular
- c) Catheterization, FAST Scan, Cardiac USG inside the ICU.
- d) Should have on site 24-hour access to Video Bronchoscopy for diagnostic and therapeutic procedures inside the ICU.
- e) Should have 24 hours access to pathology, pharmacy, operating theatres and imaging services Should have supportive 24 hour Gastroenterology service in the hospital who can provide upper and lower GI endoscopy services in acute setting
- f) Should have supportive 24 hour Neurosurgical service in the hospital who can immediately provide Neurosurgical Intervention and ICP monitoring devices
- g) Suitable infection control and isolation procedures and facilities

4). Patients' turnover:

- Should manage at least 250 critically ill patients every year with sufficient clinical workload and case-mix to maintain clinical expertise.
- Should be capable of providing comprehensive critical care including complex multi-system life support for an indefinite period (ionotropes, vasopressors, pacemaker, mechanical ventilation, renal replacement therapy)

5). Academic and clinical expertise to be developed during three years training:

- a) Academic: As mentioned above in academic expertise.
- b) Clinical: As mentioned above

6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:

DM CCM Residents **must** be posted in Level III Mixed/General/Multidisciplinary Dedicated Intensive Care Unit for at least **six** months, every year during the three-year training period. (Total 18 months in three years).

1. DM CCM Residents **must** have at least Six Months posting in Subspecialty ICU or Elective Posting in another ICU outside the institution; E.g. (not limited to) are Cardiac ICU, Cardiothoracic & Vascular Surgical ICU, Neuro ICU, Transplant ICU. The duration of each rotation can be determined by the institution but has to be a minimum of **one** month.
2. DM CCM Residents **must** be posted in other departments, namely, Radiology, Echocardiography, Bronchoscopy, Pulmonary Function Test, ECLS etc. for additional clinical knowledge/skills training (But **not** more than three months/equivalents in total)
3. DM CCM Residents **could be** posted (But is **not** Mandatory) in other departments for additional clinical training relevant to Critical Care Medicine, as felt need by the DM CCM preceptor for **not more than six** months which could be from Anesthesiology, Pulmonology, Emergency and Trauma, Nephrology(Dialysis). The duration of each rotation has to be minimum of **one** month.

7). Entry criteria: For entry into DM CCM program, the candidate should possess either of following qualifications:

- MD Anesthesiology
- MD Internal Medicine
- MD General Practice / Emergency Medicine

5. DM, Medical Gastroenterology:

- 1) Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a) Fundamental Department/Division/Unit: Medical Gastroenterology
 - b) Supportive Departments/Ancillary Departments: It must have all other departments required for MBBS and Postgraduate MD/MS academic

- program.
- c) Departmental protocols, specifying treatment guidelines
- 2). Dedicated beds: 30
- 3). Equipments (minimum): The Department should have all the following necessary equipments:
- A. Basic equipments:
- UGU endoscopy, colonoscopy
 - Esophageal Varietal Ligation (EVIL)
 - Glue injection
 - Polypectomy
 - ERCP
 - USG abdomen
 - Argon plasma coagulation
- B. Advanced equipments:
- Enteroscopy
 - Endoscopic ultrasound
 - Capsule endoscopy
 - Oesophageal manometry and Ph monitoring
- 4).Patients' turnover:
- Minimum Gastro OPD load 12000/year (40patients/day)
 - Minimum Gastro Inpatient load: 70% occupancy in dedicated beds
- 5). Academic and clinical expertise to be developed during three years training:
- Academic: As mentioned above in academic expertise.
 - Clinical: At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment and related investigations, by standard therapeutic methods/ interventions and also be able to explain the possible outcomes/prognosis of the same.
- 6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:
- | | |
|---------------------------------------------------------------------------------------|-----------|
| (1) Indoor services/Out patient Clinics/Consultations: | 13 months |
| (2) Endoscopy | 9 months |
| (3) Interventional gastroenterology | 6 months |
| (4)Critical Care gastroenterology | 3 months |
| (5) GI-Radiology (joint meeting, seminar, case discussion, USG abdomen etc equiv to): | 1 month |
| (6) GI-histopathology (joint meeting, seminar, case discussion etc equivalent to) | :1 month |
| (7) GI-surgery | 1 month |
| (8) Elective | 2 months |
- 7). Entry criteria:
- MD Internal Medicine
 - MD Gastroenterology

6. DM, Medical Oncology:

- 1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a) Fundamental Department/Division/Unit: Medical oncology
 - b) Supportive Departments/Ancillary Departments:
 - : Department of Radiology
 - : Department of Radiation oncology
 - : Department of Nuclear Medicine
 - : Department of Pathology with Oncopathology services
 - : All other supportive departments to conduct Postgraduate MD/MS programs
 - c). Departmental protocols, specifying treatment guidelines.
- 2). Dedicated beds: 20 beds
- 3). Equipments (minimum):
 - : Radiology (with conventional radiology, CT, MRI facility)
 - : Nuclear Medicine; preferably Radioisotopes, PET scan
 - : Facilities of Oncopathology
 - : Blood bank with provision of irradiated blood.
- 4). Patients' turnover:
 - : Management of minimum 300 new patients/year
- 5). Academic and clinical expertise to be developed during three years training:
 - a) Academic: As mentioned above in academic expertise.
 - b) Clinical:

At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment and related investigations, by standard therapeutic methods/ interventions and also be able to explain the possible outcomes/prognosis of the same.
- 6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:

• Medical oncology:	23 months
• Radiation oncology:	2 months
• Radiology (Dept. with conventional radiology, CT, MRI facility):	2 months
• Onco-pathology:	2 months
: Immuno-histochemistry,	
: Immune-cytochemistry,	
: Floctometry,	
: Tumour markers	
• Haemato-oncology, Bone marrow transplantation:	2 months
• Paediatric oncology:	1 month
• Palliative care:	1 month
• Blood Bank with provision of irradiated blood:	1 month
• Gen Surgery (pref. Surgical oncology):	15 days
• Nuclear medicine(preferably Radioisotopes, PET scan):	15 days
• Elective postings:	1 month

7). Entry criteria:

- MD Internal Medicine/MD Medical oncology
- MD Radiation oncology
- MD Pediatrics

7. DM, Pulmonology, Critical Care & Sleep Medicine:

1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:

- a) Fundamental Department/Division/Unit: Pulmonology with Critical Care & Sleep Medicine
- b) Supportive Departments/Ancillary Departments: It must have all departments required for MBBS and Postgraduate MD/MS academic program.
- c) Departmental protocols, specifying treatment guidelines.

