



THE SECRETARY OF EDUCATION  
WASHINGTON, D.C. 20202

MAY 23 2003

SENT BY FACSIMILE TRANSMISSION

Dr. M. Hayat Zafar  
President  
Pakistan Medical and Dental Council  
G-10/4, Mauve Area  
Islamabad  
Pakistan

Dear Dr. Zafar:

In March 1997, the National Committee on Foreign Medical Education and Accreditation (NCFMEA) determined that the medical accreditation standards used by Pakistan were comparable to the standards used to evaluate programs leading to the M.D. degree in the United States. On March 13, 2003, the NCFMEA reviewed the information recently provided by the Pakistan Medical and Dental Council (Council) on its current medical accreditation standards to reassess the comparability of those standards.

I am pleased to inform you that the NCFMEA, based on the most recent information and materials received from Pakistan, reaffirmed its prior determination that the standards and processes used by the Council to accredit medical schools in Pakistan are comparable to those used to accredit medical schools in the United States. This determination of comparability by the NCFMEA has a maximum duration of six years from the date of this letter, unless the Committee withdraws, extends or renews its determination prior to that date. Before expiration of the six-year period, the NCFMEA will seek to confirm that your standards and processes for accrediting medical schools in Pakistan are still comparable to the accreditation standards applied to medical schools in the United States. If so, its previous determination of comparability will be extended for another period.

As a result of the determination of continued comparability by the NCFMEA, any medical school in Pakistan that is accredited by the Council may apply to the U.S. Department of Education to participate in the Federal Family Education Loan (FFEL) program. If a medical school's application is approved, students enrolled in the school who are either U.S. citizens or permanent residents of the U.S. may receive FFEL loans to finance their medical education if they meet all other eligibility requirements. Medical schools that wish to participate in the FFEL program may obtain the proper application forms from the Foreign Schools Team by calling (202) 377-3168 or by writing to the following address:

Foreign Schools Team  
FSA/Schools Channel/CMO  
U.S. Department of Education  
Room 73C3  
830 First St., NE  
Washington, DC 20202-5340  
U.S.A.

The NCFMEA also requested that Pakistan submit, for review at the March 2004 NCFMEA meeting, a report on Pakistan's accreditation activities. Please see the enclosure for specific details about the report. In addition to the report, the NCFMEA requested that Pakistan provide more detailed information on the following: (1) what policy, if any, the Council has pertaining to a medical school's humane treatment of animals that are used in medical research, and (2) what policies the Council has to deal with circumstances where the private interests of a faculty or staff member may conflict with that person's official responsibilities.

Please provide the requested policy information and the report on accreditation activities by December 1, 2003 to the U.S. Department of Education at the address below:

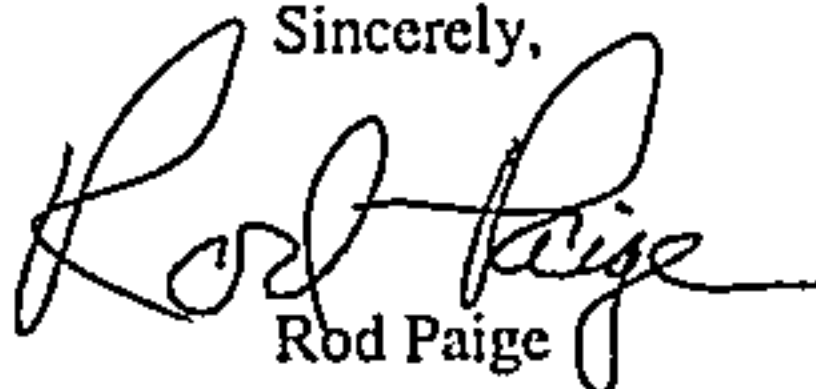
Carol Griffiths  
Chief, Accrediting Agency Evaluation Unit  
U.S. Department of Education  
1990 K Street, NW – Room 7105  
Washington, D.C. 20006-8509  
U.S.A.

If you have any questions regarding the information requested, please feel free to contact Ms. Griffiths at (202) 219-7011 (telephone), (202) 219-7005 (fax), or [carol.griffiths@ed.gov](mailto:carol.griffiths@ed.gov) (e-mail).

In the fall of 2003, Bonnie LeBold, the Executive Director of the NCFMEA, will contact you to provide information regarding the March 2004 NCFMEA meeting. In the interim, if you have any questions about the meeting, please do not hesitate to contact Ms. LeBold at (202) 219-7009 (telephone), (202) 219-7008 (fax), or [bonnie.lebold@ed.gov](mailto:bonnie.lebold@ed.gov) (e-mail).

I want to thank you for taking the time to respond to our requests for information about your standards and processes for accreditation of medical schools. The NCFMEA members and I very much appreciate your ongoing interest and assistance in this matter.

Sincerely,



Rod Paige

Enclosure

**Report Requested from the  
Pakistan Medical and Dental Council (PMDC)  
by the National Committee on Foreign Medical Education and Accreditation (NCFMEA)**

**Due Date:** December 1, 2003

**Submit to:** Carol Griffiths  
Chief, Accrediting Agency Evaluation Unit  
U.S. Department of Education  
1990 K Street, NW – Room 7105  
Washington, D.C. 20006-8509  
U.S.A.

Phone: (202) 219-7011  
Fax: (202) 219-7005  
E-mail: [carol.griffiths@ed.gov](mailto:carol.griffiths@ed.gov)

**Content:** The NCFMEA is requesting the following information (and any applicable supporting documents) regarding the following:

- ***Current status of medical schools:*** A list of the medical schools currently operating in Pakistan, indicating whether each school has gone through the accreditation process and what the outcome of that accreditation process has been; for example, whether the school is fully accredited, whether the school is provisionally accredited, whether accreditation has been terminated, etc.
- ***Overview of accreditation activities:*** A summary of key activities by the PMDC in 2003, such as a list of accreditation reviews conducted, accreditation decisions reached, and accreditation conferences or training sessions held.
- ***Laws and Regulations:*** An indication as to whether there have been any changes during 2003 in your country's laws or regulations that affect the accreditation of your medical schools, and, if so, what those changes were.
- ***Standards:*** An indication as to whether there have been any changes during 2003 in the accreditation standards that the PMDC uses to evaluate and accredit medical schools in the areas listed below, and, if so, what those changes were:
  - administration,
  - faculty,
  - curriculum,
  - admissions procedures,
  - student services,
  - methods for evaluating student achievement, and
  - facilities.
- ***Processes and procedures:*** An indication as to whether there have been any changes during 2003 in the accreditation processes or procedures used by the PMDC for the following –
  - conducting site visits,
  - selecting and training individuals who conduct site evaluations or who make accreditation decisions,

- periodically reevaluating and regularly monitoring medical schools,
  - reviewing substantive changes reported by medical schools,
  - ensuring the PMDC has effective controls against the conflicts of interest and the inconsistent application of accreditation standards, and
  - ensuring that accreditation decisions are based, in part, on the evaluation of student performance after graduation from medical school.
- *Schedule of upcoming accreditation activities:* A listing of upcoming accreditation meetings and on-site visits to medical schools and clinical clerkship sites for the period covering December 2003 through December 2004.

**U.S. Department of Education**



**Staff Analysis**

**Pakistan**

**For the March 13, 2003 Meeting  
of the  
National Committee on Foreign Medical  
Education and Accreditation**

**U.S. Department of Education**  
**Staff Analysis**  
**of the Standards Used by**  
**Pakistan**  
**For the Evaluation of Medical Schools**  
  
**Prepared February 2003**

**Background**

At its March 1997 meeting, the National Committee on Foreign Medical Education and Accreditation (NCFMEA) determined that the standards of accreditation used by Pakistan to accredit medical schools offering programs leading to the M.D. (or equivalent) degree were comparable to standards of accreditation applied to M.D. programs in the United States. The NCFMEA reviews the comparability of countries' standards on a periodic basis. The U.S. Department of Education (Department), in September 2002, sent Pakistan a copy of the NCFMEA's new guidelines and requested that Pakistan provide information to demonstrate its compliance with those guidelines. The information provided by Pakistan in response to that request is the subject of this analysis.

**Summary of Findings**

The environment for the evaluation and recognition of medical schools in Pakistan is somewhat different from the system used in the United States to accredit medical schools. The Pakistani government completely regulates every aspect of public medical education in the country, with the Pakistan Medical & Dental Council (PMDC or the Council) prescribing the medical curriculum and its objectives, the size and qualifications of the faculty, admissions criteria and other indicia traditionally associated with educational quality, and even the number of beds to be used in clinical studies in the affiliated teaching hospitals.

The function of the on-site evaluation teams (called inspection teams) is to verify whether the prescribed standards are maintained by each of the medical schools, and only those schools that meet the standards qualify for recognition by the PMDC. This is very different from the accreditation system used in the United States, which allows medical schools considerable freedom and flexibility to operate within generally established parameters. While the Pakistani system may be seen as focusing primarily on what would traditionally be called "educational inputs" in the United States, it nevertheless does require a very thorough on-site inspection of a number of variables, namely, the quality of a medical school's faculty and the adequacy of its facilities, including equipment, classrooms, laboratories, and libraries.

One other aspect of Pakistan's evaluation system that is particularly important in light of their highly structured, government-mandated format for medical education is the feedback mechanism that is used to obtain information about the effectiveness of the system. The Council, through interviews with appropriate individuals during the on-site inspection (primarily faculty, who it believes to be the key to the overall quality of the national system of medical education), elicits suggestions for improving the overall quality of medical education. The on-site inspection thus serves a valuable function in assisting the PMDC to evaluate the effectiveness of the government-mandated educational objectives of the medical curriculum and to make appropriate changes.

The highly-structured, government-mandated format for medical education in Pakistan and the application of a thorough on-site inspection component used to evaluate the delivery of medical education appears to have a comparable rigor to the system used in the United States to evaluate medical education programs.

However, subsequent to the NCFMEA's prior determination of comparability, the Committee made changes to its guidelines for comparability (in 1999). Because the accreditation/approval process is usually an ongoing and evolving process of improvement, the Department understands that a country may also have made changes to its accreditation evaluation process and standards. Therefore, each time a country comes before the NCFMEA for a redetermination of comparability, Department staff reviews the application as a case of first impression and relies only on the documentation submitted with the country's new application. In this instance, the documentation provided was not inclusive. Therefore, Department staff cannot, based on the information provided, make an assessment as to whether Pakistan's process and standards for the evaluation of the medical education offered by its institutions remain comparable to the system used to evaluate medical education programs in the United States.

### Staff Analysis

#### PART I: The Entity Responsible for the Accreditation/Approval of Medical Schools

There should be a clearly designated body responsible for evaluating the quality of medical education in the foreign country, and that body should have clear authority to accredit/approve medical schools in the country that offer educational programs leading to the M.D. (or equivalent) degree.

The Pakistan Medical & Dental Council is by statute the regulatory entity responsible for medical education in Pakistan. The statute granting the Council authority is the Pakistan Medical & Dental Council Ordinance of 1962, which was amended in 1973 by an Act of Parliament. The PMDC approved Regulations in March 1998 to exercise its powers for the degree of Bachelor of Medicine and Bachelor of Surgery (M.B.B.S.).

