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Graduate Medical Attributes w.e.f. 2019 [In accordance to CBME Curriculum prescribed by National Medical Commission New Delhi and Maharashtra University of Health Sciences, Nashik, M.S.] are as follows

How to use the Manual

This Manual is intended for curriculum planners in an institution to design learning and assessment experiences for the MBBS student. Contents created by subject experts have been curated to provide guidance for the curriculum planners, leaders and teachers in medical schools. They must be used with reference to and in the context of the Regulations.

Section 1

Competencies for the Indian Medical Graduate

Section 1 - provides the global competencies extracted from the Graduate Medical Education Regulations, 2018. The global competencies identified as defining the roles of the **Indian Medical Graduate** are the broad competencies that the learner has to aspire to achieve; teachers and curriculum planners must ensure that the learning experiences are aligned to this Manual.

Extract from the Graduate Medical Education Regulations, 2018

2. Objectives of the Indian Graduate Medical Training Programme

The undergraduate medical education program is designed with a goal to create an “Indian Medical Graduate” (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training program are hereby prescribed:-



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2.1. National Goals

At the end of undergraduate program, the Indian Medical Graduate should be able to:

- (a) recognize “health for all” as a national goal and health right of all citizens and by undergoing training for medical profession fulfill his/her social obligations towards realization of this goal.
- (b) learn every aspect of National policies on health and devote herself/himself to its practical implementation.
- (c) achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.
- (d) develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.
- (e) become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

2.2. Institutional Goals

In consonance with the national goals, each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

- (a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.
- (b) be competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the commonly encountered health problems.
- (c) appreciate rationale for different therapeutic modalities, be familiar with the administration of the "essential drugs" and their common side effects.
- (d) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.



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- (e) possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.
- (f) be familiar with the basic factors which are essential for the implementation of the National Health Programs including practical aspects of the following:
 - (i) Family Welfare and Maternal and Child Health (MCH);
 - (ii) Sanitation and water supply;
 - (iii) Prevention and control of communicable and non-communicable diseases;
 - (iv) Immunization;
 - (v) Health Education;
 - (vi) Indian Public Health Standards (IPHS) at various level of service delivery;
 - (vii) Bio-medical waste disposal; and
 - (viii) Organizational and or institutional arrangements.
- (g) acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, General and hospital management, principal inventory skills and counseling.
- (h) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.
- (i) be able to work as a leading partner in health care teams and acquire proficiency in communication skills.
- (j) be competent to work in a variety of health care settings.
- (k) have personal characteristics and attitudes required for professional life including personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.



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All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate, as given in the Graduate Medical Education Regulations, 2018

2.3. Goals for the Learner

In order to fulfil this goal, the Indian Medical Graduate must be able to function in the following roles appropriately and effectively:-

- 2.3.1. Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- 2.3.2. Leader and member of the health care team and system with capabilities to collect, analyze, synthesize and communicate health data appropriately.
- 2.3.3. Communicator with patients, families, colleagues and community.
- 2.3.4. Lifelong learner committed to continuous improvement of skills and knowledge.
- 2.3.5. Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

3. Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

3.1. *Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion*

- 3.1.1 Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioral and social perspective.
- 3.1.2. Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- 3.1.3 Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.



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- 3.1.4 Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- 3.1.5. Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- 3.1.6. Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- 3.1.7 Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- 3.1.8 Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.
- 3.1.9 Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- 3.1.10 Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frameworks.
- 3.1.11 Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- 3.1.12 Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:
 - i) Disease prevention,
 - ii) Health promotion and cure,
 - iii) Pain and distress alleviation, and
 - iv) Rehabilitation and palliation.



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- 3.1.13 Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
- 3.1.14 Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- 3.1.15 Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

3.2. *Leader and member of the health care team and system*

- 3.2.1 Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- 3.2.2 Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- 3.2.3 Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- 3.2.4 Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- 3.2.5 Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- 3.2.6 Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancer, in collaboration with other members of the health care team.

3.3. *Communicator with patients, families, colleagues and community*

- 3.3.1 Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.
- 3.3.2 Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.
- 3.3.3 Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.



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3.3.4 Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

3.4. Lifelong learner committed to continuous improvement of skills and knowledge

3.4.1. Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.

3.4.2. Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.

3.4.3. Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.

3.4.4. Demonstrate ability to search (including through electronic means), and critically reevaluate the medical literature and apply the information in the care of the patient.

3.4.5. Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

3.5. *Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession*

3.5.1. Practice selflessness, integrity, responsibility, accountability and respect.

3.5.2. Respect and maintain professional boundaries between patients, colleagues and society.

3.5.3. Demonstrate ability to recognize and manage ethical and professional conflicts.

3.5.4. Abide by prescribed ethical and legal codes of conduct and practice.

3.5.5. Demonstrate a commitment to the growth of the medical profession as a whole.



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Relevant documents of Course/Learning Outcomes of MBBS Program of all subjects

(Prescribed by Maharashtra University of Health
Sciences, Nashik as per CBME Curriculum of
National Medical Commission Regulations
GMER 2019)

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1. ANATOMY

Goal

The broad goal of the teaching of undergraduate students in Anatomy aims at providing comprehensive knowledge of the gross and microscopic structure and development of human body to provide a basis for understanding the clinical correlation of organs or structures involved and the anatomical basis for the disease presentations.