2). Dedicated beds: 30 beds

3). Equipments (minimum):

- Fiber optic Bronchoendoscope, Thoracoscope,
- Facilities of Specialized investigation related to Interventional Pulmonology, Lung and Pleural biopsies, Thoracocentesis and thoracostomy.
- Facilities of Comprehensive Pulmonary Function Studies including Spirometry, Diffusion-studies, Airway resistance and compliance, Body plethysmography and Blood gas analysis.
- Facilities of Allergy and broncho provocation tests.
- Facilities of Radiographic and scanning for intervention radiographic procedures of thorax.
- Facilities of specialized investigations of allied nature such as cardiac catheterization, other organ endoscopies, body scans and angiographic procedures.
- Facilities of Histological and cytological specimens of lung diseases
- Facilities of other medical investigations related to pulmonary ,critical care and Sleep medicine(polysomnography)
- Facilities of Chest Imaging: x-ray chest, ultrasound, CT, Bronchography
 - Facilities of Cardiopulmonary exercise testing
 - Facilities of Broncho provocation tests
 - Facilities of Pulmonary angiography
 - Facilities of Pulmonary rehabilitation.

4). Patients' turnover:

- Pulmonary OPD load: Minimum 4500/year
- Pulmonary Inpatient load: Minimum 70% occupancy in dedicated beds

5). Academic and clinical expertise to be developed during three years training:

- a) Academic: As mentioned above in academic expertise.

b) Clinical: At the end of the training program, the resident should be able to perform/manage:

- Aspiration of pleural and pericardial effusion
- Tube thoracostomy
- Critical care USG
- Respiratory muscle exercising
- Medical Emergency management:
 - i. Cardiopulmonary resuscitation
 - ii. Management of acute emergencies:
 - Acute respiratory failure
 - Acute asthma
 - Pneumothorax
 - Haemoptysis
 - Pulmonary thromboembolism
 - Multiple organ failure
- Mechanical Ventilation: On hand training in providing both short and long term mechanical ventilator support
 - i. Invasive:
 - Endotracheal intubation
 - Ventilatory settings
 - Care and maintenance
 - Monitoring
 - Weaning
 - ii. Non-invasive: ventilation including domiciliary respiratory support.

Likewise at the end of three years academic program, candidate must be able to perform /observe/interpretive the following procedures in following numbers:

- | | |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| 1. Fibroptic bronchoscopy (including bronchial wash, biopsy, brush & transbronchial needle aspiration-TBNA) | 50 |
| 2. Bronchoscopy in ICU | 10 |
| 3. Pleural biopsy | 15 |
| 4. Medical thoracoscopy | 5 |
| 5. Pulmonary function test | |
| a. Spirometry | 25 |
| b. Diffusion study | 5 |
| c. Body plethysmography | 4 |
| 6. Sleep study | 15 |
| 7. Radiology | |
| a. HRCT chest | 30 |
| b. CT chest | 50 |
| c. CT pulmonary angiography | 10 |
| d. MRI chest | 5 |
| 8. Critical care | |
| a. Mechanical ventilation- Invasive & non invasive | 25 |
| b. Total parenteral nutrition | 4 |
| c. CVP & arterial line | 6/4 |
| d. Critical care ultrasound | 20 |
| 9. Observations | |
| a. Tracheostomy: (Open/Mini/Percutaneous): | 6 |
| b. EBUS | 5 |

- | | |
|-----------------------|---|
| c. Lobectomy | 2 |
| d. Decortication | 2 |
| e. Rigid bronchoscopy | 5 |

6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:

SN	Postings	1 st year	2 nd year	3 rd year	Total
1.	Pulmonary Services: Respi ward, OPD, Consultation, emergency attendance:	7 months		3 months	10 months
2.	Sleep Laboratory			3 months	3 months
3.	Respiratory Laboratory	1 month	2 months		3 months
4.	Bronchoscopy Services	2 months		2 months	4 months
5.	Critical Care & ICU	2 months		4 months	6 months
6.	Thoracic(invasive) services		1 month		1 month
7.	Cardiology Services		1 month		1 month
8.	Pediatric intensive care services		1 month		1 month
9.	Radiology(joint meeting, seminar, case discussion etc equivalent to):		1 month		1 month
10.	Elective		3 months		3 month
11.	Peripheral Health Facility Posting		3 months		3 month
12.	Total duration of training	12 months	12 months	12 months	36 months

7). Entry criteria:

- MD Internal Medicine
- MD Pulmonology

8. DM, Endocrinology:

1). Institutional requirements: A multidisciplinary, tertiary level, referral hospital which must have:

- a) Fundamental Department/Division/Unit: Endocrinology
- b) Supportive Departments/Ancillary Departments: It must have all departments required for MBBS and related Postgraduate MD/MS academic program.
- c) Departmental protocols, specifying treatment guidelines.

2). Dedicated beds: 20 beds

3). Equipments (minimum):

- Insulin pump
- Thyroid scan facility
- Well-equipped Biochemistry lab where following tests could be performed:
 - OGTT, ONDST, LDDST, HDDST, CGMS, BMD
 - Synacthen stimulation test
 - HCG stimulation test
 - GH suppression test
 - GH stimulation test
 - Dynamic prolactin test
 - Clomiphene stimulation test
 - 72 Hrs. fasting test for hypoglycaemic evaluation

- 4). Patients' turnover:
 - Endocrine emergency: Minimum 75/month
 - Endocrine OPD load: Minimum 10,000/year
 - Endocrine In patient load: Minimum 70% occupancy in dedicated beds.
- 5). Academic and clinical expertise to be developed during three years training:
 - a) Academic: As mentioned above in academic expertise
 - b) Clinical: At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment and related investigations, by standard therapeutic methods/ interventions and also be able to explain the possible outcomes/prognosis of the same.
- 6). Training schedule/ Postings/ Rotations:

a) Endocrinology (OPD/ Indoor/consultation services, special clinic)	24 months
b) Reproductive endocrinology	4 months
c) Community posting	3 months
d) Elective posting	3 months
e) Nuclear medicine	½ month
f) Clinical Biochemistry	½ month
g) Retina clinic (Ophthalmology)	½ month
h) Paediatric endocrinology	½ month
- 7). Entry criteria:
 - MD Internal Medicine
 - MD Endocrinology

9. DM, Neurology

- 1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a) Fundamental Department/Division/Unit: Neurology
 - b) Supportive Departments/Ancillary Departments: It must have Neurosurgery and all other departments required for MBBS and related Postgraduate MD/MS academic program
 - c) Departmental protocols, specifying treatment guidelines
- 2). Dedicated beds: 30
- 3). Equipments (minimum):
 - EEG
 - ENG
 - EMG
 - Cranial colour dopler
 - Polysomnography
- 4). Patients' turnover:
 - NeuroOPD load: Minimum 40 patients/day (12000 patients/year)
 - Neuro In patient load: Minimum 70% bed occupancy in dedicated beds.
- 5). Academic and clinical expertise to be developed during three years training:

- a) Academic: As mentioned above in academic expertise
 - b) Clinical: At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment and related investigations, by standard therapeutic methods/ interventions and also be able to explain the possible outcomes/prognosis of the same.
- 6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:
- | | |
|--------------------------------------------------------------------------------|-----------|
| a) Clinical neurology | 18 months |
| b) Stroke unit | 3 months |
| c) Neuro-ICU | 3 months |
| d) Clinical neurophysiology | 4 months |
| e) Neurosurgery | 1 month |
| f) Neuropathology(joint meeting, seminar, case discussion etc equivalent to): | 1 month |
| g) Neuroradiology (joint meeting, seminar, case discussion etc equivalent to): | 1 month |
| h) Neuropsychiatry | 1 month |
| i) Neuroanaesthesiology | 1 month |
| j) Neuropsychology | 1 month |
| k) Elective posting | 2 months |
- 7). Entry criteria:
- MD Internal Medicine
 - MD Neurology