Under the Regulations, the Council's authority includes setting minimum standards for basic and higher qualifications in medicine, and includes the following:

- To prescribe a uniform minimum standard of courses of training for obtaining graduate and postgraduate medical qualifications
- To prescribe minimum requirements for the content and duration of courses of studies for the degree of M.B.B.S.
- To prescribe conditions, for admission to courses of training for the degree of M.B.B.S.

## **PART II: Accreditation/Approval Standards**

The entity within the foreign country that is responsible for evaluating the quality of medical education in the country and has authority to accredit/approve medical schools should have standards comparable to the following:

### **1. Mission and Objectives**

- (a) The educational mission of the medical school must serve the general public interest, and its educational objectives must support the mission. The medical School's educational program must be appropriate in light of the mission and objectives of the school.
- (b) An essential objective of a program of medical education leading to the M.D. (or equivalent) degree must be to prepare graduates to enter and complete graduate medical education, qualify for licensure, provide competent medical care, and have educational background necessary for continued learning.

Pakistan requires its medical schools " . . . to prepare a caring general purpose community oriented doctor who is competent to deal with the common health problems of the people in a scientifically sound and cost effective manner."

Students must have five years of training from an institution recognized by the PMDC and affiliated with a chartered Pakistani university. Students can be registered as medical practitioners once they complete this five-year education, pass all University professional examinations and serve a one-year internship in a recognized hospital.

### **2. Governance**

- (a) The medical school must be legally authorized to provide a program of medical education in the country in which it is located.

- (b) There must be an appropriate accountability of the management of the medical school to an ultimate responsible authority external to and independent of the school's administration. This external authority must have sufficient understanding of the medical program to develop policies in the interest of both the medical school and the public.**

The Council licenses institutions to provide medical education programs, and institutions must be legally authorized to operate. All medical institutions must be affiliated with universities, which are authorized by the country's higher education commission. Universities in Pakistan have the authority to issue the M.B.B.S. degree.

For public universities, federal and provincial health ministries exercise administrative control. For private universities, a Board of Governors oversees the management of the medical institutions.

### **3. Administration**

- (a) The administration of the medical school must be effective and appropriate in light of the school's mission and objectives.**
- (i) There must be sufficient administrative personnel to ensure the effective administration of admissions, student affairs, academic affairs, hospital and other health facility relationships, business and planning, and the other administrative functions that the medical school performs.**
  - (ii) The chief academic officer of the medical school must have sufficient authority provided by the institution to administer the educational program. That individual must also have ready access to the university president or other university official charged with final responsibility for the school, and to other university officials as are necessary to fulfill the responsibilities of the chief academic officer's office.**
  - (iii) In affiliated institutions, the medical school's department heads and senior clinical faculty members must have authority consistent with their responsibility for the instruction of students**

The PMDC regulations stipulate that: "Administrative organization of the College should be prompt, effective, and problem solving in the form of governing body with non-lapsable budget." Pakistan also reported that: "Board of Governors appointed by the respective authorities are responsible for the administration of their medical schools in light of PMDC regulations."

The regulations further stipulate that each medical college establish a "... Department of Medical Education with adequate staff, space, furnishing, equipment, stationery, and funds. A Department of Medical Education has to be given the status of a compulsory departments without which a medical college should not be recognized." The regulations require the department to be under a trained senior staff member for "... devising educational innovations, conducting teacher training programs, continuing medical education activities and student counseling for which proper facilities be provided."

- (b) The chief academic official of the medical school must be qualified by education and experience to provide leadership in medical education.**

A senior professor is in charge of the medical institution and its affiliated teaching hospital. Pakistan has not provided the qualifications that are required to be a "senior professor." However, in the Department of Medical Education subsection of the Educational Facilities section of the Regulations, there is this statement: "As a rule, the senior-most professor should be the Principal or Dean of the College."

- (c) The medical school may determine the administrative structure that best suits its mission and objectives, but that structure must ensure that the faculty is appropriately involved in decisions related to--**

- (i) Admissions;**
- (ii) Hiring, retention, promotion, and discipline of faculty; and**
- (iii) All phases of the curriculum, including the clinical education portion;**

Pakistan reported that "... administrative authorities in light of PMDC regulations" control "... admission and promotion of faculty." A medical institution's academic council has the authority to make clinical teaching decisions. The University Grants Commission, appointed by the Pakistani government in 1976 as the "Competent Authority to look after the Curriculum Revision Work beyond Class XII at Bachelor level and onwards of all Degrees, Certificates and Diplomas awarded by Degree Colleges, Universities and other Institutions of higher education" continually revises the medical degree curriculum and the curriculum of a subject must be reviewed after every three years. Although it does not appear that faculty at the medical schools in the country are involved in revising the curriculum at their schools, the University Grants Authority constitutes "various committees ... at the national level comprising senior teachers nominated by the Universities. Teachers from local degree colleges and experts from user organizations, where required, are also included in these committees."

It does not appear that the faculty is involved in admissions or the hiring, retention, promotion and discipline of faculty.

- (d) If some components of the educational program are conducted at sites that are geographically separated from the main campus of the medical school, the school must have appropriate mechanisms in place to ensure that--**
- (i) The educational experiences at all geographically separated sites are comparable in quality to those at the main campus; and**
  - (ii) There is consistency in student evaluations at all sites.**

There are no branch campuses of medical institutions in Pakistan. Some medical schools have teaching hospitals that are not located at the site of the medical institution, but these hospitals are located in the same city as the medical institution.

#### **4. Educational Program**

- (a) Duration: The program of education leading to the M.D. (or equivalent) degree must include at least 130 weeks of instruction, scheduled over a minimum of four calendar years.**

The medical education program to earn an M.B.B.S. degree is a minimum of five calendar years plus one year of a supervised residency.

- (b) Curricular Content: The medical school's curriculum must provide students with general professional education, i.e. the knowledge and skills necessary to become a qualified physician. At a minimum, the curriculum must provide education in the following:**

- (i) The sciences basic to medicine, including—**

**(A) The contemporary content of those expanded disciplines that have traditionally been titled anatomy, biochemistry, physiology, microbiology and Immunology, pathology, pharmacology and therapeutics, and preventive medicine; and**

**(B) Laboratory or other practical exercises that facilitate the ability to make accurate quantitative observations of biomedical phenomena and critical analyses of data.**

A student enrolled in a Pakistani medical school must study a variety of basic medical science subjects to earn the M.B.B.S. degree. The subjects are:

Anatomy  
Biochemistry  
Physiology  
Pharmacology and Therapeutics  
Pathology (Microbiology, Histology)  
Forensic Medicine and Toxicology  
Community Health Services (Preventive Medical)

The Council's regulations specify the total number of hours to be taught in each subject and the "spacing," i.e., the year(s) the subject is to be taught. A total of 2550 hours is required in these non-clinical subjects. For Biochemistry, Physiology, Pharmacology and Pathology, laboratories should be available and they should have both simple and high technology equipment for demonstrations and experiments. Immunology does not appear to be a required basic medical science subject.

- (ii). A variety of clinical subjects, including at least the core subjects of internal medicine, obstetrics and gynecology, pediatrics, surgery, and psychiatry and, preferably, family medicine.

**Note 1:** Medical schools that do not require clinical experience in one or another of the above disciplines must ensure that their students possess the knowledge and clinical abilities to enter any field of graduate medical education.

**Note 2:** Clinical instruction must cover all organ systems and include aspects of acute, chronic, continuing, preventive, and rehabilitative care.

**Note 3:** The medical school's program of clinical instruction must be designed to equip students with the knowledge, skills, attitudes, and behaviors necessary for further training in the practice of medicine.

**Note 4:** Instruction and experience in patient care must be provided in both ambulatory and hospital settings.

**Note 5:** Each required clinical clerkship (or equivalent) must allow the student to undertake thorough study of a series of selected patients having the major and common types of disease problems represented in the clerkship.

The required clinical science subjects to earn the M.B.B.S. degree, "... which are examined by the university" are:

Internal Medicine  
Surgery  
Obstetrics & Gynecology

Pediatrics  
Ophthalmology  
Otorhinolaryngology

Other related clinical specialties, mentioned in the M.B.B.S. regulations, are also taught. These include:

Cardiology  
Neurology  
Urology  
Psychiatry  
Dermatology  
Tuberculosis and Chest Diseases  
Orthopedic Surgery  
Thoracic Surgery  
Neurosurgery  
Anesthesiology Geriatrics  
Family Medicine  
Radiology  
Radiotherapy

The Regulations' Curriculum section provides that: "Students should learn to perform simple basic clinical procedures in all disciplines (emphasis added)," and that the fourth-year students should learn the management of health problems for both in- and out-patients. There are guidelines in the Regulations for each clinical subject, including Internal Medicine, Surgery, Obstetrics and Gynecology, Pediatrics and Ophthalmology.

**(iii) Disciplines that support the fundamental clinical subjects, such as diagnostic imaging and clinical pathology.**

The M.S.S.B. regulations include radiology as one of the clinical specialties that is taught. Also, Pakistan reported that: "In support of the fundamental clinical subjects in a medicine program leading to the M.B.B.S. degree fully developed departments of Radiology and Clinical Pathology are established."

**(iv) Ethical, behavioral, and socioeconomic subjects pertinent to medicine.**

The Council believes that students should be taught behavioral sciences, including interpersonal relationships and social adjustment issues, in the first two years of their M.B.B.S. program. The Regulations' Curriculum section has the following under Subject Objectives: "Behavioral Sciences: It is imperative that students be trained to deal with complexities of life, as well as the complex medical problems accruing from them. It is, therefore, essential that in the first two years of the MBBS course the

students should be taught behavioral sciences, including the interpersonal relationships and social adjustment issues."

- (v) **Communications skills integral to the education and effective function of physicians, including communication with patients, families, colleagues, and other health professionals.**

The PMDC believes students should be able to conduct interviews and take patient histories as well as conducting accurate physical examinations by the time they finish their M.B.B.S. program. The Council expects that graduates will "... display virtues, personal character and a sense of responsibility towards patients, community and colleagues."

The "Guiding Principles" that resulted from the curriculum revision work of the University Grants Commission on behalf of the Pakistani government, states that: "The desired humanistic attributes of a caring doctor with effective communication skills should be defined, methods that build these attributes should be included and tested, including trust-building in a professional patient-doctor relationship."

**(c) Design, Implementation, and Evaluation:**

- (i) **There must be integrated responsibility by faculty within the medical school for the design, implementation, and periodic evaluation of all aspects of the curriculum, including both basic sciences and clinical education.**
- (ii) **The medical school must regularly evaluate the effectiveness of its medical program by documenting the achievement of its students and graduates in verifiable ways that show the extent to which institutional and program purposes are met. The school should use a variety of measures to evaluate program quality, such as data on student performance, academic progress and graduation, acceptance into residency programs, and postgraduate performance; the licensure of graduates, particularly in relation to any national norms; and any other measures that are appropriate and valid in light of the school's mission and objectives.**

The PMDC and Pakistan's Higher Education Commission are the two entities authorized to evaluate the curriculum of all medical schools. The Council, which prepares and approves the M.B.B.S. curriculum, periodically evaluates and redesigns it with the assistance of senior faculty members from all of the country's recognized medical schools. Also, medical schools are permitted to make changes in the implementation of the curriculum for teaching and training.