Objectives

1. Knowledge:

At the end of the course the student shall be able to

1. Comprehend the normal disposition, clinically relevant interrelationships, functional and cross sectional anatomy of the various structures in the body
2. Identify the microscopic structure and correlate elementary ultrastructure of various organs and tissues and correlate the structure with the functions as a pre requisite for understanding the altered state in various disease processes.
3. Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functions of the organs and systems. He/she shall be able to locate the site of gross lesions according to the deficits encountered.
4. Demonstrate knowledge of the basic principles and sequential development of the organs and systems, recognize the critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards. He/she shall be able to explain the developmental basis of the major variations and abnormalities.

2. Skills

At the end of the course the student shall be able to;

1. Identify and locate all the structures of the body and mark the topography of the living anatomy.
2. Identify the organs and tissues under the microscope.
3. Understand the principles of karyotyping and identify the gross congenital anomalies.
4. Understand principles of newer imaging techniques and interpretation of CT scan, sonogram etc.
5. Understand clinical basis of some common clinical procedures i.e. intramuscular and intravenous injection, lumbar puncture and kidney biopsy etc.

3. Integration

From the integrated teaching of other basic sciences, student shall be able to comprehend and regulation and integration of the functions of the organs and systems in the body and thus interpret the anatomical basis of disease process.


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2. PHYSIOLOGY

Goals

The broad goal of the teaching of undergraduate students in physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and diseases.

Educational Objectives

1. Knowledge

1. At the end of the course, the student will be able to: describe the normal functions of all the organ systems, their regulatory mechanisms and interactions of the various systems for well-coordinated total body function.
2. Understand the relative contribution of each organ system in the maintenance of the milieu interior (homeostasis).
3. Explain the physiological aspects of normal growth and development. Analyse the physiological responses and adaptation to environmental stresses.
4. Comprehend the physiological principles underlying pathogenesis and treatment of disease.
5. Correlate knowledge of physiology of human reproductive system in relation to National Family Welfare Program.



2. Skill

At the end of the course the student shall be able to:

1. Conduct experiments designed for study of physiological phenomena like Various human, haematology experiments and clinical examination of healthy individual.
2. Interpret experimental/investigative data.
3. Distinguish between normal & abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

3. Integration

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.


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3. BIOCHEMISTRY

Goal

The broad goal of the teaching of undergraduate students in biochemistry is to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of the knowledge acquired in solving clinical problems.

Objectives

1) Knowledge

At the end of the course, the student shall be able to :

1. describe the molecular and functional organization of a cell and list its subcellular components;
2. delineate structure, function and inter-relationships of biomolecules and consequences of deviation from normal;
3. summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered;
4. describe digestion and assimilation of nutrients and consequences of malnutrition;
5. integrate the various aspects of metabolism and their regulatory pathways;
6. explain the biochemical basis of inherited disorders with their associated sequelae;
7. describe mechanisms involved in maintenance of body fluid and pH homeostasis;
8. outline the molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application in medicine.
9. Summarize the molecular concept of body defences and their application in medicine;
10. Outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis;
11. familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of given data;
12. suggest experiments to support theoretical concepts and clinical diagnosis;

2) Skills

At the end of the course, the student shall be able to :

1. make use of conventional techniques / instruments to perform biochemical analysis relevant to clinical screening and diagnosis;
2. analyse and interpret investigative data;
3. Demonstrate the skills of solving scientific and clinical problems and decision making.

3) Integration

The knowledge acquired in biochemistry shall help the students to integrate molecular events with structure and function of the human body in health and disease.

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4. MICROBIOLOGY

Goals

The goal of teaching Microbiology is to provide understanding of the natural history of infectious diseases in order to deal with the etiology, pathogenesis, pathogenicity, laboratory diagnosis, treatment, control and prevention of these infections and infectious diseases.

Educational objectives

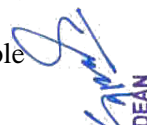
1. Knowledge

At the end of one year microbiology curriculum, the student should be able to: -

1. State the etiology, pathogenesis and methods of laboratory diagnosis and apply that knowledge in the diagnosis, treatment, prevention and control of communicable diseases caused by microorganisms.
2. Understand commensal, opportunistic and pathogenic organisms of human body and describe host parasite relationship.
3. List pathogenic micro-organisms (bacteria, viruses, parasites, fungi), know and describe the pathogenesis of diseases caused by microorganisms.
4. Understand the immunological mechanisms associated with important infectious diseases.
5. State the sources and modes of transmission of pathogenic and opportunistic micro-organisms including knowledge of insect vectors & their role in transmission of infectious diseases.
6. Choose appropriate laboratory investigations required for clinical diagnosis.