10 DM-Hepatology:

- 1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a. Fundamental Department/Division/Unit: Hepatology
 - b. Supportive Departments/Ancillary Departments: It must have Medical Gastroenterology, Surgical Gastroenterology and all other departments required for MBBS and related Postgraduate MD/MS academic program.
 - c. Departmental protocols, specifying treatment guidelines
- 2). Dedicated beds: 20 beds
- 3). Equipments (minimum):
 - Endoscopy
 - Colour dopler USG
 - Fibroscan
 - Radio frequency ablation(desirable)
 - Argon plasma coagulation
 - Endoscopic ultrasound
 - Digital subtraction angiography (Radiology Department)
- 4). Patients' turnover:
 - Hepatic OPD load: Minimum6000 patients/year (20 patients/day)
 - Hepatic In patient load: Minimum70% occupancy in dedicated beds.
- 5). Academic and clinical expertise to be developed during three years training:
 - a) Academic: As mentioned above in academic expertise

b) Clinical: At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment and related investigations, by standard therapeutic methods/ interventions and also be able to explain the possible outcomes/prognosis of the same.

6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:

a) Indoor services/Outpatient Clinics/Consultations:	25 months
b) Paediatric Hepatology	1 month
c) Medical gastroenterology	3 months
d) Pathology(joint meeting, seminar, case discussion etc equivalent to):	1 month
e) Radiology(joint meeting, seminar, case discussion etc equivalent to):	1 month
f) Pregnancy related hepatobiliary diseases	1 month
g) ERCP (Pancreatology)	2 months
h) Liver transplant (minimum 5 transplant to be attended)	2 months

7). Entry criteria:

- MD Internal Medicine
- MD Hepatology

11. DM, Emergency Medicine:

1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:

- Fundamental Department/Division/Unit: Department of Emergency& General Practice
- Supportive Departments/Ancillary Departments: It must have, observation ward, ICU/CCU, emergency operation theatre, radiology, pathology and all other departments required for MBBS and related Postgraduate MD/MS academic program.
- Departmental protocols, specifying treatment guidelines.

2). Dedicated beds: 30 beds

3). Equipments (minimum):

4). Patients' turnover:

- Attending emergency : Minimum 100/day
- : Minimum 30,000/year

5). Academic and clinical expertise to be developed during three years training:

- Academic: As mentioned above in academic expertise
- Clinical: At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment and related investigations, by standard therapeutic methods/ interventions and also be able to explain the possible outcomes/prognosis of the same.

6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:

• Emergency department	24 months
• Anaesthesia department	3 months
• ICU/NICU/PICU	3 months
• Allied subjects:trauma, epidemics, community & elective:	6 months

7). Entry criteria:

- MD, General practice or MD, Emergency & General practice
- MD Emergency Medicine
- MD, Internal Medicine, Pediatrics, Anesthesia, Gynaecology & Obstetrics
- MS, General surgery, Orthopedics

12. MCh, Cardio Thoracic and Vascular Surgery (CTVS):

1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:

- a) Fundamental Department/Division/Unit: Cardiothoracic and Vascular Surgery
- b) Supportive Departments/Ancillary Departments: It must have Cardiology and all other departments required for MBBS and related Postgraduate MD/MS academic program.
- c) Departmental protocols, specifying treatment guidelines.

2). Dedicated beds: 20 beds

3). Equipments (minimum): Should have the following equipment/ technology:

- Heart lung machine with heater cooler
- Intraaortic balloon pump
- ACT machine
- Well-equipped ICU dedicated or at least beds assigned to CTVS : 6 beds having Ventilators, monitors with invasive parameters, ABG machines, bipap machines
- Flexible and rigid esophagoscopes one each
- VATS system with complete instruments
- Cath lab back up by cardiology
- Relevant sets of instruments
- TEE facility

4). Patients' turnover:

- Total minimum major CTVS surgery cases 250 per year with:
 - Minimum open heart surgery 100 per year
 - Minimum major thoracic surgery cases 50 per year
 - Minimum major vascular surgery 50 per year

5). Academic and clinical expertise to be developed during three years training:

- a) Academic: As mentioned above in academic expertise
Clinical (**surgical skills**): At the end of the 3-years academic program, the resident should be able to perform the following procedures:

A. Bronchoscopes and Airway Procedures.

1. Flexible diagnostic bronchoscopy, biopsy, brush biopsy with bronchoscope cleaning:
30(performed)/100 (assisted)
2. Rigid Bronchoscopy: intubation/assessment/dilatation: 5/ 30
3. Branch/LASER:
 - ✓ Intubation and Assessment: 5/30 **Optional**
 - ✓ Laser ablation: 5/30 **Optional**
4. Tracheobronchial Stenting, intubation, assessment, planning, stent deployment & dilatation: 5/ 30 **Optional**
5. Ebus : **Desirable**

- ✓ Intubation & Assessment:
- ✓ TBNA and sample processing:
- ✓ Radial EBUS:
- 6. Tracheal Resection & anastomosis: 0/5 **assist**
- 7. Tracheostomy: 5/ 10

B. Endoscopic and Esophageal Procedures.

- 1. Flexible UGU Endoscopy: 10/30
- 2. Rigid esophagoscopy: 0/10
- 3. Esophagel Dilatation (CRE Balloon): 5/20
- 4. Esophageal Stenting: 5/ 30 **Desirable**
- 5. EUS –FNA: 10/ 50 **Optional**
- 6. Esophagectomy: (*at least 15 patients in total*)
 - ✓ Esophageal Mobilization: 5/ 15 **Desirable**
 - ✓ Gastric mobilization and fundoplication: 5/15 **Desirable**
 - ✓ Preparation of esophageal stump @ neck: 5/15 **Desirable**
 - ✓ Esophago gastric (colic) anastomosis: 5/15 **Desirable**
 - ✓ Feeding jejunostomy: 5/15
- 7. PEG: **Optional**
- 8. Cervical esophagostomy: **Optional**
- 9. Heller's cardiomyotomy (Thoracotomy)
 - ✓ Access and or Myotomy: 5/ 20
- 10. Heller's (Laparoscopic) **Desirable**
 - ✓ Access: 5/ 20
 - ✓ Myotomy: 5/ 20
 - ✓ Fundoplication: 5/ 20

C. Lungs:

- 1. Thoractomy, Closure and Pneumohysis: 20/ 50
- 2. Lobectomy / Pneumonectomy: 5/20
- 3. Extrapleural/Paravertebral catheter: 10/20
- 4. VATS for Empyema: 5/20
- 5. Pneumothorax:
 - ✓ Tube pleurodesis/ABP/Vats Bullectomy/Vats Pleurodesis:5/20
- 6. VATS Pleural Biopsy: 10/30
- 7. Port placement for VATS Lobectomy: 5/20