As stated earlier in this analysis, the University Grants Commission continually revises the medical degree curriculum, as needed, and the Commission must review the curriculum of all subjects every three years. The National Curriculum Revision Committee in May 2002 reviewed 18 subjects.

## **5. Medical Students**

### **(a) Admissions, Recruiting, and Publications**

- (i) The medical school must admit only those new and transfer students who possess the intelligence, integrity, and personal and emotional characteristics that are generally perceived as necessary to become effective physicians.**
- (ii) A medical school's publications, advertising, and student recruitment must present a balanced and accurate representation of the mission and objectives of its educational program. Its catalog (or equivalent document) must provide an accurate description of the school, its educational program, its admissions requirements for students (both new and transfer), the criteria it uses to determine that a student is making satisfactory academic progress in the medical program, and its requirements for the award of the M.D. degree (or equivalent).**
- (iii) Unless prohibited by law, student records must be available for review by the student and an opportunity provided to challenge their accuracy. Applicable law must govern the confidentiality of student records.**

The PMDC sets the standards for admission to all the public medical schools in Pakistan. Thus, admission to these schools is regulated at the national level and medical schools are required to provide data on their admissions. On-site inspectors are expected to verify the quality of the student body through interviews.

The Council prescribes in some detail the conditions for admission to programs leading to the M.B.B.S. degree. These include, as stated in the "Pakistan Medical & Dental Council Regulations for The Degree of Bachelor of Medicine and Bachelor of Surgery" (pages 4-5): limiting the size of class enrollments; mandating that provincial governments conduct entry tests for those seeking admission and directing how the tests are to be scored; setting minimum academic requirements and passing scores, and determining what courses candidates must pass before being admitted.

The PMDC allows private medical schools to conduct their own entry examinations.

Medical institutions keep student records of internal assessment results, such as monthly, mid-term and term exams. Students have full access to these records. The universities conduct annual professional examinations and maintain the records of the results of these exams. University rules do not allow students access to these records.

Pakistan provided no information on its oversight or regulation of a medical school's publications, including its catalog or equivalent document, or on a medical school's advertising or student recruitment.

#### **(b) Evaluation of Student Achievement**

- (i) The medical school faculty must establish principles and methods for the evaluation of student achievement, including the criteria for satisfactory academic progress and the requirements for graduation.**
- (ii) The medical school's evaluation of student achievement must employ a variety of measures of student knowledge, competence, and performance, systematically and sequentially applied throughout the medical program, including the clinical clerkships.**
- (iii) The medical school must carefully monitor the progress of students throughout their educational program, including each course and clinical clerkship, must promote only those who make satisfactory academic progress, and must graduate only those students who successfully complete the program.**

The Council's Regulations mandate that all medical colleges and universities in Pakistan continuously make internal assessments. These assessments include appropriate evaluations at the end of each assignment, term, stage or course of the curriculum. Records of internal evaluations are maintained and the scores from these tests contribute 30% to the final total score of the candidates. Medical schools are not free to establish their own methodology for evaluation of professional examinations. The Universities conduct professional examinations at the end of each academic year.

#### **(c) Student Services**

**Students must have access to preventive and therapeutic health services, including confidential mental health counseling. Policies must include education, prevention, and management of exposure to infectious diseases during the course of the educational program.**

The Council requires medical schools to provide sufficient facilities for their students in the belief that healthy extra curricular activities contribute to the proper grooming of students. The PMDC recommends the following activities and welfare programs for medical students:

1. Sports clubs
2. Literary societies
3. Social welfare activities such as conducted tours, community organizations, etc.
4. Student counseling services to deal with such problems as substance abuse
5. Motivation against political exploitation
6. Teacher-Student organizations like tutoring systems
7. Student's Group Insurance System and Benevolent Fund
8. Proper awards and adequate scholarships for purposes of incentives and assistance
9. Student health services
10. Student exchange programs with other institutions at home and abroad
11. Proper hostel accommodations
12. Transport facilities
13. Language training programs for proficiency in English language on a voluntary basis

It is unclear whether Pakistan requires its medical schools to have policies regarding services to students in the areas of education, prevention and management of exposure to infectious diseases that students receive during the course of their educational program.

## **6. Resources for the Educational Program**

**(a) Finances:** The medical school must have adequate financial resources for the size and scope of its educational program.

**(b) Facilities:**

**(i)** The medical school must have, or be assured use of, physical facilities and equipment, including clinical teaching facilities, that are quantitatively and qualitatively adequate for the size and scope of the educational program, as well as the size of the student body.

**(ii)** The medical school should be encouraged to conduct biomedical research and must provide facilities for the humane care of animals when animals are used in teaching and research.

The PMDC has reported that its booklet, "Criteria for Establishment/Recognition of Medical and Dental Colleges," has the requirements for a medical institution's financial resources. This booklet has the following in its "Financial Resources" section: "Every

intending college must be financially viable. Financial resources should be clearly indicated according to level, size, and type of the proposed institution. It should be able not only to establish but also to run progressive medical/dental college."

For facilities, again the Council refers to its "Criteria for Establishment/Recognition of Medical and Dental Colleges, where two sections, "Space" and "Infrastructure" appear to apply. Under "Space," the PMDC has the following: "It must include all the relevant documents of ownership, possession, and plan of academic blocks. Site selected should be suitable from academic point of view. Minimum requirement for total area of Medical/Dental Institution will be provided in due course."

The "Infrastructure" section of this booklet has the following: "Adequate physical facilities for Academic Blocks, dissection halls, common rooms, cafeteria, medical/dental equipment related to laboratories, libraries, various models, Information Technology, etc. must be created for by the intending institute."

Pakistan has not indicated its position on whether it encourages (or requires) medical schools to conduct biomedical research or for providing facilities for the humane care of animals when animals are used in teaching and research.

**(c) Faculty:**

- (i) Members of the medical school's faculty must be appropriately qualified to teach in a medical program leading to the M.D. (or equivalent) degree and effective in their teaching. The faculty must be of sufficient size, breadth, and depth to provide the scope of the educational program offered.**
- (ii) The medical school should have policies that deal with circumstances in which the private interests of its faculty or staff may conflict with their official responsibilities.**

The Council has reported that the medical faculty's qualifications are found in its "Pakistan Medical & Dental Council Regulations for The Degree of Bachelor of Medicine and Bachelor of Surgery" booklet. Apparently, the only reference to faculty qualifications is in Section VI—"Educational Facilities" (page 19)—where the following is under "Teaching Staff": "Properly qualified and properly committed teaching staff should be provided on the basis of a minimum teacher student ratio of 1:5 for clinical departments and 1:10 for basic sciences. Institutions should have a faculty development plan, and career structure. Good teachers should be rewarded appropriately. Teachers should be provided with adequate support staff, and equipment including access to computers. Institutions should develop organized teacher's exchange programs with other institutions at home and abroad. Teachers training programs should be compulsory."

Regarding the size of the faculty a medical school is required to have, the PMDC's "REQUIREMENTS of Teaching Faculty & Number of Beds, etc. in Medical College and Teaching Hospital" booklet contains lists of the number of "Staff required for 100 admission, 200 admission and 300 admission" for 18 medical school courses or categories.

For instance, under Anatomy, one Professor is required for 100 admissions, while two and three Professors are required for 200 and 300 admissions, respectively. Two Associate Professors are required for 100 admissions, while four and six Associate Professors are required for 200 and 300 admissions, respectively. Finally, ten Lecturers/Demonstrators are required for 100 admissions, while 20 and 30 Lecturers/Demonstrators are required for 200 and 300 admissions, respectively.

Pakistan has not reported on whether it requires that the country's medical schools have policies that deal with circumstances in which the private interests of its faculty or staff may conflict with their official responsibilities (conflicts-of-interest).

- (d) Library: The medical school must have a library sufficient in size, breadth, and depth to support the educational program and adequately and professionally staffed.**

The PMDC does not appear to mandate what specific materials that medical school libraries must contain. Instead, the Council has stated that all libraries: "... should be well equipped with sufficient number of books, latest editions of reference books/journals, computers with Internet facilities. Libraries should be comfortable and well stocked with standard reference printed matter including access to journals. Libraries should also include books on humanities, community problems, psychology, occupational health etc. Library Science should be utilized to train students in proper reading habits and use of library. Audio-visual libraries should be developed."

- (e) Clinical Teaching Facilities: The medical school should have affiliation agreements with each teaching hospital or clinical facility it uses that define the responsibilities of each party.**

In response to the issue of medical schools' clinical facilities, the PMDC again has reported that these requirements are found in the "REQUIREMENTS of Teaching Faculty & No. of Beds, etc. in Medical College and Teaching Hospital" booklet. This booklet contains a section on the "Number of Beds for Teaching Hospitals: A Ratio of Minimum of 5 Beds to a Student (must) be maintained in Medical Colleges." The lists include such categories as Medicine and Surgery (both with 120 beds for 100 admissions and 240 and 360 beds for 200 and 300 admissions, respectively) and Psychiatry with 10, 20 and 30 beds for 100, 200 and 300 admissions, respectively.

### **PART III: Accreditation/Approval Processes and Procedures**

The entity within the foreign country that is responsible for evaluating the quality of medical education in the country and has authority to accredit/approve medical schools should have processes and procedures for granting accreditation/approval to medical schools that are comparable to the following:

#### **1. Site Visit**

The accreditation/approval process must include a thorough on-site review of the school (and all its geographically separated sites, if any) during which sufficient information is collected to determine if the school is in fact operating in compliance with the accreditation/approval standards. This review should include, among other things, an analysis of the admission process, the curriculum, the qualifications of the faculty, the achievement of students and graduates, the facilities available to medical students (including the training facilities), and the academic support resources available to students.

The Pakistan Medical & Dental Council regularly inspects the country's medical colleges to determine if the facilities available for training students are satisfactory. The PMDC also reviews the professional examinations conducted by the universities. Additionally, the reviews include an evaluation of a medical college's curriculum, its faculty, the achievement of its students and graduates, the teaching facilities, the academic support services available to the students and the school's admission criteria in light of the Council's regulations. Inspections include other locations operated by the main campus of the medical school.

#### **2. Qualified On-Site Evaluators, Decision-Makers, and Policy-Makers**

The accreditation/approval process must use competent and knowledgeable individuals, qualified by experience and training in the basic or clinical sciences, responsible for the on-site evaluation, policy-making, and decision-making.