2. Skills

1. Plan and interpret laboratory investigations for diagnosis of infectious diseases and correlate the clinical manifestations with the etiological agent.
2. Identify common infectious agents with the help of laboratory procedure; acquire knowledge of antimicrobial agents, use of antimicrobial sensitivity tests to select suitable antimicrobial agents for treatment.
3. Perform simple laboratory tests, which help to arrive at rapid diagnosis.
4. Be conversant with proper methods of collection, storage & transport of clinical material for microbiological investigations.
5. Understand the principles of immunology and its application in the diagnosis and prevention of infectious diseases including immunization schedule, acquire knowledge of the scope of immunotherapy and different vaccines available for the prevention of communicable diseases.
6. Understand methods of disinfection and sterilization and their application to control and prevent hospital and community acquired infections including universal biosafety precautions and waste disposal.
7. Recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.
8. The student should be well equipped with the knowledge of prevalent communicable diseases of national importance and of the newer emerging pathogens.


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3. Attitude

1. The student will be regular, sincere, punctual and courteous and regular in studies.
2. The student will follow all the rules laid down by the department and participate in all activities.
3. The student will understand the importance of, and practice asepsis, waste segregation and appropriate disposal.
4. The student will understand the importance of, and practice the best methods to prevent the development of infection in self and patient. (E.g. hand washing, using aprons for hospitals in hospitals only, regularly washing the aprons, wearing gloves (as and when required / handling specimens etc.).
5. The student will understand the use of the different antimicrobial agents including antibiotics to use judiciously and prevent misuse, (prescribing attitude).
6. The student will understand the significance of vaccinations and will receive appropriate vaccines (e.g. TT, Hepatitis B, Covid vaccine, Flu and any other as per needs).
7. The student will wash his/her hands with soap after each practical class.
8. The student will leave the area allotted for his practical neat and tidy.
9. The student will discard the slides in the appropriate container provided for the same.
10. The student will report any injury sustained in class, immediately.
11. The student will report any breakage occurring during class times immediately.
12. The student may give suggestions to improve teacher student association.

4. Integration

At the end of one year of microbiology curriculum, the student shall be able to integrate the causes and mechanisms of infectious diseases and syndromes, most prevalent in India with their natural history for the understanding of their etiology, immunological response by the host, clinical course, laboratory diagnosis, treatment, prevention and prophylaxis.



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5. PHARMACOLOGY

Goals

The broad goal of teaching pharmacology to undergraduate students is to inculcate in them a rational and scientific basis of therapeutics

Educational objectives

1. Knowledge

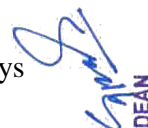
At the end of the course, the student shall be able to -

1. describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs
2. list the indications, contraindications, interactions and adverse reactions of commonly used drugs
3. indicate the use of appropriate drug in a particular disease with consideration of its cost, efficacy and safety for - individual needs, and mass therapy under national health programmes.
4. describe the pharmacokinetic basis, clinical presentation, diagnosis and management of common poisonings
5. Integrate the list the drugs of addiction and recommend the management
6. Classify environmental and occupational pollutants and state the management issues
7. Explain pharmacological basis of prescribing drugs in special medical situations such as pregnancy, lactation, infancy and old age
8. explain the concept of rational drug therapy in clinical pharmacology viii state the principles underlying the concept of 'Essential Drugs'
9. evaluate the ethics and modalities involved in the development and introduction of new drugs

2. Skills

At the end of the course, the student shall be able to

1. prescribe drugs for common ailments
2. identify adverse reactions and interactions of commonly used drugs
3. interpret the data of experiments designed for the study of effects of drugs and bioassays which are observed during the study


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4. scan information on common pharmaceutical preparations and critically evaluate drug formulations
5. be well-conversant with the principles of pharmacy and dispense the medications giving proper instructions

3. Integration

Practical knowledge of rational use of drugs in clinical practice will be acquired through integrated teaching vertically with pre-clinical & clinical subjects and horizontally with other para-clinical subjects.



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4. PATHOLOGY

Goals :

The goal of teaching pathology is to provide undergraduate students comprehensive knowledge of the causes and mechanisms of disease, in order to enable them to achieve complete understanding of the natural history and clinical manifestations of the disease.

Educational objectives

1. Knowledge

At the end of one and half years, the student shall be able to -

1. describe the structure and ultrastructure of a sick cell, the mechanisms of the cell degradation, cell death and repair.
2. Correlate structural and functional alterations in the sick cell.
3. Explain the Patho physiological processes which governs the maintenance of homeostasis, mechanism of their disturbances and the morphological and clinical manifestation associated with it.
4. describe the mechanisms and patterns of tissue response to injury to appreciate the Pathophysiology of disease processes and their clinical manifestations.
5. Correlate the gross and microscopic alterations of different organ systems in common diseases to the extent needed to understand disease processes and their clinical significance.
6. Develop an understanding of neoplastic change in the body in order to appreciate need for early diagnosis and further management of neoplasia.
7. Understand mechanisms of common haematological disorders and develop a logical approach in their diagnosis and management.