D. Mediastinum, Chest wall & others:

- 1. Sternotomy: (10) 30 (including Hemiclamshell/clamshell):**Optional**
- 2. Radical transsternal thymectomy: **Optional**
- 3. VATS Thymectomy: **Optional**
- 4. Anterior mediastinal mass excision: 0/5 **Optional**
- 5. Posterior mediastinal mass excision: 2 /5 **Optional**
- 6. VATS Pericardial window: 0/5
- 7. Diaphragmatic Plication/Hernia repair/Injury Repair: 2/10
- 8. Chest wall Resection ± Reconstruction: **Optional**
- 9. Cervical Rib Excision: 0/5
- 10. Window Thoracostomy: 3/5
- 11. Mediastinoscopy/Anterior Mediastinostomy: 3/10
- 12. VATS Sympathectomy: 0/5

Cardiac Surgery: minimum cases to be performed independently (under supervision):

A. General:

• Sternotomy:	50	Re-Sternotomy:	2
• Thoracotomy:	15	Peripheral Cannulation:	5
• Institution of Cardiopulmonary bypass:	50	Insertion of IABP:	5

B. Specific:

PDA ligation:	5	ASD closure:	5
Coarctation repair:	2	PA banding:	Optional
Systemic to pulmonary shunts:	5(optional)	VSD closure:	5
Conduit harvesting mammary:	10	Conduit harvest saphenous veins:	25
Repair of Tetralogy of Fallot/ complex congenital first assist in:			10
Aortic valve replacement:	5	Mitral valve replacement:	5
Tricuspid repair:	5	DVR	10
CABG proximal anastomosis:	10	Pericardial window:	5
CABG distal anastomosis:	5	Pericardiectomy:	2

C. Vascular Surgery:

Repair of brachial artery/ popliteal/femoral artery injury:			5
Embolectomy:	10	Fasciotomy(optional)	5
Peripheral artery bypass:	5	Endovascular stenting	Optional
DTA/AAA surgery (1st assist):	5	Dialysis access creation:	30
Carotid artery surgery (assist):	2	Chemical sympathectomy:	optional
Surgery for varicose Veins:	10		

6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:

As per Universities/Institutions/Academies curriculum.

7). Entry criteria:

- MS General Surgery
- MS Cardiac Surgery
- MS Thoracic Surgery
- MS Vascular Surgery

NB: Although this criteria is made for MCh Cardiothoracic and Vascular Surgery, University/Academy/Institution can run individual program like Cardiac surgery, Thoracic surgery, Vascular surgery separately, provided necessary equipments/technology/surgical exposures and skills to be developed by the resident, will also be increased/changed as per subject specialty.

13. MCh, Urology (Urogenital Surgery):

- 1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a) Fundamental Department/Division/Unit: Urology(Urogenital Surgery)
 - b) Supportive Departments/Ancillary Departments: It must have Nephrology and all other departments required for MBBS and related Postgraduate MD/MS academic program.
 - c) Departmental protocols, specifying treatment guidelines.
- 2). Dedicated beds: 30 beds
- 3). Equipments (minimum):
 - Uroflometry, urodynamic study(*must have within 5 years*)
 - Ultrasound/TURS
 - Urethrocystoscopy
 - C-arm
 - LASER for urology services
 - Equipments/instruments for Lower tract surgery for example-TURP, TURBT, OIU
 - Equipments/instruments for Lower Upper tract surgery for example - PCNL, URS
 - Equipments/instruments for Lower Open surgery
 - Equipments/instruments for Lower Laparoscopic surgery
- 4). Patient turnover: To start MCh Urology, following volume of procedures must be done in the department.
 - TURP more than 60 per year
 - TURBT more than 20 per year
 - URS more than 50 per year
 - PCNL more than 100 per year
 - Radical/Partial nephrectomy more than 15 per year
 - Radical cystectomy more than 5 per year
 - Urethroplasty more than 10 per year
 - CAPD insertion more than 5 per year
 - Kidney transplantation – *mandatory exposure*
- 5). Academic and clinical expertise to be developed during three years training:
 - a) Academic: As mentioned above in academic expertise
 - b) Clinical: At the end of the 3-years academic program, the resident should be able to manage:

Acquaintance

- All catheters types/tubes – insertion, maintenance and care
- Instruments(knowledge, care) from the basic to the advanced gadgets in operation theater
- Operation of C-ARM and USG machine for routine day today procedures
- Video /photography recording/database maintenance / computer knowledge

Endoscopy:

- Cystourethroscopy

- Cystoscopy for fulguration / biopsy (cold / electro-loop) ureteric catheterization /insertion / removal of stent
- DJ stenting
- Suprapubic cystostomy
- OIU (Optical internal urethrotomy)
- PCN
- CLT
- BNI
- TURBT
- TUIP, TURP
- URS
- PCNL
- PUV fulguration

Open Surgery:

- Orchiectomy scrotal / high inguinal
- Orchiopexy
- Partial /Total penectomy
- Bladder repair
- Ureterolithotomy
- Pyelolithotomy
- Extended pyelolithotomy
- Radical/Radical Nephrectomy
- Perineal urethrostomy/ Urethroplasty
- AV fistula creation/ CAPD catheter insertion
- Pyeloplasty
- Nephroureterectomy
- Pelvic lymph node dissection
- Partial Cystectomy
- Vas recanalization
- Excision of epididymal cyst
- Ilio-Inguinal Lymph Node dissection
- Surgery for Female incontinence
- Open prostatectomy(BPH)
- Uretero -neocystostomy / Psoas hitch / Boari flap

II. At the end of MCh residency training the resident should be able to perform the following procedures under supervision:

- Radical cystectomy and bowel handling for urinary diversion
- Radical prostatectomy
- VVF repair
- Hypospadias repair
- Perineal/ transpubic / staged urethroplasty
- Augmentation Cystoplasty
- Creation of retropneumoperitoneum
- Flexible URS
- Laproscopic pyelolithotomy/ ureterolithotomy/ Pyeloplasty
- Laparoscopic Nephrectomy (Simple and Radical)
- Robotic surgery exposure (*Desirable*)
- Kidney Transplant exposure (departmental/exchange program)

6). Training schedule/ Postings/ Rotations: During entire training program the resident should be posted as follows:

As per University/Institution/Academy's curriculum, but clinical meetings/discussions with pathology and radiology departments will be mandatory.