Inspection teams have at least 5-7 members, including senior professors of basic medical sciences and clinical subjects and 2-3 members from the Council. The PMDC, which has 55 members who are "all well placed in the medical profession," makes all accreditation/approval decisions

#### **3. Re-evaluation and Monitoring**

The accreditation/approval process must provide for the regular reevaluation of accredited/approved medical schools in order to verify that they continue to comply with the approval standards. The entity must also provide for the

**monitoring of medical schools throughout any period of accreditation/approval granted to verify their continued compliance with the standards.**

**The PMDC inspects fully recognized medical colleges every five years to ensure that the schools continue to meet the Council's standards. The PMDC re-evaluates provisionally recognized medical colleges on a year-to-year basis. The Council also conducts surprise inspections.**

#### **4. Substantive Change**

**The accreditation/approval process must require medical schools to notify the appropriate authority of any substantive change to their educational program, student body, or resources and must provide for a review of the substantive change by the appropriate authority to determine if the school remains in compliance with the standards.**

**According to the PMDC: "No changes are allowed in curriculum, system of examination and faculty requirements." The Council reports that colleges are required to follow the written regulations and curriculum requirements of the M.B.B.S. degree program. Medical colleges must notify the PMDC and the Ministry of Health of any changes.**

#### **5. Controls against Conflicts of Interest and Inconsistent Application of Standards**

**The accreditation/approval process must include effective controls against conflicts of interest and inconsistent application of the accreditation/approval standards.**

**To ensure meritorious accreditation decisions, site evaluators or inspectors are nominated from provinces other than that where the school is located. The PMDC reviews all inspection team reports before making accreditation decisions, and each college has a right to have its representatives present the school's case before the Council before it makes an accreditation decision.**

#### **6. Accrediting/Approval Decisions**

**The accreditation/approval process must ensure that all accreditation/approval decisions are based on the accreditation/approval standards. It must also ensure that the decisions are based, in part, on an evaluation of the performance of students after graduation from the medical school.**

The Council continuously monitors the performance of medical school students from their enrollment, during their studies, and after they graduate. The Council inspects all professional examinations and closely monitors students' clinical training during their stay in a medical school. The PMDC uses these evaluations of the medical students' performance in making accreditation and other recognition decisions.

The PMDC sets the minimum level of performance for passing the licensing examination for the M.B.B.S degree.

**Documentation:**

Pakistan Medical & Dental Council REGULATIONS for The Degree of Bachelor of Medicine and Bachelor of Surgery

Revised Curriculum of M.B.B.S. Curriculum Development Project, Sponsored by the Ministry of Education, Islamabad. University Grants Commission, H-9, Islamabad 2002

Pakistan Medical and Dental Council – Islamabad – Guide Book for Inspection

Government of Pakistan – Medical and Dental Council: REQUIREMENTS of Teaching Faculty and No. of Beds, etc. in Medical College & Teaching Hospital

Letter dated January 3, 2003, from Dr. M. Sohail Karim Hashmi, Secretary of the PMDC, with responses to U. S. Department of Education guidelines and questionnaire.



NEWDOC

Committee Name 3	Year yyyy	Meeting Summer(s)-Winter(w)
NCFMEA	2003	S (W)

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01 Agenda

Country Materials for 43

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30 By-Laws

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- 68 Miscellaneous

*Country Response to draft Staff analysis*

No.PF.2-H-2002/ 1823

e mail : pmdcsec5@lsb.comsats.net.pk



PAKISTAN  
MEDICAL & DENTAL COUNCIL  
G-10/4, Mauve Area,  
Islamabad.

Dated 3<sup>rd</sup> March.2003.

Tel : (92 51) 9266004  
Fax: (92 51) 9266427

Ms.Robin Greathouse,  
Management Analyst,  
Accreditation and State Liaison,  
1990 K Street, NW, Room 7105,  
WASHINGTON D.C. 20006-8509.

Dear Sir,

Thank you very much for your E.mail dated 28<sup>th</sup> February 2003. I am pleased to learn that NCFMBA is going to do periodical review of the standards used by PM&DC for medical education.

Draft analysis prepared by the staffing department is appreciated and I have tried to response certain queries raised by the staff.

I hope enclosed information will satisfy your requirement and will help the august committee to make a decision regarding our standards of medical education comparable with those of US standards as was done previously.

*Please* feel free to contact me for any further information, if required.

Yours faithfully,

*M. Hashmi*  
Dr.M.Sohail Karim Hashmi  
Secretary, PM&DC.

## SUMMARY OF FINDINGS

Query	Explanation
Page No.1. How the PM&DC regulates accredits or approves private medical school?	There is no distinction between public & private medical School in the PM&DC Ordinance 1962. Criteria used for regulation/accreditation & approval of private medical schools is same. That's why no separate information was provided for recognition of private Med. Schools.
Page No.2. However, department staff cannot based on the information provided make an assessment as to whether Pakistan's process and standards for the evaluation of the medical education officered by its insitutions remain comparable to the system used to evaluate medial education programs in United States.	It is emphasized that P&DC standards have already been approved and declared comparable to US standards in 1997 by NCFMEA. Since then PM&DC has not made any radical change in the medical education system rather we have improved the system of monitoring. We are unable to understand, this observation. If any additional information is required we will welcome to furnish the same.
Page No.5-a. A senior professor is in charge of the medical institution and its affiliated teaching hospital. Pakistan has not provided the qualifications that are required to be a "Senior professor." However, in the Department of Medical Education subsection of the Education Facilities section of the Regulations, there is this statement: "As a rule, the senior-most professor should be the Principal or Dean of the College."	5-a. Qualification/experience and other requirements of a professor are given at page No.2 of PM&DC regulations for appointment of teachers/examiners. (copy already provided). Selection of senior professor is based on the major postgraduate qualification, length of service, research publications and other academic achievements. Only a Senior Professor is appointed as Dean/Principal of Med. School.
Page No.5-b. It does not appear that the faculty is involved in admissions or the hiring, retention, promotion and discipline of faculty.	5-b. Faculty of the medical school is fully involved in the admission process of the medical students. Senior faculty members of the med. school are part of the public service commission which hire the services of the faculty for public med. school. Retention, promotion and discipline is regulated by the administrative authorities on the recommendations of Principal/Dean/Professor Incharge of various disciplines.

	<p>Recently, the medical schools in Punjab(The largest province of Pakistan) have been accorded autonomy and Board of Governors (Which include representatives of faculty) are fully authorized for hiring, retention, promotion and discipline of faculty.</p>
<p>Page No.10. Pakistan provided no information on its oversight or regulation of a medical school's publications, including its catalog or equivalent document, or on a medical school's advertising or student recruitment.</p>	<p>Advertisement of various medical schools for recruitment of faculty and admission of students are enclosed for perusal.</p>
<p>Page No.12. It is unclear whether Pakistan requires its medical schools to have policies regarding services to students in the areas of education, prevention and management of exposure to infectious diseases that students receive during the course of their educational program.</p>	<p>Student services mentioned in the draft are quite elaborate in this regard. PM&amp;DC also emphasize on Health of the students and many colleges have established students Health clinics in their medical schools.</p>
<p>Page No.13. Pakistan has not indicated its position on whether it encourages (or requires) Medical schools to conduct biomedical research or for providing facilities of the humane care of animals when animals are used in teaching and research.</p>	<p>PM&amp;DC encourages bio-medical research by the faculty &amp; at postgraduate level however Medical Schools in Pakistan maintain animals house for keeping the animals which are used for experimental purposes in different labs and these animals are provided proper care.</p>
<p>Page No. 14. Pakistan has not reported on whether it requires that the country's medical schools have policies that deal with circumstances in which the private interests of its schools have policies that deal with circumstances in which to private interests of its faculty or staff may conflict with their official responsibilities (conflicts-of interest).</p>	<p>Conflict of interest of the faculty members is managed by the academic head of Med. School and the administrative authority. PM&amp;DC has not framed any regulation for this purpose.</p>

درخت لگانا صدقہ جاریہ ہے



**KARACHI MEDICAL & DENTAL COLLEGE**  
City District Government, Karachi  
NEW CAMPUS: BLOCK-M, NORTH NAZIMABAD, KARACHI.  
PHONE: 6628322-3, 6628373



## ADMISSION FIRST YEAR MBBS & BDS

Applications on the prescribed forms are invited from the eligible candidates for the session 2002-2003. Forms & prospectus for MBBS & BDS, separately, will be available from 10.09.2002. Last date for submission of application forms is 20.09.2002. Detailed information is given in the prospectus of 2002-2003 of Karachi Medical & Dental College (KMDC).

### ELIGIBILITY & PROCEDURE

- a. Candidates who have passed Intermediate (Science) Pre-Medical group annual examination of 2002 and have secured at least 60% marks can apply for admission.
- b. Candidates who have passed 2002 'A' level examination with Biology, Physics & Chemistry from Karachi Centre may apply, provided achievement in each of these subjects in Grade 'C' or higher.
- c. Candidates should have passed last two examinations (Matriculation & Intermediate) from the institutions located in Karachi or should have been examined by the Federal Board, Islamabad at the centers located outside Pakistan.
- d. The students who have appeared in the Intermediate Science examination 2001 for an improvement are eligible to apply only in case they have improved the grade/percentage of marks. The proof to that effect is mandatory.
- e. In case of a govt. employee if the candidate has passed his or her any one examination Matric/O-level or H.S.C./A-level from other than Karachi Board he/she will have to produce parents deputation letter from the respective department for admission eligibility.
- f. Domicile & P.R.C. of Karachi.
- g. Written aptitude test (arranged by C.B.M) will be held to select the candidates. The test will consist of MCQ's from Physics, Chemistry, Biology & English at par to H.S.C. curriculum.
- h. The weightage of marks to entry test, H.S.C., S.S.C. will be as under:  
Entry test: 50%  
H.S.C.: 40%  
S.S.C.: 10%
- i. Selected candidates will be interviewed by the Admission Committee of KMDC for the final selection.
- j. All selected candidates will have to be examined by a Medical Board of KMDC before depositing fees.
- k. 60 (thly) admission for MBBS & 30 (thly) admission for BDS will be made for the academic session 2002-2003.
- l. The test for MBBS & BDS will be held on same date & time.
- m. Three recent passport size photographs will be required for Admit Card with the filed admission form.

Forms & Prospectus will be available from New Campus, Block-M, North Nazimabad, Karachi, KMDC from 09:00 a.m. to 1:00 p.m. The fee for Form, Prospectus & Entrance Test is Rs. 1000/- (non-refundable) in shape of pay order in favour of Karachi Medical & Dental College, Karachi. Issuance of form & prospectus does not guarantee the admission.

**NOTE:** THE COLLEGE DOES NOT PROVIDE ANY SPECIAL PREPARATION AND HAS NOT AUTHORISED ANY PUBLICATION OR PREPARATORY CLASSES FOR THE TEST.