2. Skills

At the end of one and half years, the student shall be able to -

1. Describe the rationale and principles of technical procedures of diagnostic laboratory tests.

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2. Interpret diagnostic laboratory tests and correlate with clinical and morphological features of diseases.
3. Perform simple bedside tests on blood, urine and other biological fluid samples.
4. Draw a rational scheme of investigations aimed at diagnosing and managing common disorders.
5. Recognise morbid anatomical and histopathological changes for the diagnosis of common disorder.

3. Integration

At the end of one and half years, the student shall be able to integrate the causes and mechanisms of disease most prevalent in India with their natural history for the understanding of their clinical course and management.



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**5. FORENSIC MEDICINE AND MEDICAL JURISPRUDENCE
INCLUDING TOXICOLOGY**

Goals :

The broad goal of teaching undergraduate students Forensic Medicine is to produce a physician who is well informed about Medico-legal responsibility during his/her practice of Medicine. He/She will also be capable of making observations and inferring conclusions by logical deductions to set enquiries on the right track in criminal matters and associated medico-legal problems. He/She acquires knowledge of law in relation to Medical practice, Medical negligence and respect for codes of Medical ethics.

Educational objectives :

1. Knowledge

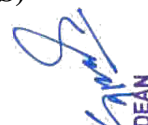
At the end of the course, the student shall be able to

1. identify the basic Medico-legal aspects of hospital and general practice
2. define the Medico-legal responsibilities of a general physician while rendering community service either in a rural primary health centre or an urban health centre
3. appreciate the physician's responsibilities in criminal matters and respect for the codes of Medical ethics
4. diagnose, manage and identify also legal aspect of common acute and chronic poisonings
5. describe the Medico-legal aspects and findings of post-mortem examination in cases of death due to common unnatural conditions and poisonings
6. detect occupational and environmental poisoning, prevention and epidemiology of common poisoning and their legal aspects particularly pertaining to Workmen's Compensation Act
7. describe the general principles of analytical toxicology

2. Skills

A comprehensive list of skills and attitude recommended by Medical Council of India Regulation, 1997 desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) Graduate for Forensic Medicine and Toxicology

At the end of the course, the student shall be able to:


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1. make observations and logical inferences in order to initiate enquiries in criminal matters and Medico-legal problems
 - a. *to be able to carry on proper Medico-legal examination and documentation/Reporting of Injury and Age*
 - b. *to be able to conduct examination for sexual offences and intoxication*
 - c. *to be able to preserve relevant ancillary materials for medico - legal examination*
 - d. *to be able to identify important post-mortem findings in common unnatural deaths*
2. diagnose and treat common emergencies in poisoning and chronic toxicity
3. make observations and interpret findings at post-mortem examination
4. observe the principles of medical ethics in the practice of his profession.

3. Integration

Department shall provide an integrated approach towards allied disciplines like Pathology, Radiology, Forensic Sciences, Hospital Administration etc. to impart training regarding Medico-legal responsibilities of physicians at all levels of health care. Integration with relevant disciplines will provide scientific basis of clinical toxicology e.g. Medicine, Pharmacology etc.



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6. MEDICINE

Goals :

The broad goal of the teaching of undergraduate students in Medicine is to have the knowledge, skills and behavioral attributes to function effectively as the first contact physician.

Objectives :

1. Knowledge:

At the end of the course, the student shall be able to :

1. Diagnose common clinical disorders with special reference to infectious diseases, nutritional disorders, tropical and environmental diseases;
2. Outline various modes of management including drug therapeutics especially dosage, side effects, toxicity, interactions, indications and contra-indications;
3. Propose diagnostic and investigative procedures and ability to interpret them;
4. Provide first level management of acute emergencies promptly and efficiently and decide the timing and level of referral, if required;
5. Recognize geriatric disorders and their management.

2. Skills :

At the end of the course, the student shall be able to :

1. develop clinical skills (history taking, clinical examination and other instruments of examination to diagnose various common medical disorders and emergencies;
2. refer a patient to secondary and/or tertiary level of health care after having instituted primary care;
3. perform simple routine investigations like hemogram, stool, urine, sputum and biological fluid examinations;
4. assist the common bedside investigative procedures like pleural tap, lumbar puncture, bone marrow aspiration/ biopsy and liver biopsy.

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A course of systematic instruction in the principles and practice of medicine, including medical disease of infancy;

- a) Lecture - demonstrations, seminars and conferences in clinical medicine during the 3 years shall run concurrently with other clinical subjects.;
- b) Instructions in comprehensive medical care;
- c) Instructions in applied anatomy and physiology and pathology throughout the period of clinical studies;
- d) Instructions in dietetics, nutrition and principles of nursing Medical and in simple ward procedure e.g. should be imparted during clinical concurrently.