7). Entry criteria:

- MS General surgery
- MS Urology

14. MCh, Surgical Gastroenterology (GI- Surgery):

- 1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a) Fundamental Department/Division/Unit: Surgical Gastro-enterology
 - b) Supportive Departments/Ancillary Departments: It must have Gastro-enterology and all other departments required for MBBS and related Postgraduate MD/MS academic program.
 - c) Departmental protocols, specifying treatment guidelines
- 2). Dedicated beds: 20 beds
- 3). Equipments (minimum): As required for 5-b procedures.
- 4). Patient turnover:
 - Surgical GI Out patient load: minimum 25 patients/day (7500 patients/year)
 - Surgical GI In patient load: Minimum 70% bed occupancy in dedicated beds.
- 5). Academic and clinical expertise to be developed during three years training:
 - a) Academic: As mentioned above in academic expertise
 - b) Clinical: At the end of the training program, the resident should be able to do/assist:

Upper Gastrointestinal Surgery (UGU)

- a) Esophageal resections for malignancy- 5
- b) Esophageal surgery for benign diseases (Surgery for Achalasia, Antireflux surgery)-5
- c) Gastrectomy (Total, Subtotal, D2, Non D2 resections)-25
- d) Other G-I procedures(Gastrojejunostomy, TruncalVagotomy, sleeve resections,etc)-10
- e) Laparoscopic UGU Surgery (Antireflux, hellers, Bypass, bariatric, others)-5

Hepatopancreatobiliary Surgery (HPB)

- a) Major livers resections (More than two segment resections)-5
- b) Non-resectional liver surgery (Surgery for hydatid cyst, abscess, other cystic lesions, trauma, others)-15
- c) Pancreaticoduodenectomy (Classical, Pylorus preserving)- 15

- d) Other pancreatic surgery (surgery for chronic pancreatitis, central resections, distal pancreatectomy, necrosectomy, others)-**10**
- e) Surgery for portal Hypertension (Devascularisation, Shunt procedures)- **5**
- f) Gallbladder cancer surgery- **5**
- g) Hepatico jejunostomy for other than whipple's (Bile duct injury, segment three bypass, hepatolithiasis)- **10**
- h) Laparoscopic HPB Surgery other than cholecystectomy(Laparoscopic hydatid cyst, simple cyst fenestrations, CBD expoloration, laparoscopic liver resections, laparoscopic splenectomy, laparoscopic distal pancreatectomy, cystogastrostomy)- **10**

Colorectal Surgery

- a) Abdominoperineal resections including total proctocolectomy- **5**
- b) Other rectal resections (Anterior resections, Low anterior resections)- **10**
- c) Surgery for rectal prolapse (Resectional and non resectional procedures)- **5**
- d) Hemi colectomies (Right, left, sigmoid, Extended resections)-**20**
- e) Laparoscopic colorectal Surgery(for both benign and malignant)- **5**

Emergency Gastrointestinal Surgery

- a) Surgery for peptic ulcer disease- **10**
- b) Small bowel perforation repair/ resection anastomosis/ ileostomy- **10**
- c) Colorectal resections (Hemicolectomies, Hartman's procedure, colostomy)- **10**
- d) Surgery for abdominal trauma- **10**

Endoscopic Procedures

- a) UGU Endoscopy: Diagnostic and Therapeutic(Esophageal dilatations, polypectomy, Banding, sclerotherapy, Percutaneous endoscopic gastrostomy, foreign body removal and others) **total 300**
- b) ERCP- **total 25**
- c) Colonoscopy/sigmoidoscopy:((Diagnostic & Therapeutic (Polypectomy, stenting, others)- **100**

Radiological procedures

- a) Percutaneous Transhepatic biliary drainage procedures- **25**
- b) Embolization for Gastrointestinal bleeding- **10**
- c) Ultrasound guided drainage procedures- **20**
- d) Ultrasound guided biopsy related to GI surgery- **20**

6). Training schedule/ Postings/ Rotations:

- GI Surgery (out door, indoor, operation theatre, consultancy, special clinic, endoscopy, ICU, Oncology): **30 months**
- Community posting (other hospitals): **3 months**
- GI-Radiology exposure (joint meeting, seminar, case discussion etc. equivalent to): **2 months**
- GI- Pathology(joint meeting, seminar, case discussion etc equivalent to): **1 month**

- 7). Entry criteria:
- MS General Surgery

15. MCh, Neurosurgery:

- 1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:
 - a) Fundamental Department/Division/Unit: Neuro Surgery
 - b) Supportive Departments/Ancillary Departments: It must have Neurology and all other departments required for Postgraduate MD/MS academic program.
 - c) Departmental protocols, specifying treatment guidelines.
- 2). Dedicated beds: 20 beds
- 3). Equipments (minimum): All equipments/instruments/technology required for major, intermediate and minor neurosurgical and other related procedures, required to perform and required for adequate exposure in the specialties as mentioned in No.6 (training schedule).
- 4). Patients' turnover:
 - Out patient load: Minimum 5000 Neurosurgical patients/year
 - Neurosurgical In patient load: Minimum 70% bed occupancy in dedicated beds.
 - Surgical load: Minimum 400 neurosurgical operations/year, among them 50% should be major operations.
- 5). Procedures/clinical expertise to be develop during three years training:
 - a) Academic: As mentioned above in academic expertise
 - b) Clinical: At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment and related investigations, by standard therapeutic methods/ interventions and also be able to explain the possible outcomes/prognosis of the same (Competency must be as per curriculum).
- 6). Training schedule/ Postings/ Rotations: During entire 3-years training programmed the resident should have adequate exposure in:
 - Neurosurgery
 - Neuro trauma and critical care
 - Cerebrovascular surgery
 - Neurosurgical oncology
 - Spinal surgery
 - Paediatric neurosurgery
 - Peripheral neurosurgery
 - Stereotactic functional neurosurgery
 - Pain management
 - Clinical Neurology
 - Neuroradiology
 - Neuropathology
 - Neuroanaesthesiology

7). Entry criteria:

- MS General Surgery
- MS Neurosurgery
- MS Otorhinolaryngology

16. MCh, Plastic (&Reconstructive) Surgery:

1). Institutional requirements: A multidisciplinary, tertiary level, referral Hospital which must have:

- a) Fundamental Department/Division/Unit: Plastic and Reconstructive Surgery
- b) Supportive Departments/Ancillary Departments: It must have all other departments required for MBBS and related postgraduate MD/MS academic programmed.
- c) Departmental protocols, specifying treatment guidelines.

2). Dedicated beds: 20

3). Equipments (minimum):All equipments/instruments required for, common general surgeries, skin grafts, repair of cleft lip and palate, craniofacial surgeries, aesthetic surgeries, liposuction, cosmetic surgeries and reconstructive surgeries by flaps and micro vascular free flaps, etc.

4). Patients' turnover: Minimum 300 major plastic surgeries/ year

5). Academic and clinical expertise to be developed during three years training:

- a) Academic: As mentioned above in academic expertise
- b) Clinical: At the end of the 3-years academic program, the resident should be able to manage all the Subspecialty related clinical conditions/problems, on the basis of clinical assessment & related investigations, by standard therapeutic methods/ interventions & also be able to explain the possible outcomes/prognosis of the same.

6). Training schedule/ Postings/ Rotations: During entire training programmed the resident should be posted as follows:

- | | |
|-----------------------------------------------------------------------|-----------|
| • General plastic surgery | 18 months |
| • Burns' unit | 6 months |
| • Cleft and craniofacial surgery | 3 months |
| • Hands and microsurgery | 3 months |
| • Aesthetic surgery: | 3 months |
| • Elective: (Rotation in plastic unit of other recognized hospitals): | 3 months |

7). Entry criteria:

- MS General Surgery

Bed Occupancy Rate:

- For normal teaching learning of Subspecialty Postgraduate residents, the patient occupancy rate of the hospital bed in the concerned department for concerned subject should not be less than **70%**.