Prof. Dr. SAADIA AZIZ KARIM  
PRINCIPAL  
KARACHI MEDICAL & DENTAL COLLEGE

KMDC/COGK/246/2002

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DAILY DAWN  
8-9-02

# Islamic International Medical College

Affiliated with



HAMDANI UNIVERSITY

A Source of Quality Education

# ADMISSION

## Session 2003




### Salient Features

- Recognized by Pakistan Medical & Dental Council (PMDC)
- Name included in the WHO Directory of Medical Schools.
- Recognized by the College of Physicians and Surgeons Pakistan for FCPS-II (Gynaec / Obs Paediatrics, Surgery, Medicine & Anaesthesia)
- First Batch has already passed out and registered with Pakistan Medical & Dental Council; working / studying in Pakistan and in Foreign countries.
- Spacious Campus (Historic old Supreme Court Building) with purpose-built Labs, Museums, Lecture Halls, Dissection Halls etc.
- Modern teaching, training aids and close circuit TV for Lectures and Physiology demonstrations
- College-wide Windows NT based Intranet
- Internet facility for students and faculty
- Learning Resources Centre with well stocked library & audio visual aids
- Fully furnished, excellent Dining and Lodging arrangements.
- Cultivation of Islamic Ethical Values among the students
- Programme of student activity in accordance with the requirements of PMDC

Schedule	Eligibility	Placement Facilities	Application Package
Deadline for Applications: September 28, 2002 Call Letter for Test: September 29, 2002 Interview: September 30, 2002 Entry Test: October 12, 2002 Interviews: October 18-22, 2002 Due date for submission of fee: October 31, 2002 Classes to commence: January 08, 2003	F Sc / Fc / A / Ed with 60% marks in aggregate, unexpired or equivalent degree qualifications like the British OCE 'A' Level or American High School Examination with medical subjects	General Public and Specialized Hospitals with state of the-art equipment and teaching facilities ■ Pakistan Railway Hospital, Rawalpindi ■ Islamic International Medical Complex, Islamabad ■ Islamic International Dental Hospital, Islamabad ■ Hamdani International Hospital, Rawalpindi	Available • By hand at Rs 500/- • By post at Rs 500/- through Demand Draft in favour of 'Islamic International Medical College Trust', Rawalpindi • Prospectus also available at Islamic International Dental Hospital at G-7/4, Islamabad. Tel: 2876711-11

### AL-MIZAN-IIMC Trust Medical Complex

274, Peshawar Road, (Old Supreme Court Building) Rawalpindi Cantt. Phone: (92-51) 5565981-86 Fax: (92-51) 5567527  
 E-Mail: admissions@iimc.edu.pk Web Site: http://iimc.edu.pk



### Ziauddin Medical University Convocation

Ziauddin Medical University is holding its 1<sup>st</sup> Convocation on Saturday 28<sup>th</sup> September, 2002. Graduates of 2001 and 2002 are advised to contact the Registrar's Office latest by Monday 16<sup>th</sup> September, 2002.

Tel: 5862937-9, Fax: 215

*Truly Yours*  
 8-9-02

(11)

## AYUB MEDICAL COLLEGE ABBOTTABAD

### SITUATION VACANT ON CONTRACT BASIS

Applications are invited for the following posts of Ayub Medical College Abbottabad so as to reach the Principal, Ayub Medical College 7th October, 2002.

**1. One post of Assistant Professor (IPS-18) in E.N.T.**

**Qualification:** (a) MBBS or equivalent medical qualifications recognized/registered by the PM&DC, and (b) FCPS/MS/MD in the respective specialty OR other equivalent qualifications in the specialty recognized/registered by the PM&DC.

**Experience:** Three years teaching/practical experience in the respective specialty in the recognized institution in following order of preference:-

(i). Teaching Experience, (ii). Practical Experience after Postgraduation, (iii). Practical Experience before Postgraduation.

**Age limit:** 27 to 45 years.

**Eligibility:** Both Sexes.

**Domicile:** N.W.F.P.

**2. One post of Assistant Professor (IPS-18) in Dentistry Department (Oral Surgery/Oral Medicine)**

**Qualification:** (a). BDS (Pak) or equivalent qualifications recognized/registered by the PM&DC and (b) D.Sc/Ph.D/FCPS/MDS (Pak), M.Phil OR equivalent Postgraduate qualifications recognized/registered by the PM&DC in respective subject. (c) Minor Postgraduate qualification in the respective subject recognized/registered by the PM&DC.

**Experience:** Three years teaching/practical experience in the respective specialty in the recognized institution in following order of preference.

(i). Teaching Experience, (ii) Practical Experience after Postgraduation, (iii) Practical Experience before Postgraduation. In the case of qualification at (c) above, five years teaching experience as Lecturer/Demonstrator in the Dental teaching institution after Postgraduation.

**Note:**

Minor Diploma holder shall be considered only when person with higher qualification like D.Sc/Ph.D/FCPS/MDS (Pak)/M.Phil (Pak) are not available.

**Age limit:** 27 to 45 years.

**Eligibility:** Both Sexes.

**Domicile:** All Pakistan Basis.

**GENERAL CONDITIONS:-**

All the posts will be filled on contract basis for a period of one year extendable to indefinitely. Age in all cases will be reckoned on 7th October, 2002. Degree/Diplomas/Certificates of un-recognized institutions are not acceptable. Ex-Armed Forces personnel must send copy of discharge certificate with their applications. Government/Semi Government/Autonomous Body/Semi Autonomous Body employees send an advance copy directly but their departmental permission certificates should reach within 30 days of closing date. Application Forms available from Establishment Branch, Ayub Medical College Abbottabad on payment of Rs. 100/- Applicant wanted to the foreigners are considered only on productions of Government relaxation order. No applicant will be considered in absentia on paper, qualifications unless he possesses exceptionally higher qualification and a valid reason communicated well in advance. The competent authority reserves the right not to fill any of the posts or fill more or less than the advertised posts Experience in line where-ever prescribed shall be counted after the minimum qualifications for the posts in case where number of applications for posts are disproportionately higher than the number of vacancies, short listing of the candidates may be done on the basis of academic or professional record as the authority may decide.

(Maj. Gen. (R) Pervez Akhter Butt)  
Chief Executive

INF (P) 2026 Ayub Medical Institution Abbottabad

**Greathouse, Robin**

---

**From:** Lipton, Ron  
**Sent:** Wednesday, February 19, 2003 10:06 AM  
**To:** Greathouse, Robin  
**Subject:** FW: From the U.S. Department of Education

-----Original Message-----

**From:** Lipton, Ron  
**Sent:** Wednesday, January 22, 2003 4:17 PM  
**To:** 'pmdcsec5@isb.comsats.net.pk'  
**Subject:** From the U.S. Department of Education

Again hello from the U.S. Department of Education. In reviewing the materials you sent to us, I note that in a few instances you specify that certain rules and regulations do not apply to Pakistan's private medical schools (as opposed to the public medical schools). Please tell me how many private and public medical schools there are in Pakistan.

More importantly, would you please explain how you oversee or regulate the private medical schools, if the PM & DC does in fact do this? Also, if you could explain any other differences between the private and public medical schools and how the PM & DC accredits, monitors or regulates them differently, I would appreciate it.

Thank you--Ron Lipton

2/20/2003



NEWDOC

Committee Name 3	Year yyy	Meeting Summer(s) Winter(w)
NCFMBA	2003	S (W)

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01 Agenda

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- 68 Miscellaneous

*Country Submission*

NO.PF.11-F-2002/560

e mail : pmdcsec5@isb.comsats.net.pk



**PAKISTAN  
MEDICAL & DENTAL COUNCIL**  
G-10/4, Mauve Area,  
*Islamabad.*

Dated 3 Jan, 2003.

Tel : (92 51) 9266004  
Fax: (92 51) 9266427

Mr. John Barth, Director,  
Attn: Ms. Robin Greathouse  
Accreditation and State Liaison  
1990 K Street, NW, Room 7105  
Washington D.C. 2006-8509.

I am pleased to learn that NCFMEA is reviewing the standards of our medical schools in the light of revised guidelines to compare Pakistani standards of medical education for M.B.B.S degree to the US standards of medical education for M.D degree. Para-wise reply to the queries raised in your questionnaire are attached with this letter as desired by you I hope this information will help you to formulate a solid opinion about the standard of medical education in Pakistan and it will be easy for the National Committee on Foreign Medical Education and Accreditation (NCFMEA) to approve standard of M.B.B.S degree equivalent to M.D USA.

Assuring you of best of my cooperation. If you need further clarification, please do not hesitate to contact me.

Yours Sincerely,

  
Dr. M. Sohail Karim Hashmi  
Secretary.

**PART-1: The entity responsible for the accreditation/approval of medical schools.**

**Question.1** What is the name of the entity responsible for evaluating the quality of medical education in your country?

**Answer.** Pakistan Medical & Dental Council, Islamabad (PM&DC) is the only statutory regulatory body in Pakistan responsible to maintain uniform minimum standard of medical education in Pakistan.

**Question.2** By what authority does this entity accredit or approve medical school?

**Answer.** PM&DC Ordinance 1962, which was later amended by an Act of Parliament in 1973 (copy enclosed).

**PART-II: Accreditation/Approval Standards**

**1. Mission and Objectives**

**Question.3** What are your country's requirements related to the educational mission of medical schools in your country? How does the mission serve the general public interest?

**Answer.** Medical Schools in Pakistan are required to prepare a caring general purpose Community oriented doctor who is competent to deal with the common health problems of the people in a scientifically sound and cost effective manner.

**Question.4** What are your country's requirements related to how medical schools must prepare graduates to qualify for licensure and to provide competent medical care?.

**Answer** The medical students are required to undergo five years training from a recognized institution, which is affiliated with a chartered university. After clearing all the professional examination from the University and on completion of one year internship in a recognized hospital, they are registered as medical practitioners ( M.B.B.S Regulations enclosed).

## **2. Governance**

**Question.5** What are your country's requirements related to authorization or licensure of medical schools in your country? Are they required to be legally authorized or licensed in order to provide a program of medical education in your country? If so, what is the name of the entity that authorizes or licenses medical school?

**Answer:** PM&DC is the licensing body, which authorizes a medical institute to run a medical education programme, while University is the authority to issue the degree of M.B.B.S. Medical colleges should be affiliated with a chartered university, which is authorized by higher education commission to issue degrees. A medical institution in Pakistan must be legally authorized to provide a programme of medical education and it should follow the curriculum and other regulations of MBBS as laid down by PM&DC.

**Question.6** What are your country's requirements related to the accountability of the management of a medical school to some authority external to the medical school? Is there such an external authority? If so, what is that authority?

**Answer** Federal and Provincial health ministries exercise administrative control over public sector, hence so accountability of the management of the medical school in Pakistan lies with the health ministries of the respective provincial governments, while Board of Governors of private universities are responsible for the management of their medical colleges.

## **3. Administration.**

**Question.7** What are your country's requirements regarding how medical schools are to be administered?

**Answer** Board of Governors appointed by the respective authorities are responsible for the administration of their medical schools in the light of PM&DC regulations.

**Question.8** What are the qualifications your country requires for the person who hold the position of chief academic official of a medical school?

**Answer**

The principal of a medical college is one of the senior professors and he is overall in charge of the college and attached teaching hospital..

**Question.9** What are your country's requirements related to the participation of the faculty members of a medical school in decisions related to admissions; the hiring, retention, promotion, and discipline of faculty; and curriculum?

**Answer** The academic Council of a medical institute is authorized to make decisions regarding the clinical teaching programs. Admission and promotion of faculty is controlled by the administrative authorities in the light of PM&DC regulations.

**Question.10** What requirements does your country impose on a medical school that offers part or all of its program at a geographically separated site (sometimes called a branch campus or additional location) to ensure that the quality of education at that site is comparable to that at the main campus and that students are evaluated in a comparable manner at all sites?