3. Attitude :

1. The teaching and training in clinical medicine must aim at developing the attitude in students to apply the knowledge & skills he/she acquires for benefit and welfare of the patients.
2. It is necessary to develop in students a sense of responsibility towards holistic patient care & prognostic outcomes.
3. Students should develop behavioural skills and humanitarian approach while communicating with patients, as individuals, relatives, society at large & the co- professionals.



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7. SKIN DERMATOLOGY / STD/ LEPROSY

Goals :

The aim of teaching the Under graduate students in Dermatology, S.T.D. and Leprosy is to impart such knowledge and skills that may enable him to diagnose and treat common ailments and to refer rare diseases or complications and unusual manifestations of common diseases to the specialist.

Objectives :

1.Knowledge :

At the end of the course of Dermatology, Sexually Transmitted Diseases & Leprosy the student shall be able to :

1. Demonstrate sound knowledge of common diseases, their clinical manifestations including emergent situations and of investigative procedures to confirm their diagnosis.
2. Demonstrate comparative knowledge of various modes of topical therapy.
3. Demonstrate the mode of action of commonly used drugs, their doses, side effects / toxicity, indications and contraindication & interactions.
4. Describe commonly used modes of management including the medical & Surgical procedures available for the treatment of various diseases and to offer a comparative plan of management for a given disorder.

2. Skills :

The student shall be able to

1. Interview the patient, elicit relevant and correct information and describe the history in a chronological order :
2. conduct clinical examination, elicit and interpret physical findings and diagnose common disorders and emergencies :
3. perform simple, routine investigative and laboratory procedures required for making the bed-side diagnosis, especially the examination of scrapings for fungus, preparation of slit smears and staining for AFB for leprosy patients and for STD cases :
4. take a skin biopsy for diagnostic purposes ;
5. Manage common diseases recognizing the need for referral for specialized care, in case of inappropriateness of therapeutic response.


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8. CHEST TUBERCULOSIS AND RESPIRATORY DISEASES

Goals :

The aim of teaching the undergraduate student in Tuberculosis and Chest Diseases is to impart such knowledge and skills that may enable him/her to diagnose and manage common ailments affecting the chest with the special emphasis on management and prevention of Tuberculosis and especially National Tuberculosis control programme.

Objectives :

1. Knowledge :

At the end of the course of Tuberculosis and Chest diseases, the student shall be able to:

- 1) demonstrate sound knowledge of common chest diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis"
- 2) demonstrate comprehensive knowledge of various modes of therapy used in treatment of respiratory diseases;
- 3) describe the mode of action of commonly used drugs, their doses, sideeffects/toxicity, indications and contra-indications and interactions.;
- 4) describe commonly used modes of management including medical and surgical procedures available for treatment of various diseases and to offer a comprehensive plan of management inclusive of National Tuberculosis Control Programme.

2.Skills :

The student shall be able to :

- 1) interview the patient, elicit relevant and correct information and describe the history in chronological order;
- 2) conduct clinical examination, elicit and interpret clinical findings and diagnose common respiratory disorders and emergencies;
- 3) perform simple, routine investigative and office procedures required for making the bed side diagnosis, especially sputum collection and examination for etiologic organisms especially Acid Fast Bacilli

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- (AFB), interpretation of the chest x-rays and respiratory function tests;
- 4) Interpret and manage various blood gases and PH abnormalities in various respiratory diseases.
 - 5) Manage common diseases recognizing need for referral for specialized care, in case of inappropriateness of therapeutic response;
 - 6) Assist in the performance of common procedures, like laryngoscopic examination, pleural aspiration, respiratory physiotherapy, laryngeal intubation and pneumo-thoracic drainage/aspiration

3. Integration:

The broad goal of effective teaching can be obtained through integration with departments of Medicine, Surgery, Microbiology, Pathology, Pharmacology and Preventive and Social Medicine



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9. PSYCHIATRY

Goals :

The aim of teaching of the undergraduate student in Psychiatry is to impart such knowledge and skills that may enable him to diagnose and treat common Psychiatric disorders, handle Psychiatric emergencies and to refer complications/unusual manifestation of common disorders and rare Psychiatric disorders to the specialist.

Objectives :

1. Knowledge :

At the end of the course, the student shall be able to :

1. comprehensive nature and development of different aspects of normal human behaviour like learning, memory, motivation, personality and intelligence;
2. recognize differences between normal and abnormal behaviour;
3. classify psychiatric disorders;
4. recognize clinical manifestations of the following common syndromes and plan their appropriate management of organic psychosis, functional psychosis, schizophrenia, affective disorders, neurotic disorders, personality disorders, psychophysiological disorders, drug and alcohol dependence, psychiatric disorders of childhood and adolescence;
5. describe rational use of different modes of therapy in psychiatric disorders.