Learning Resources / Library:

- Adequate reference books, journals, skill labs, periodicals, and internet search facility for each Subspecialty Postgraduate resident should be available for the Subspecialty Postgraduate program in the concerned institution. In addition, adequate number of books must be available in the department library.

Laboratory facilities:

- The Postgraduate institution should have adequate clinical laboratory facilities for the training of Subspecialty Postgraduate residents. Such laboratories shall provide all the investigative facilities (e.g. pathology, histopathology, microbiology) and that should be regularly updated keeping in view of the recent advancement and research requirements, departments should have their own departmental laboratories.
- The institution should have required learning materials/specimens (e.g. autopsies, biopsies, cytopsies etc.) as demanded by the Subspecialty academic program as mentioned in the curriculum.

Equipment :

- The Postgraduate institution should possess required medical equipment, instruments, tools, materials and consumables specific to the concerned Subspecialty (minimum as mentioned above in individual Subspecialty) including the latest ones as prescribed by the University/Institution/Academy as mentioned in the curriculum which should be updated from time to time.

3.4.6 Number of Subspecialty Postgraduate Residents to be enrolled:

- The number of resident that can be enrolled in Subspecialty Postgraduate program shall be determined by the facilities available in terms of infrastructure, faculties and other teaching materials as per the NMC guidelines.
- The ratio of recognized Subspecialty Postgraduate faculty to the number of resident to be admitted shall be preferably **1:1** in one academic year.
- A unit having one Professor, one Associate Professor and two Assistant Professors/Lecturers can admit **two** residents in one academic year.
- A unit having one Professor and two Assistant Professors/Lecturers can admit **one** resident in one academic year.

- A unit having one Associate Professor with DM/MCh Subspecialty degree and two Assistant Professors/Lecturers can admit **one** resident in one academic year.
- But the maximum number of DM/MCh candidates to be enrolled in any Department/Institution in one program should not be more than **3(three)** in one academic year, regardless of adequate faculties and infrastructures.
- Faculties' holding the full time administrative post of any University/Academy/Institution is not allowed to enroll any Subspecialty resident till his/her tenure is over.
- ***A faculty under whom a Postgraduate resident has been enrolled and has not completed his/her course shall not be recognized as Postgraduate teacher in any other institution during the stipulated period of the course.***
- If preceptor leaves the program in between, the University/Institution/Academy should have alternate preceptor for the resident within 35 days.

3.5 Subspecialty Postgraduate Academic Program:

- ♦ All candidates joining the Subspecialty Postgraduate academic program shall work as full time residents during the period of program attending **not less than 90% (ninety percent)** of the training during each academic year and should be given full time responsibility, assignments and participation in all facets of the educational process.
- ♦ All Subspecialty Postgraduate residents shall be paid remunerations as per the rule of the University/Institution/Academy. Generally Subspecialty Postgraduate residents should have **two 24 hour in house call duties along with their regular work in a week.**
- ♦ Every institution undertaking postgraduate academic program shall set up a **Subspecialty Postgraduate subject committee**, under the chairmanship of a senior faculty member, which shall work out the details of the training program and also coordinate and monitor the implementation of the academic program.
- ♦ Subspecialty Postgraduate residents shall **maintain a record (log) book** of the work carried out by them and the training undergone during the period of academic program including details of exposure in ambulatory setting, details of surgical operations assisted or done independently in required Subspecialty.
- ♦ The record (log) books shall be checked, assessed and counter signed by the faculty members imparting the training.
- ♦ The Subspecialty Postgraduate residents are required to participate in the teaching of undergraduate students and Postgraduate residents and other health professionals wherever applicable.

- ♦ The postgraduate academic program in clinical disciplines also requires teaching of relevant basic medical sciences related to the discipline concerned. During the training in basic medical sciences, there shall be training in applied aspects of the subject as well as in allied subjects related to the discipline concerned.
- ♦ In all Subspecialty postgraduate academic programs, emphasis to be given on preventive, promotive, rehabilitative and social aspects and emergency care.
- ♦ Exposure in Medical Audit, Management, Leadership, Health Economics, Health Information System, basics of statistics, exposure to human behavioral studies, medical ethics, communication skill, research methodology and information technology innovations in medical education, practices management is imparted to the Subspecialty postgraduate residents.
- ♦ The residents should be given graded responsibility in the management of patients entrusted to their care, participation in seminars, journal clubs, group discussions, clinical meetings, case presentation, grand rounds as well as exposure in allied clinical specialties and community is recommended.
- ♦ Post graduate Subspecialty Residents should be rotated in major related sub-specialties for example in DM Cardiology the candidate will be posted in different sub-specialties as follows: Clinical Cardiology (Indoor services/Out patient Clinics/Consultations), Cath lab, CCU, Echocardiography, TMT/Holter/ABPM, Electrophysiology/Pacemaker, Cardiothoracic Surgery, Paediatric Cardiology, Nuclear Cardiology, and Cardio-Anesthesiology.

4. SUBSPECIALTY POSTGRADUATE CURRICULUM

4.1 Subspecialty Postgraduate Curriculum Guidelines:

- There should be curriculum committee for each Subspecialty subject and the curriculum should be as uniform as possible among all Universities/Institutions/Academy for the same subject.
- ♦ The curriculum including the time frame and competencies expected of the Postgraduate residents is to be defined by the University/Institution/Academy concerned.
- ♦ The curriculum is to be evaluated regularly by the concerned University/Institution/Academy and necessary amendments to be made as and when required.
- ♦ Duration of the course will be 3 years including examinations.

4.2 Requirement of Postgraduate Curriculum:

- a. It should be competency based.

- b. It should encourage independent, self-directed and problem based learning.
- c. A modular approach to the course curriculum is essential for achieving a systemic exposure to the various super-specialties branches related to a discipline.
- d. Teaching learning in ambulatory setting should be planned in the curriculum.
- e. There shall be a combination of formative and summative assessments with remedial measures during the program.
- f. Thesis shall be a mandatory part of the curriculum.
- g. Publication of original research work in national or international journal before appearing for final examination.
- h. There should be 3 months Peripheral Health Facility posting (community posting) which enhances community based learning, preferably during second half of the training period.
- i. Cardio-Pulmonary Resuscitation (CPR), Basic Life Support (BLS), Primary Trauma Care (PTC), Advanced Trauma Life Support (ATLS), Advanced Cardiac Life Support (ACLS), Research Methodology and other relevant Skill Courses should be integral part of the program.