**Answer.** Most of the medical colleges are in one campus and there are no branch campuses of medical institution in Pakistan. Some colleges may have attached teaching hospitals located away from the main campus but within the same city.

### **3. Educational Programme**

(a) Duration :

**Question.11** How long must a medical school's program of medical education leading to the M.D.degree(or equivalent) be in your country?

**Answer** The programme of education leading to the MBBS degree is minimum 5 calendar years, followed by a one year mandatory house job i.e residency under supervision.

(b) Curricular content:

**Question.12** What are your country's requirements related to the basic sciences component of a medical program leading to the M.D.(or equivalent) degree? What subjects does your country require a medical school to include in the basic sciences? What requirements does your country have for the laboratory portion of the basic sciences curriculum?

**Answer.** Following are the basic medical science subjects leading to the MBBS degree in Pakistan.

1. Anatomy
2. Biochemistry
3. Physiology
4. Pharmacology & Therapeutics
5. Pathology ( Microbiology, Histo pathology)
6. Forensic Medicine & Toxicology
7. Community Health Sciences ( Preventive Medical )

Laboratories for the subjects of Biochemistry, Pharmacology, Physiology, Pathology should be available. A dissection hall for Anatomy. Museum for Anatomy &

Forensic Medicine should be available. Community Health facilities should be acquired in the Vicinity of the college. Laboratories should be well-equipped with both simple and high technology for demonstration and experimentation and may be mono-disciplinary or multi-disciplinary. Museums should be well-functioned and well-supplied with specimens and models for self-learning.

**Question.13** What are your country's requirements related to the clinical sciences component of a medical program leading to the M.D(or equivalent) degree? What subjects does your country require a medical school to include in the clinical sciences?

**Answer** Following are the compulsory clinical science subjects leading to the MBBS degree in Pakistan, which are examined by the University.

1. Internal Medicine
2. Surgery
3. Obstetrics & Gynaecology
4. Paediatrics
5. Ophthalmology
6. Otorhinolaryngology

However allied specialties of medicine and surgery i.e Cardiology, Neurology, Urology, Psychiatry, Dermatology, Paediatrics, T.B. & Chest Diseases, Orthopaedic Surgery, Thoracic Surgery, Neurosurgery, Anaesthesiology Geriatrics, Family Medicine, Radiology, Radiotherapy & all other specialties as mentioned in the MBBS Regulations are also taught

**Question.14** What are your country's requirement related to the inclusion of disciplines that support the fundamental clinical subjects in a medicine program leading to the M.D (or equivalent) degree? What does your country require a medical school to include in these disciplines?

**Answer.**

In support of the fundamental clinical subjects in a medicine program leading to the MBBS degree fully developed departments of Radiology and clinical pathology are established.

**Question.15** What are your country's requirements related to the inclusion of ethical, behavioural, and socioeconomic subjects in a medical program leading to the M.D. (or equivalent) degree?

**Answer.** In order to achieve the general objective a medical graduate at the conclusion of undergraduate training is able to apply the knowledge of basic principles of

Medical Ethics. Ethical guidance is also provided during teaching of Medical Jurisprudence. Behavioral Sciences, Psychiatry & Community Medicine.

It is imperative that students be trained to deal with complexities of life, as well as the complex medical problems accruing from them. It is, therefore, essential that in the first two years of the MBBS course the students should be taught behavioral sciences, including interpersonal relationships and social adjustment issues.

**Question.16** What are your country's requirements related to the inclusion of communications skills in a medical program leading to the M.D.(or equivalent) degree?

**Answer.** At the end of the M.B.B.S course of study a graduate should be able to conduct interviews, takes history and do physical examination of patients correctly and acquires ability to communicate and make accurate observation. He should be able to display virtues, personal character and a sense of responsibility towards patients, community and colleagues.

**c. Design, Implementation, and Evaluation:**

**Question.17** What are your country's requirements related to the design, implementation, and evaluation of a medical school's curriculum? Does your country require each medical school to have its own system for evaluating the effectiveness of its curriculum and making changes to the curriculum as a result of its evaluation? If so, what role does your country require the faculty members of the medical school to play in that process? Alternatively, does your country mandate the evaluation of the curriculum all medical schools are required to have to be provided by some centralized authority or body? If so, what is that authority or body?

**Answer:** PM&DC is the central body which prepares and approves the curriculum for the M.B.B.S degree and it is evaluated, redesigned by PM&DC from time to time .Senior faculty members from all the recognized medical schools are actively involved in the process of designing evaluation , and implementation of the curriculum, however , medical schools are allowed to make changes in implementation of the curriculum for teaching and training. In Pakistan PM&DC along with Higher Education Commission are the authorized bodies to evaluate the curriculum of all medical schools.

**5. MEDICAL STUDENTS.**

**a. Admissions, Recruiting, and Publications.**

**Question.18** What are the requirements for the admission of students to medical schools in your country? Are these requirements specified at the national level for all medical schools or is each medical school allowed to set its own standards for admission provided it meets the general requirements specified by the government or other appropriate body?

**Answer.** The requirements for the admission of students to medical schools in Pakistan are laid down by the PM&DC i.e at national level and those are to be followed. The regulations pertaining the admission requirement are enclosed.

**Question.19** What access do students have to their records in your country? What law(if any) govern student access to records and the confidentiality of students records in your country?

**Answer.** The academic record of the internal assessment of students is kept by the administration of the college, and students have full access to their record of internal assessment results like monthly tests, mid term & term tests etc. However, annual professional examinations are conducted by the University and record is maintained by the controller of examinations and student do not have any access as University rules do not permit the same.

**b. Evaluation of Student Achievement**

**Question.20** What are your country's requirements related to how medical school must evaluate student achievement? Are medical schools free to establish their own methods? If so, does your country determine if they are adequate? Alternatively, are there some national requirements such as standardized examinations that all medical school students must take?

**Answer** Continuous internal assessment consists of appropriate evaluation at the end of each assignment, term, stage or course of the curriculum. Proper records of internal evaluations are maintained, and the scores obtained in these tests contribute 30% to the final total score of the candidates.

The schools are not free to establish their own methodology for assessment/ evaluation of professional exam. The regulations framed by PM&DC are followed by all the medical colleges and universities in Pakistan with a view to attain the basic minimum standard prescribed by the PM&DC.

The Professional examinations are taken at the end of academic year by the University and the total marks of the each subject i.e theory & practical are specified by the PM&DC.

## **C Student Services**

**Question.21** What are your country's requirements for the provision of student services by medical schools?

**Answer.** PM&DC regulations requires the recognized medical schools to provide sufficient facilities for their students. Facilities should be provided to generate healthy extra curricular activities to ensure proper grooming of the students. Following activities and students welfare programs are recommended for the students by PM&DC.

1. Sports Club.
2. Literary Society.
3. Social welfare activities conducted tours, community organization etc.
4. Students Counseling services to deal with such problems as substance abuse.
5. Motivation against political exploitation.
6. Teacher-Student Organizations like Tutor system, Monitor formed on the basis of talent.
7. Student's Group Insurance system and Benevolent Fund.
8. Proper awards and adequate scholarships for purpose of incentives and assistance.
9. Student Health Services.
10. Student Exchange Programmes with other institutions at home and abroad.
11. Proper hostel accommodation.
12. Transport facilities.
13. Language Training Programmes for proficiency in English language on a voluntary basis.

### **6. Resources for the Educational Program**

a) Finances:

b) Facilities:

**Question.22** What are your country's requirements related to the facilities a medical school must have?

**Answer.** PM&DC has specified such requirement related to the facilities a medical school must have been specified in a booklet titled "CRITERIA FOR THE ESTABLISHMENT OF MEDICAL COLLEGE".( Copy enclosed)..

c) Faculty:

**Question.23** What are your country's requirements related to the size of the faculty a medical school is required to have? What are its requirements related to the qualifications for appointment to the faculty?

**Answer.** The requirements related to the size of the faculty a medical school is required are specified in the PM&DC regulation for Requirement of Teaching Faculty & No of Beds etc. in the Medical College and Teaching Hospital (Copy enclosed).

Appointment / recruitment of a faculty in a medical school is done as per the instruction contained in the regulations of PM&DC for appointment of teachers / examiners in under graduate medical colleges (Copy enclosed)

d) Library:

**Question.24** What are your country's requirements related to a medical school's library.

**Answer.** Library should be well equipped with sufficient number of books, latest editions of reference books/journals, computers with Internet facilities. Libraries should be comfortable and well stocked with standard reference printed matter including access to journals. Libraries should also include books on humanities, community problems, psychology, occupational health etc. Library Science should be utilized to train students in proper reading habits and use of library. Audio-visual libraries should be developed.

e) Clinical Teaching Facilities:

**Question.25** What are your country's requirements related to a medical school's clinical teaching facilities?

**Answer.** The requirements related to a medical school's clinical teaching faculty are same as given in the regulation for Requirement and Teaching faculty and No. of bed's etc in medical college and teaching hospital.

### **PART III: Accreditation/Approval Processes and Procedures**

#### **1. Site Visit**

**Question.26** Does the entity that is responsible for accrediting/approving medical schools in your country conduct a site visit to a medical school prior to granting it accreditation/approval? If so, does the site visit include a review of the school's admission process, its curriculum, its faculty, the achievement of its students and graduates, the facilities, and the academic support services available to students? Does the site visit involve both main campus of the medical school and any other branch campus(es) or additional location(s) operated by the medical school?

**Answer.** PM&DC inspects medical colleges to determine the facilities available for imparting training to the students for the degree of MBBS. In addition it also inspects the Professional examination conducted by the university. The inspection team inspects the medical college its curriculum, its faculty, the achievement of its students and graduates,

teaching facilities and the academic support services available to the students. Inspection includes the main campus of medical school, the branch campus or any other location operated by medical school. PM&DC also registers the students after checking the admission criteria of the Medical school in light of PM&DC regulation.

## **2. Qualified On- Site Evaluators, Decision-Makers, and Policy-Makers.**

**Question.27** What are your country's requirements regarding the qualification and training of the individuals who participate in on-site evaluations of medical schools, the individuals who establish the accreditation/approval standards for medical schools and the individuals who decide whether a specific medical school should be accredited/approved.

**Answer.** The inspection team must comprise of at least 5-7 members, consisting of senior professors of basic Medical Sciences and clinical subjects. 2-3 members of the Council are also included in the inspection team. Accreditation/Approval of a medical school is finally approved by the council, which comprises of 55 members, all well placed in the medical profession.

## **3. Re-evaluation and Monitoring**

**Question.28** Does your country require accredited/approved medical schools to undergo periodic re-evaluation to determine if they are still in compliance with the standard of accreditation/approval? If so, how frequently are medical schools re-evaluated? How does your country monitor medical schools throughout any accreditation/approval period granted to them to verify their continued compliance with the standards? Are medical schools required to submit an annual report? If so, what does it contain?

**Answer.** Those medical colleges, which are given full recognition, are inspected after every 5 years to ensure that the standard of medical education is maintained. While provisionally recognized colleges are inspected on year to year basis for periodic re-evaluation. Surprise inspections are also done to keep a check.