2. Skills:

The Student shall be able to :

1. interview the patient and understand different methods of communications in patient-doctor relationship;
2. Elicit detailed psychiatric case history and conduct clinical examination for assessment of mental status;
3. Define, elicit and interpret psycho-pathological symptoms and signs;
4. Diagnose and manage common psychiatric disorders;
5. Identify and manage psychological reactions and psychiatric disorders in medical and surgical patients in clinical practice and in community setting.

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3.Integration :

Training in Psychiatry shall prepare the students to deliver preventive, promotive, curative and re-habilitative services for the care of patients both in the family and community and to refer advanced cases for a specialized Psychiatry / Mental Hospital. Training should be integrated with the departments of Medicine, Neuro-Anatomy, Behavioral and Forensic Medicine.



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10. PAEDIATRICS

Paediatric including Neonatology

The course includes systematic instructions in growth and development, nutritional needs of a child, immunization schedules and management of common diseases of infancy and childhood including scope for Social Paediatrics and counseling.

Goals :

The broad goal of the teaching of undergraduate students in Paediatrics is to acquire adequate knowledge and appropriate skills for optimally dealing with major health problems of children to ensure their optimal growth and development.

Objectives :

1.Knowledge:

At the end of the course, the student shall be able to:

1. Describe the normal growth and development during foetal life, neonatal period, childhood and adolescence and outline deviations thereof;
2. Describe the common paediatric disorders and emergencies in terms of Epidemiology, aetiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation;
3. Age related requirements of calories, nutrients, fluids, drugs etc, in health and disease;
4. Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse;
5. Outline national Programmes relating to child health including immunization Programmes.

2.Skills :

1. At the end of the course, the student shall be able to :
2. take a detailed paediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigation

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results and plan and institute therapy.

3. Take anthropometric measurements, resuscitate newborn infants at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, perform venesection, start an intravenous saline and provide nasogastric feeding :
4. Conduct diagnostic procedures such as a lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural tap and ascitic tap;
5. Distinguish between normal newborn babies and those requiring special care and institute early care o all new born babies including care of preterm and low birth weight babies, provide correct guidance and counseling in breast feeding ;
6. Provide ambulatory care to all sick children, identify indications for specialized / inpatient care and ensure timely referral of those who require hospitalization :

4. INTEGRATION :

The training in paediatrics should prepare the student to deliver preventive, promotive, curative and rehabilitative services for care of children both in the community and at hospital as part of team in an integrated form with other disciplines, e.g. Anatomy, Physiology, Forensic Medicine, Community Medicine and Physical Medicine and Rehabilitation.



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**11. .PREVENTIVE AND SOCIAL MEDICINE / COMMUNITY MEDICINE
(PSM)**

Goals :

Community Medicine including Humanities (Preventive and Social Medicine)

The broad goal of the teaching of undergraduate students in community medicine is to prepare them to function as community and first level physicians in accordance with the institutional goals.

Objectives :

1.Knowledge :

At the end of the course the student shall be able

1. Explain the principles of sociology including demographic population dynamics.
2. Identify social factors related to health, disease and disability in the context of urban and rural societies.
3. Appreciate the impact of urbanization on health and disease.
4. Observe and interpret the dynamic of community behaviours.
5. Describe the elements of normal psychology and social psychology.
6. Observe the principles of practice of medicine in hospital and community settings.
7. Describe the health care delivery systems including rehabilitation of the disabled in the country.
8. Describe the National Health Programmes with particular emphasis on maternal and child health programmes, family welfare planning and population control.
9. List the epidemiological methods and techniques.
10. Outline the demographic pattern of the country and appreciate the roles of the individuals, family, community and socio-cultural milieu in health and disease.
11. Describe the health information systems.
12. Enunciate the principles and components of primary health care and the national health policies to achieve the goal of "Health for all".
13. Identify the environmental and occupational hazards and their control.
14. Describe the importance of water and sanitation in human health.
15. To understand the principles of health economics, health administration, health education in relation to community.

2.Skills :-

At the end of the course, the student shall be able to make use of


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1. The principles and practice of medicine in hospital and community settings and familiarization with elementary practices.
2. Use the Art of communication with patients including history taking and medico social work.
3. Use epidemiology as a scientific tool to make rational decisions relevant to community and individual patient intervention. Collect, analyse, interpret and present simple community and hospital base data.
4. Diagnose and manage common health problems and emergencies at the individual, family and community levels keeping in mind the existing health care resources and in the context of the prevailing socio-culture beliefs.
5. Diagnose and manage common nutritional problems at the individual and community level.
6. Plan, implement and evaluate a health education programme with skill to use simple audio-visual aids.
7. Interact with other members of the health care team and participate in the organization of health care services and implementation of national health programmes.

3.Integration:

Develop capabilities of synthesis between cause of illness in the environment or community and individual health and respond with leadership qualities to institute remedial measures for this.



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12. GENERAL SURGERY AND ITS ALLIED SPECIALITIES

Goal:

The broad goal of the teaching of undergraduate students in Surgery is to produce graduates capable of delivering efficient first contact surgical care.