Postgraduate Curriculum must include:

- 1. Theoretical knowledge related to the subject concerned
- 2. Practical and clinical skills
- 3. Proper knowledge in the applied basic sciences pertaining to the specialty
- 4. Thesis writing including research methodology and biostatistics
- 5. Evidence based learning and critical analysis of the literature
- 6. Communication skill training for both core communication skill and skill required in special circumstances
- 7. Development of professional attitudes and behavioral studies including ethical issues, human values
- 8. Information technology including medical informatics
- 9. Basic understanding of the pharmaco-economics and health economics

4.3. Methods of learning should include:

- 1. Bedside learning
- 2. Structured ambulatory learning with specific learning objectives
- 3. Seminars/Tutorials/Medical audit
- 4. Presentations/Journal club/CME
- 5. Self-directed learning, Literature review / use of information technology
- 6. Project work/Research undertaking

7. Patient care and management
8. Computer based learning/Skill Lab learning as and whenever applicable
9. Simulation based learning as and whenever applicable

5. SUBSPECIALTY POSTGRADUATE FACULTY

5.1. Eligibility criteria for Subspecialty Postgraduate Faculty:

1. All Subspecialty Postgraduate Faculty must possess a basic university postgraduate degree or equivalent qualifications (DM, MCh in the concerned Subspecialty) to be eligible to become a Subspecialty Postgraduate teaching faculty.
2. Faculty of the related subject and who is professor with a working in a Subspecialty unit for 10 years.
3. Professor of the related subject and working in a Subspecialty unit for five years after being Professor.
4. They should be duly registered with the Nepal Medical Council.
5. Age of the faculty should not be more than 73 years in clinical disciplines and 75 years in basic sciences disciplines. But after 70 years, approval of faculties will be provided only after assessment of physical fitness of the faculties by NMC. This provision will remain till 2024. Thereafter, maximum age of the faculty should not be more than 70 years, in both clinical and basic sciences disciplines.
6. Relaxations mentioned in 2 & 3 will be valid for maximum of seven years.

5.2. Designation of Subspecialty Postgraduate faculty:

The nomenclatures of the designation for faculty positions are:

- a. Professor
- b. Associate Professor(KU, NAMS, BPKIHS, PAHS)/Reader(TU)
- c. Assistant Professor(KU,NAMS, BPKIHS, PAHS)/Lecturer(TU)
- d. Lecturer(KU,BPKIHS,PAHS, NAMS)/Assistant Lecturer/Teaching Assistant(TU)

NB: The designation/nomenclature of the faculties should preferably be the same among the Universities/Institutions/Academy throughout the country as far and as soon as possible.

5.3. Basic requirement of Postgraduate faculty:

All affiliated institutions must have the teaching faculty appointment approved

by the parent University/Institutions/Academy. Similarly, the academic qualifications required for faculty position will be according to the rules and regulations of the University/Institutions and Nepal Medical Council's rule and regulation.

Basic requirements and broad principles for appointment of faculties with medical qualifications to different levels are as follows:

Professor:

1. Should have Postgraduate degree or equivalent qualification (DM, MCh) in the respective Subspecialty subject from University/Institution/Academy recognized by the Nepal Medical Council, together with teaching/working experience of **five** years as Associate Professor or equivalent post.
OR,
2. One must have a minimum of **ten years** of teaching experience in the Subspecialty concerned after the Postgraduate qualification(MD/MS) and be a professor in that general specialty.
OR,
3. One must have a minimum of **five years** of teaching experience in the Subspecialty concerned after being the Professor in general specialty (MD/MS).
4. The total duration of service counted under different faculty appointments held should not be less than ten years for becoming eligible for the post of Professor.
5. Should have minimum of two research/original researches as main author and two other publications in national/international indexed scientific journal as main/co-author at the level of Associate Professor/Reader.

Associate Professor/Reader:

1. Should have Subspecialty Postgraduate degree (DM/MCh) or equivalent qualification in the respective Subspecialty subject from University/Institution/Academy recognized by the Nepal Medical Council, together with teaching/working experience of **two years** as an Assistant Professor/Lecturer (TU) or equivalent post, and
2. Should have minimum of two research/original researches as main author and two other publications in national/international indexed scientific journal as main/co-author at the level of Assistant Professor/Lecturer (TU).

Assistant Professor (KU, BPKIHS, PAHS, NAMS)/Lecturer (TU):

1. Should have Subspecialty Postgraduate degree or equivalent qualification in the respective Subspecialty subject from an University/Institution/Academy recognized by the Nepal Medical Council, and
2. Should have minimum of two research/original researches as main author and

two other publications in national/international indexed scientific journal as main/co-author at the level of Assistant lecturer or teaching assistant or clinical tutor or senior resident etc.

Note:

- Research and publications already considered for the previous post shall not be taken into consideration.
- Case report, case series, book review are not counted as a research article.
- For the entry faculty position, requirement of publication is not mandatory.

5.4. Criteria for Visiting Faculty:

- The posts of Professor Emeritus and Visiting Faculty may be conferred upon the teaching faculties holding posts in other University/Institutions/Academy.
- The same criteria which are applicable for appointment of regular Subspecialty Postgraduate faculties will be also applicable to the visiting faculties.
- The Visiting Faculty title may be awarded to a teacher involved in teaching/training of the Subspecialty Postgraduate program run by the University/Institution/Academy provided the candidate fulfills the following criteria:
 1. Requirement of academic qualifications, teaching/working experiences and publications: as per regular faculty position, recognized by the Nepal Medical Council.
 2. The appointment should be institution specific and be time limited.
 3. In case, the Visiting Faculty is no longer involved in the teaching/training program of the institution or is transferred to another institution, this title should be automatically cancelled.
 4. Visiting faculties are not counted for the allocation of (seat) i.e. enrolment of Subspecialty resident. They may be appointed for the upliftment of overall academic standard and betterment of the training institution.

5. SUBSPECIALTY POST GRADUATION ENTRY CRITERIA

6.1. Selection criteria for Subspecialty Postgraduate Candidates:

1. Candidate must have completed Post Graduate or equivalent degree in the related subjects
2. Candidate must be registered with Nepal Medical Council.
3. Selection should be on the basis of the candidate's academic merit (preferably National Eligibility Entrance Test).

6.2. Criteria for Foreign candidate for Subspecialty Postgraduate Program:

1. The registration to foreign national applying for Subspecialty Postgraduate studies shall be subject to the condition that such person is duly registered as medical practitioner in his/her own country with Postgraduate degree and that his/her degree is recognized by the corresponding Medical Council or concerned authority of respective country of origin.
2. Foreign candidates must be provisionally registered with NMC for the period of their studying exclusively for the College/Institution/Academy where they are admitted.
3. The entrance requirement for foreign candidates will be according to the rules and regulations of the concerned University/Institutions/Academy; however they should qualify (pass) in the competitive entrance exams conducted by them.

6.3. Selection procedure for Subspecialty Postgraduate Candidates:

1. Candidates for Subspecialty Postgraduate programs shall be selected on merit basis. The criteria for merit will be according to the University/Institution/Academy rules based on the competitive exam.
2. For determining the academic merit, the University/Institution/Academy may adopt any of the following procedures:
 - a. On the basis of merit as determined by a competitive entrance test conducted by the university/Institution/Academy (National Eligibility Test).
 - b. On the basis of merit as determined by a centralized competitive entrance test held at the national level; the Subspecialty Postgraduate candidates may be enrolled in the Postgraduate institutions on the basis of central allotment

system.