## **4. Substantive Change**

**Question.29** If a medical school wants to make a substantive change to its educational program or some other aspect of the medical school, what are your country's requirements requiring notification of the change to the appropriate entity and review by the entity?

**Answer.** The college is required to follow the laid down regulations & curriculum of MBBS programme. Any change is notified to PM&DC & Ministry of Health. No changes are allowed in curriculum, system of examination & faculty requirement. .

**5. Controls against Conflicts of Interest and Inconsistent Application of Standards**

**Question.30** How does your country ensure that those involved in the accreditation/approval decision for a specific medical school do not have a conflict of interest that might prevent them from making an objective decision? How does your country ensure that your standards for the accreditation/approval of medical school are applied consistently to all schools that seek that accreditation/approval?

**Answer** To ensure the approval of accreditation on merit, inspectors are nominated from different provinces and they give independent opinion. The report of the inspection team is considered by the Council and representatives of the college authorities are given full opportunity to present their case before the council before taking a decision of accreditation.

**6. Accrediting/Approval Decisions**

**Question.31** How does your country use information on the performance of a medical school's graduates in reaching a decision on whether or not to grant that school accreditation/approval? What procedures does your country use to ensure that accreditation/approval decisions are based on your accreditation/approval standard?

**Answer.** The performance of the graduates of a medical school is continuously monitored by PM&DC since their inception in medical college. All the professionals examinations are inspected by the council and their clinical training is closely monitored during their stay in the medical school. Based upon the evaluation of their performance in the medical school recognition / accreditation is granted to their medical school.

**Question.32** Does your country have benchmark of minimal levels of performance on licensing examination that medical school graduates must meet in order for the medical school to be granted accreditation/approval? If so, what are they.

**Answer.** The minimum level of performance for passing a licensing examination have been prescribed in the M.B.B.S regulations (Copy enclosed).

**LIST OF DOCUMENTS ENCLOSED.**

- 1) **M.B.B.S REGULATIONS.**
- 2) **CURRICULUM OF M.B.B.S COURSE.**
- 3) **GUIDE BOOK FOR INSPECTION.**
- 4) **REGULATION FOR REQUIREMENT OF TEACHING FACULTY  
& NO. OF BED'S.**
- 5) **CRITERIA FOR ESTABLISHING / RECOGNITION OF A  
MEDICAL COLLEGE**

**PAKISTAN  
MEDICAL & DENTAL COUNCIL**



**REGULATIONS  
FOR  
THE DEGREE OF  
BACHELOR OF MEDICINE  
AND  
BACHELOR OF SURGERY  
(M.B.B.S)**

## INTRODUCTION

The Pakistan Medical and Dental Council is a body constituted by the Federal Government under the Pakistan Medical and Dental Council Ordinance, 1962. The Medical Education in Pakistan is controlled by the Council. One of the main functions of the Council is to lay down the minimum standard of basic and higher qualifications in Medicine & Dentistry. The Council under sub-section (2) of Section 33 of the said ordinance has been conferred with the powers to frame Regulations :

- to prescribe a uniform minimum standard of courses of training for obtaining graduate and postgraduate medical qualifications.
- to prescribe minimum requirements for the content and duration of courses of studies for the degree of M.B.,B.S.
- to prescribe condition for admission to courses of training for the degree of M.B.,B.S.

In exercise of the powers referred to above these Regulations have been framed for regulating the Medical Education in Pakistan. These Regulations are to be followed by all the Medical Colleges and Universities in Pakistan with a view to attaining the basic minimum standard prescribed by the Council. These Regulations were approved by the Council in its (92nd) Session held on 22nd March, 1998.

Islamabad August, 1998.

  
(SYED EHTRAM ALI)  
SECRETARY.

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**SECTION I****GENERAL EDUCATIONAL OBJECTIVES**

The General Objective of the MBBS curriculum is to prepare a caring, general purpose, community oriented doctor who is competent to deal with the common health problems of the people in a scientifically sound and cost-effective manner using appropriate technology and a holistic approach. He/She should be able to assume leadership in a health care team, function and communicate effectively as a manager in accordance with the code of medical ethics prescribed by the PMDC. He/She should be a continuous self-learner who is able to pursue training in the specialty of his/her choice.

The teaching of subjects should be integrated as far as possible.

In order to achieve this general objective, the medical institution should aim at the acquisition of the following specific learning outcomes in the cognitive, affective and psychomotor domains:

1. **COGNITIVE DOMAIN (KNOWLEDGE):** In order to achieve the general objective above, a medical graduate at the conclusion of undergraduate training is able to apply the knowledge of:
  - 1.1 The principles of sciences that are essential for understanding the structures, functions and behaviour of man in health and disease including:
    - a. Structure and function of cells and organ systems and their adaptations to injury and drugs.
    - b. Behaviours of man as an individual, as a family, and as a community.
  - 1.2 Macroscopic and microscopic structure of the human body from conception to completion of growth.
  - 1.3 Functions of normal human body at all levels of development.
  - 1.4 Abnormalities of structure and function of the human body and their causative agents.
  - 1.5 Clinical presentations of health and disease in terms of processes, both physical and mental.

- 1.6 Diagnostic procedures and their interpretations.
  - 1.7 Preventive and therapeutic measures for management of health and disease.
  - 1.8 Legal aspects of medical practice and legal implications of disease.
  - 1.9 Normal human behaviour and disorders of human behaviour resulting from non-organic causes.
  - 1.10 Present and future health problems of the community and solutions of such problems through planning, implementation, critical evaluation and research in preventive programmes.
  - 1.11 Diagnosis and treatment of all common emergencies in clinical practice.
  - 1.12 The role of socio-cultural background, socio-economic factors, population dynamics and changing environment in health and illness. The environmental and social determinants of disease, the principles of disease surveillance, the means by which diseases spread, and the analysis of the burden of disease within the community.
  - 1.13 The concept of reproductive health and understanding of all related aspects.
  - 1.14 Basic principles of Medical Ethics.
2. **PSYCHOMOTOR DOMAIN (SKILLS):** In order to achieve the general objectives of medical education at the end of the MBBS course of study a graduate:
- 2.1 Conducts interviews, takes history and does physical examination of patients correctly and acquires ability to communicate and make accurate observations.
  - 2.2 Collects fluids, effusions, blood, secretions, discharges and excretions from the human body correctly for diagnostic and therapeutics purposes.
  - 2.3 Performs simple laboratory investigations, takes an ECG, requests and interprets tests.
  - 2.4 Applies dressings, bandages, splints.
  - 2.5 Performs minor surgical procedures, and gives injections, and vaccines.

- 2.6 Gives local anaesthesia and analgesia.
  - 2.7 Conducts normal deliveries and resuscitates neonates.
  - 2.8 Performs administrative duties as a member of the health care team.
  - 2.9 Performs cardio-pulmonary resuscitation.
  - 2.10 Prescribes drugs rationally.
  - 2.11 Refers patients appropriately when required.
3. **AFFECTIVE DOMAIN (BELIEFS AND ATTITUDES):** In order to achieve the general objectives of medical education at the end of the undergraduate course of study, a medical graduate:
- 3.1 Displays virtues personal character such as a sense of responsibility towards patients, community and colleagues.
  - 3.2 Respects patient's rights of confidentiality and obtains informed consent.
  - 3.3 Recognizes his/her professional limitations.
  - 3.4 Develops and maintains good relations with patients and all persons concerned in the delivery of health care.
  - 3.5 Educates, guides and helps in adoption of preventive and curative measures against disease.
  - 3.6 Improves his/her professional knowledge, skills and attitudes continuously with a critical and enquiring approach.
  - 3.7 Shows willingness to take part in education and training of students, para-medical personnel and colleagues in health education.
  - 3.8 Assumes leadership in the health care delivery team as well as accepts the leadership of his seniors, demonstrating a spirit of team-work.
  - 3.9 Identifies himself/herself with the community.

**SECTION II****1. NUMBER OF ANNUAL ADMISSIONS:**

The optimum number of annual admissions in a medical/dental college should be one hundred (100). The maximum teacher and student ratio of 1:5 in clinical subjects and 1:10 in basic subjects must be maintained. The hospital bed and student ratio of 1:5 should also be maintained. Some of medical colleges are admitting 400 students without consequential facilities. If a medical /dental college has teacher:student ratios and other facilities which allow more than 250 students to be admitted in a year, even then the total annual admissions in that college shall not exceed 250. The medical colleges which have more than 250 admissions shall gradually reduce the number to 250. In private sector medical colleges should not in any case admit more than 100 students.

**2. A STANDARDIZED MEDICAL COLLEGE ENTRY TEST**

Entry Test should be conducted by the respective Provincial Government for medical colleges of public sector under their administrative control. The paper shall be computerised. There should not be any pass marks for the entry test. The merit for admission shall be elaborated after adding all marks as given below :

Intermediate	-	40%
Matric	-	10%
Entry Test	-	50%

The private sector medical colleges like Aga Khan University Medical College, Karachi and Army Medical College, Rawalpindi etc. shall continue to conduct their own entry test.

**3. MINIMUM ACADEMIC REQUIREMENTS FOR ENTRY TEST:****PRIORITY 1**

The candidate should have passed the Intermediate Science (F.Sc) Examination (Medical Group) securing at least 60% marks in aggregate, unadjusted, from a Pakistani university or an equivalent examination of a Board of Secondary Education in Pakistan.

OR

any other examination of a foreign university or examining body which in

scope and standard is found equivalent to the Intermediate Science (F.Sc) Examination (Medical Group) of a Pakistani university or Board of Secondary Education.

**PRIORITY 2**

The candidate should have passed a higher examination of a Pakistani University with Biological Sciences provided he/she has passed the Intermediate Science (F.Sc Examination, Medical Group) securing at least 60% marks in aggregate, unadjusted, from a Pakistani University or an equivalent examination of a Board of Secondary Education in Pakistan.

- ✓4. Verified Hafiz-e-Quran and NCC Training shall get credit, according to the government admission policy.
5. Admission to a medical college including that to reserved seats should be strictly on merit according to the above rules of admission.
6. No special seats will be created in medical colleges.
7. There shall be minimum age limit 17 years and maximum 25 years.
8. A candidate seeking admission should possess adequate mental and physical health to be able to obtain medical education as prescribed and should be able to practice as a general duty doctor. Necessary steps should be taken by medical colleges to ensure this provision on admission of the student.

**SECTION III****CURRICULUM****1. GENERAL PRINCIPLES:**

- 1.1 General educational objectives are essential. Limited flexibility is available for innovations. A curricular strategy approved by the Pakistan Medical and Dental Council should be adopted to achieve the general objectives of medical education.
- 1.2 Students should be able to recognize and manage common health problems, and make appropriate referrals.
- 1.3 The curriculum should not be overloaded with details about uncommon conditions.
- 1.4 Lectures should be given less than one third of the time allotted for the subject. More emphasis should be given to tutorials, seminars, workshops, practical work and clinical training specially in the final year.
- 1.5 Training of students should be in small groups.
- 1.6 Clinical teaching should be conducted in teaching hospitals, at community level, and in community based institutions like Primary Health Centres.
- 1.7 The role of new developments in the health delivery system may be kept in mind while working out the details of curriculum and examinations.
- 1.8 Students should learn to perform simple basic clinical procedures required in all disciplines.
- 1.9 The duration of MBBS course is five years, followed by a one-year pre-registration house job with six months in medicine and allied specialties, and six months in surgery and allied specialties. The academic session should not be less than nine months in one year.
- 1.10 Teachers must set a personal example of conduct so as to inculcate qualities of character and attitudes expected of a good doctor, as laid down in the objectives.