Objectives:

The departmental objectives, syllabus and skills to be developed in the department of surgery during undergraduate medical education are presented herewith. These are prepared taking into consideration of various aspects and institutional goals given below:

1. A medical student after graduation may have different avenues of his/her professional career and may work either as a first contact physician in a private, semi-private or public sector or may take up further specialization in surgery or other specialties.
2. He may have to work in different settings such as rural, semi-urban or urban which may have deficient or compromised facilities.
3. These are based on the various health services research data in our community.
4. These are also based on following institutional goals in general;

At the end of the teaching/ training the undergraduate will be able to:

- a) Diagnose and manage common health problems of the individual and the community appropriate to his/her position as a member of the health team at primary, secondary and tertiary levels.
- b) Be competent to practice curative, preventive, promotive and rehabilitative medicine and understand the concepts of primary health care.
- c) Understand the importance and implementation of the National Health Programmes in the context of national priorities.
- d) Understand the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude required for professional responsibilities.
- e) Develop the ability for continued self-learning with a scientific attitude of mind and acquire further expertise in any chosen area of medicine.

1. Knowledge

At the end of the course, the student shall be able to:

1. Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children;


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2. Define indications and methods for fluid and electrolyte replacement therapy including blood transfusion.
3. Define asepsis, disinfection and sterilization and recommend judicious use of antibiotics.
4. Describe common malignancies in the country and their management including prevention.
5. Enumerate different types of anaesthetic agents, their indications, mode of administration, contraindications and side effects

2. Skills

At the end of the course, the student should be able to

1. Diagnose common surgical conditions both acute and chronic, in adult and children.
2. Plan various laboratory tests for surgical conditions and interpret the results;
3. Identify and manage patients of haemorrhagic; septicaemic and other types of shock.
4. Be able to maintain patent air-way and resuscitate:
 - A. A critically injured patient.
 - B. Patient with cardio-respiratory failure;
 - C. A drowning case.
5. Monitor patients of head, chest, spinal and abdominal injuries, both in adults and children
6. Provide primary care for a patient of burns;
7. Acquire principles of operative surgery, including pre-operative, operative and post-operative care and monitoring;
8. Treat open wounds including preventive measures against tetanus and gas gangrene.
9. Diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary/territory centers;
10. Identify congenital anomalies and refer them for appropriate management.


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13. ORTHOPAEDICS

1. Knowledge

The student shall be able to:

1. Explain the principles of recognition of bone injuries and dislocation.
2. Apply suitable methods to detect and manage common infections of bones and joints.
3. Identify congenital, skeletal anomalies and their referral for appropriate correction or rehabilitation.
4. Recognize metabolic bone diseases as seen in this country:
5. Explain etiology, manifestations, and diagnosis of neoplasm affecting bones.

2. Skills:

At the end of the course, the student shall be able to:

1. Detect sprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colles's forearm, phalanges etc.
2. Use techniques of splinting, plaster, immobilization etc.
3. Manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities;
4. Advise aspects of rehabilitation for Polio, Cerebral Palsy and Amputation.

3. Application

Be able to perform certain orthopaedic skills, provide sound advice of skeletal and related conditions at primary or secondary health care level.

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14. ANAESTHESIOLOGY

Departmental Objectives:

At the end of the training, the students should be able to:

1. Perform cardio-pulmonary resuscitation with the available resources and transfer the patients to a bigger hospital for advanced life support.
2. Set up intravenous infusion.
3. Clear and maintain airway in an unconscious patient.
4. Administer oxygen correctly.
5. Perform simple nerve block.
6. Exhibit awareness of the principles of administration of general and local anaesthesia.

Skills:

1. Start I V line and infusion in adults, children and neonates.
2. Do venous cutdown.
3. Insert, manage a CVP line.
4. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.
5. Perform nerve blocks like infiltration, digital and field blocks.
6. Do lumbar puncture.
7. Administer O₂ by mask, catheter, and O₂ tent and be able to handle O₂ cylinder.

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15. Radiology :Diagnosis & Imaging

Goals :

- Realisation of the basic need of various radio-diagnostic tools.
- Radio-diagnostic Techniques to be adopted indifferent clinical situations in diagnosis of ailments.

Objectives:

1. Knowledge: -

The student shall be able to

- Understand basics of X-ray / USG production, its utility and hazards
- Appreciate and diagnose radiological changes in diseases of Chest, Abdomen, Skeletal system, Gastro-intestinal system, Genito-urinary System & CNS
- Learn about various Imaging techniques like nuclear medicine, computerised tomography (CT),Ultrasound, magnetic resonance imaging (MRI), conventional & Digital subtraction Angiography (DSA).

Skills: -

At the end of the course the student shall be able to

- Interpret various radiological findings and their consequences
- Use basic protective techniques during various Imaging procedures
- Advice appropriate Diagnostic procedures to arrive at an appropriate diagnosis.