- c. In order to be selected for the Subspecialty Postgraduate program, the candidate must qualify in the competitive entrance examination with a minimum score of 50%.

6.4. Commencement of the Subspecialty Postgraduate programs:

Nepal Medical Council strongly recommends to all University/Institution /Academy that the academic session of all Subspecialty/Specialty Postgraduate programs shall start from the same date in all University/Institution/Academy throughout the country, so that the council could organize the Subspecialty/Specialty registration examinations immediately after the completion of their Subspecialty/Specialty training and they can serve the people as a Subspecialist/Specialist immediately without any gap.

Recommended dates to start Postgraduate programs:

15 April (~2nd Baisakh) for Postgraduate Master programs (MD/MS/MDS)

15 October (~ 2nd Kartik) for Subspecialty Postgraduate programs (DM/MCh)

7. SUBSPECIALTY POSTGRADUATE EVALUATION SCHEME

Assessment Guidelines for Subspecialty Postgraduate Academic Program:

The methods of assessment for Subspecialty Postgraduate residents should include Logbook, Formative assessment, Summative assessment, and Thesis.

The weightage of formative and summative assessments will be as per the norms of the University/Institution/Academy concerned.

Formative Assessment:

There shall be adequate weightage given to the formative assessment as per the university regulations.

Constructive feedback on the performance of the Subspecialty postgraduate resident must be given on an ongoing basis during the formative assessment. It should carry support and counseling to the resident as well.

Formative evaluation shall allow/disallow the resident for the appearance in summative (final) examinations as per University/ Institution/Academy regulation.

7.1. Attendance of Subspecialty Postgraduate Residents:

All Subspecialty Postgraduate residents should work as full time residents during the period of program attending not less than **90% (ninety percent)** of the training during each academic year.

Evaluation of the Subspecialty Postgraduate Residents:

1. Evaluation of the Subspecialty postgraduate resident should be on the basis of grading or marking system as per the norms of the University/Institution/Academy concerned.
2. The residents should be adequately tested for the knowledge, skill and competencies required for the program concerned and obtain a minimum of **60% marks in theory as well as clinical and practical separately.**

NB: As the Subspecialty Postgraduate programs are competency based, all the concern University/Institution/Academy are requested to shift from their traditional evaluation system to competency based evaluation system as soon as possible.

7.2. Composition of Subspecialty Postgraduate Examinations:

Subspecialty Postgraduate examinations (DM/MCh) in any subject shall consist of *Theory papers, Clinical/Practical and Oral examinations and Thesis.*

Theory Papers:

1. Papers comprising the subjects of basic science and other allied subjects mentioned in curriculum, different systems and recent advances related to the subject as per the norms of the University/Institution/Academy concerned.
2. The theory paper should give adequate weightage to basic and applied medical sciences, apart from the subject proper.

Clinical and Oral Examinations:

1. Clinical examination for the Subspecialty subjects shall be conducted to test the competence of the resident for undertaking independent work as a sub specialist/teacher, for which the resident shall be examined on objective and structured format.
2. The resident's clinical competency should be tested with long case / short cases / Objective Structured Clinical Examinations (OSCE) as per the University/Institution/Academy regulations.
3. The oral examinations shall be structured and be aimed at assessing the resident's competency about the subject matter, investigative procedures,

therapeutic technique and other aspects of the specialty, which form a part of the examination.

Thesis:

1. Every resident shall carry out research work on an assigned topic following standard research methodology under the guidance of recognized Subspecialty Postgraduate Guide, the results of which shall be written up and submitted in the form of a thesis. The provision of Co-guide may be undertaken whenever necessary.
2. Professor as well as Associate Professor (with DM/MCh degree) shall be eligible to be the thesis guide. Associate Professor and Assistant Professor with Postgraduate master degree (MD/MS) shall be eligible for the thesis co-guide of the Subspecialty Postgraduate residents till clause 2 of Postgraduate faculty requirement is met.
3. Research proposal should be submitted to the concerned department before undertaking the thesis.
4. Work for thesis writing is aimed at contributing to the development of a spirit of enquiry, besides exposing the resident to the techniques of research, critical analysis, acquaintance with the latest advances in medical sciences and the manner of identifying and consulting available literature.
5. Thesis should be presented, reviewed and approved by the preceptor as well as by the concerned Subspecialty-faculties of the department/division/unit and shall be submitted at least six months before the theory and clinical/practical examinations.
6. The Thesis shall be evaluated independently by the internal and external examiners. Resident will have to defend his / her thesis work to get it approved.
7. The acceptance of the thesis is pre-requisite to appearing in the final examinations.
8. Evaluation of thesis should be done on a structured basis including the appropriate statistical review as per the University/Institution/Academy regulations.

7.3. Number of Resident to be Examined:

The maximum number of resident to be examined in Clinical/Practical and Oral examination on any day is as per University/Institution/Academy regulation. But the no of candidates to be examined shall not be exceeded more than three for DM/MCh program on any day.

7.4 Guidelines on appointment of Subspecialty Postgraduate Examiners:

1. Postgraduate examiner shall be appointed in the related Subspecialty subject on the fulfillment of the requirements and on the basis as laid down by the Nepal Medical Council & University/Institution/Academy concerned.
2. All the Postgraduate examiners shall be appointed from recognized Subspecialty Postgraduate faculty members. Only Professors and Associate professors (with DM/MCh degree), recognized as Subspecialty Postgraduate preceptors, shall be eligible for Subspecialty Postgraduate Examiners, but for the external examiner only Professor shall be eligible.

3. For all Subspecialty Postgraduate examinations, the minimum required number of examiners shall be ***four***, out of which ***at least two (50%) shall be External Examiners***, who shall be invited from other recognized universities other than one's own university.
4. In exceptional circumstances, examinations may be held with 3 (three) examiners with two of them as external. In such conditions Nepal Medical Council should be intimated with the justification of such examination.
5. An external examiner shall ordinarily be appointed for not more than **two** consecutive terms in the same University/Institution/Academy.

8. EXAMINATION FOR THE SUBSPECIALTY REGISTRATION

Whenever Nepal Medical Council realizes, subspecialists who obtain Subspecialty Postgraduate certification, will have to appear in a competency based examination, for their Subspecialty registration with NMC. An expert team of examiners under NMC will be constituted for this purpose. Subspecialty Registration Certificate shall be provided only to those candidates who will satisfy the expert team of examiners.

9. PERIPHERAL HEALTH FACILITY POSTING

Anex1: "Peripheral Health Facility Posting"(Community posting):

- "Peripheral Health Facility Posting"(Community posting), means posting of the residents of clinical and Para-clinical disciplines of post graduate program in District, Zonal, Sub-regional and Regional level Hospitals, under Ministry of Health, Government of Nepal or other semi-governmental hospitals located far from the site of Academic institutions/Medical colleges.
- Residents of DM/MCh of all sub specialties preferably should be posted only either in Regional or Sub-Regional or Zonal level hospitals.
- At the same time, supervision of these residents to be considered either from University/Institutions/Academy side or Hospital side.