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16. Dentistry for MBBS students under Surgery

Goals:

Comprehensive understanding of Dentistry, Orofacial structures, the Dentition, Maxillary and Mandibular jaws and the Diagnosis, Treatment, Prevention, Restoration and Rehabilitation of the common dental problems ·

Objectives:

1.Knowledge:

1. Various Diseases, Syndromes, Lesions, Disorders manifesting and affecting the Oral cavity, the Jaws and the TM joint.
2. Effects of Dental Caries, Gingival and Periodontal diseases and Malocclusion.

2. Skills:

1. Examination of the Oral cavity and the TM Joint
2. Local Anaesthesia Administration. Dental block
3. Exodontia.
4. Emergency management of Maxillofacial Trauma.
5. Plaque control and Oral health care regimen.


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17. OPHTHALMOLOGY:

These guidelines are based on MCI recommendations.

Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

Goal

The broad goal of the teaching of students in ophthalmology is to provide such knowledge and skills to the student that shall enable him/her to practice as a clinical and as a primary eye care physician and also to function effectively as a community health leader to assist in the implementation of National Programme for the prevention of blindness and rehabilitation of the visually impaired.

Objectives

1. Knowledge

At the end of the course, student shall have the knowledge of

1. Common problems affecting the eye,
2. Principles of management of major ophthalmic emergencies,
3. main systemic diseases affecting the eye;
4. Effects of local and systemic diseases on patient's vision and the necessary action required to minimize the sequelae of such diseases;
5. Adverse drug reactions with special reference to ophthalmic manifestations;
6. Magnitude of blindness in India and its main causes;
7. National programme for control of blindness and its implementation at various levels.
8. Eye care education for prevention of eye problems
9. Role of primary health center in organization of eye camps;
10. organization of primary health care and the functioning of the ophthalmic assistant;
11. Integration of the national programme for control of blindness with the other national health Programmes.
12. Eye bank organization

2. Skills

At the end of the course, the student shall be able to:


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1. Elicit a history pertinent to general health and ocular status;
2. Assist in diagnostic procedures such as visual acuity testing, examination of eye, Schiotz tonometry, Staining of Corneal pathology, confrontation perimetry, Subjective refraction including correction of presbyopia and aphakia, direct ophthalmoscopy and conjunctival smear examination and Cover test;
3. Diagnose and treat common problems affecting the eye;
4. Interpret ophthalmic signs in relation to common systemic disorders,
5. Assist/observe therapeutic procedures such as subconjunctival injection corneal conjunctival foreign body removal, carbolic cautery for corneal ulcers, Nasolacrimal duct syringing and tarsorrhaphy;
6. Provide first aid in major ophthalmic emergencies;
7. Assist to organize community surveys for visual check up;
8. Assist to organize primary eye care service through primary health centers.
9. Use effective means of communication with the public and individual to motivate for surgery in cataract and for eye donation.
10. Establish rapport with his seniors, colleagues and paramedical workers, so as to effectively function as a member of the eye care team.

3. Integration

The undergraduate training in Ophthalmology will provide an integrated approach towards other disciplines especially Neuro-sciences, ENT, General Surgery and Medicine



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18. OBSTETRICS & GYNAECOLOGY

These guidelines are based on MCI recommendations Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

Goal

The broad goal of the teaching of undergraduate students in Obstetrics and Gynaecology is that he/she shall acquire understanding of anatomy, physiology and pathophysiology of the reproductive system & gain the ability to optimally manage common conditions affecting it.

Objectives;

1. Knowledge:

At the end of the course, the student shall be able to:

1. Outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it. •
2. Detect normal pregnancy, labour puerperium and manage the problems he/she is likely to encounter therein, •
3. List the leading causes of maternal perinatal morbidity and mortality. •
4. Understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilization and their complications. •
5. Identify the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post-menopausal periods; •
6. Describe the national programme of maternal and child health and family welfare and their implementation at various levels. •
7. Identify common gynaecological diseases and describe principles of their management.


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State the indications, techniques and complications of surgeries like Caesarian Section, laparotomy, abdominal and vaginal hysterectomy, Fothergill's operation and vacuum aspiration for Medical Termination of Pregnancy (MTP)

2. Skills

At the end of the course, the student shall be able to :

1. Examine a pregnant woman; recognize high-risk pregnancies AND make appropriate referrals
2. conduct a normal delivery, recognize complications and provide postnatal care;
3. Resuscitate the newborn and recognize the congenital anomalies
4. advise a couple on the use of various available contraceptive devices and assist in insertion and removal of intra-uterine contraceptive devices.
5. Perform pelvic examination, diagnose and manage common gynaecological problems including early detection of genital malignancies;
6. Make a vaginal cytological smear, perform a post coital test and wet vaginal smear examination for Trichomonas vaginalis, Moniliasis and gram stain for gonorrhoea;
7. interpretation of data of investigations like biochemical, histopathological, radiological ultrasound etc.

3. Integration

The student shall be able to integrate clinical skills with other disciplines and bring about coordination of family welfare programme for the national goal of population control.



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