## **2. SUBJECT OBJECTIVES:**

The learning/teaching strategy of every subject should be designed by institutions based on subject objectives, which will ultimately achieve the general objective of undergraduate medical education. Institutional strategy should involve as many principles of learning as possible.

Integration should be promoted between basic and clinical subjects, and between the different clinical subjects. Basic scientists and clinicians should take part in teaching both basic and clinical sciences.

Lectures should be given less than one third of the time allotted for the subject. More emphasis should be given to tutorials, seminars, workshops, practical work and clinical training specially in the final year.

The following guidelines are recommended:

### **2.1 Behavioural Sciences:**

It is imperative that students be trained to deal with complexities of life, as well as the complex medical problems accruing from them. It is, therefore, essential that in the first two years of the MBBS course the students should be taught behavioural sciences, including interpersonal relationships and social adjustment issues.

### **2.2 Islamic Studies and Pakistan Studies:**

The applied aspects of Islamic principles and Pakistan Studies are important. The time allotted to this subject should be utilised by inviting eminent scholars in Islamic and Pakistan Studies to speak on selected topics in the field. Some time should be devoted to seminars and group discussions on biomedical ethics in the light of Islam. The subject should not be limited to the first two years, but may be continued throughout the five years. There need not be a separate examination in this subject because the purpose is to bring about changes in the behaviour of graduates, which cannot be tested by a single written or oral examination. This is best assessed by prolonged observation.

### **2.3 Anatomy:**

In this subject emphasis should be given to the applied aspects of developmental, gross and microscopic Anatomy without burdening the students with unnecessary details of basic Anatomy. Efforts should be made to demonstrate anatomical facts of practical importance on models, dissected parts, films and slides. These methods of teaching should supplement the dissection of human bodies. It is desirable that the teaching of developmental, gross and microscopic Anatomy be done concurrently.

#### **2.4 Biochemistry:**

Students should be taught those areas of Biochemistry which are important for the understanding of metabolic disorders relevant to common disturbances of body functions, and gene structure and function. Experimental work in Biochemistry should highlight important clinical applications of biochemical tests. The use of modern equipment for biochemical analysis should be demonstrated to students.

#### **2.5 Physiology:**

Students should be taught the general principles of functions of the human body with emphasis on practical applications. Experimental work in Physiology should illustrate important physiological concepts, and measurements. Physiological phenomena must be demonstrated in practicals. The use of modern equipment for studying physiological functions must be demonstrated to the students.

#### **2.6 Pharmacology:**

The teaching of Pharmacology should be limited to general principles of pharmacokinetics of groups of commonly used drugs. Experimental work in Pharmacology should be aimed at demonstration of actions of drugs in isolated tissues and intact experimental animals. Visits to pharmaceutical industries by the students to acquaint them with modern manufacturing techniques may be useful. Outmoded and discarded methods of pharmacy need not be demonstrated. Clinical Pharmacology which is of applied value needs more emphasis in teaching.

#### **2.7 Pathology:**

This subject includes general and special Pathology, including histopathology, clinical and chemical Pathology, Microbiology, Haematology and Immunology. Teaching of general principles should be supplemented by experimental work. In addition, a student should be equipped with the skills required for collection of various specimens for pathological analysis, and should be able to perform commonly used tests which are done in a slide-room laboratory.

#### **2.8 Forensic Medicine and Toxicology:**

This Department should teach the legal aspects of medical practice and the legal implications of medical disorders, in collaboration with the Departments of Pathology and Pharmacology, hospital casualty, and clinical teachers. The emphasis should be on those legal aspects of medicine which a young medical graduate will be expected to face in practical life.

## **2.9 Community Health Sciences:**

Community Health Sciences is essential for Pakistan because of the high prevalence of preventable diseases. Knowledge of epidemiology, biostatistics, demography, population dynamics, and social sciences are vital for the study of diseases and their impact on populations as well as on individuals.

An assessment of population needs is essential for the provision of appropriate health services. Identification of priority health problems, the influence of environmental and social factors on diseases, the prevention of illness and the promotion of health, are specially important. These issues are relevant to many parts of the curriculum, and should be addressed by all disciplines of medicine. Teaching must be supplemented by practical involvement of students in research and community health projects, and actual exposure to health problems of different sections of the population. Identification of problems should be followed by planning, implementing, monitoring and evaluating appropriate interventions.

## **2.10 Clinical Subjects:**

It is important that instructional strategy involve as many principles of learning as possible. Emphasis should be placed on correlation of instruction to the general objectives, on self learning, and active participation of students using the largest possible variety of modes of transmission of knowledge. Students should be exposed to the common health problems of the community. Students should spend more time in clinics, hospitals, and community health facilities, with less reliance on lectures. Students should be actively involved in the day-to-day management of patients, and be accountable to their teachers for various allotted functions in the wards, out-patient clinics, community health facilities, operation theaters, hospital laboratories and libraries.

In the first two years of the MBBS course some exposure of medical students to clinical subjects is important in order to demonstrate the relevance of basic subjects. Students should also be taught first aid and resuscitation of patients.

In the third year of the MBBS class, students should develop communication skills, and skills for history taking and physical examination of patients. In this year the students should also develop basic skills required for patient management.

In the fourth year of the MBBS class, the student should learn the management of health problems both in out-patients and in-patients. Every student must go through the process of data collection, interpretation, analysis, synthesis and application in solving problems. Students should be given the opportunity of repeatedly performing basic skills required in the performance of professional work.

In the fifth year of medical training, students should spend more time in clinical work. They should be allotted defined responsibilities in the management of patients. Day duties of final year students are compulsory; where residential facilities are available, night duties may be allotted.

Throughout the clinical training, frequent evaluation of students' performance is important both for the purpose of feedback as well as the final certifying examinations.

In the final year of the MBBS course, weekly clinico-pathological conferences should be held. These conferences should adopt a multidisciplinary, integrated approach to correlate clinical presentations with pathology, and include comprehensive management of health problems. Students should be encouraged to take active part in the preparation and presentation of these conferences in rotation. The clinical training programme should be planned for the three clinical years, ensuring even distribution of students and smooth rotation of batches in streams.

Clinical attachments are intended to develop basic clinical skills for accurate assessment, analysis, synthesis, and critical thinking, leading to appropriate diagnosis and management.

The following guidelines are suggested for each clinical subject:

**A) Internal Medicine:**

- A.1 Systematic lectures in the principles and practice of Medicine be spread over five years.
- A.2 Clinical training in medical units and community health facilities should be spread over the three clinical years.
- A.3 Final year students should perform simple side-room laboratory tests of the patients allotted to them.
- A.4 Allied specialties of Medicine like Geriatrics, Dermatology, Psychiatry, Family Medicine, Radiology should also be taught to undergraduate medical students. The curricula for these may be developed by the individual medical colleges.
- A.5 Other medical specialties may be included in the teaching of Medicine.

**B) Surgery:**

- B.1 Emphasis should be laid on developing skills in aseptic techniques, dressing, and mastering minor surgical procedures for which log-books shall be maintained.
- B.2 Students must take full part in the pre and post-operative care of their patients.
- B.3 Final year MBBS students must be given the opportunity to attend the operations of their patients and write the operation notes.
- B.4 Students should know indications and contra-indications of common surgical procedures.
- B.5 Allied specialties of Surgery like Orthopaedics, Dentistry and Radiotherapy should also be taught to the medical students. Curricula for these may be developed by the individual medical colleges.
- B.6 Paediatric surgery and other allied surgical specialties may be included in the Surgery curriculum.
- B.7 Students should be trained in the skills for giving local anaesthesia, intubation and resuscitation.

**C) Obstetrics and Gynaecology:**

- C.1 The training in this subject includes Obstetrics, Gynaecology, Family Planning and Reproductive Health.
- C.2 While on duty in the Obstetrics and Gynaecology Units, the students should be resident in the hospital.
- C.3 Proper records of cases allotted to students must be maintained.
- C.4 Students should take part in the functions of maternity and child welfare clinics, and other community health facilities.
- C.5 Students should demonstrate familiarity with relevant health statistics and national health programmes.

**D) Paediatrics:**

- D.1 Teaching of paediatrics includes neonatology.
- D.2 Clinical training in paediatric units, and community health facilities should be spread over the three clinical years.
- D.3 Students should demonstrate an understanding of normal child growth and development.
- D.4 Students should demonstrate familiarity with child health statistics and national health programmes.

**E) Ophthalmology:**

- E.1 Students should be able to diagnose and manage minor, common eye problems.
- E.2 Students should be able to recognize and refer complicated eye problems needing specialist care.

**F) Otorhinolaryngology:**

- F.1 Students should be able to diagnose and manage minor, common ENT problems.
- F.2 Students should be able to recognize and refer complicated ENT problems needing specialist care.

**2.11 Clinico-Pathological Conferences and Seminars:**

Weekly clinico-pathological conferences should be held regularly in the fourth and fifth years. These conferences should be held in rotation by the various units. Actual cases should be presented, preferably by the students themselves using an integrated approach involving concerned specialists.

Seminars are a valuable method of integrating clinical and basic subjects. They provide a platform for discussion of topics of practical importance, as well as update and review of specific clinical issues. This process also improves the students' competence and skills in public speaking and communications. The students also learn to refer to research work on any subject and report on any research in which they have participated.

**SECTION IV**  
**EXAMINATION**

**OBJECTIVES:**

Evaluation is an essential part of the education process. There should be regular internal evaluations. The students should be evaluated in all 3 domains – cognitive, affective and psychomotor. The principles of internal evaluations should be uniformly applied by all medical colleges.

The purpose of evaluation should be:

1. To give feed back to the students about their understanding of the course material. This purpose can be achieved by regular internal evaluation of each assignment or course.
2. To certify that the students have successfully completed the training and have achieved the objectives of the educational programme.
3. To determine the success of the teaching programme.
4. To motivate and encourage students to direct their own learning.

In order to achieve the objectives it is mandatory to adopt the following processes:

1. Continuous internal assessment consists of appropriate evaluation at the end of each assignment, term, stage or course of the curriculum. Proper records of internal evaluations should be maintained, and the scores obtained in these tests should contribute 30% to the final total score of the candidates. Final University examinations of each subject should contribute 70% to the total score, and the students should pass on the aggregate.
2. No student shall be promoted to the 3rd year MBBS class without passing the First Professional MBBS Part-I and Part-II university examination in Anatomy, Physiology and Biochemistry.
3. No students can be promoted to the higher classes unless he passes all the subjects of the previous classes.
4. No student should be eligible for a university examination without having attended 75% of the lectures, demonstrations, tutorials, and practical or clinical work both in-patients and out-patients.
5. Whatever may be the system of marking, for all examinations throughout the medical course the percentage of pass marks in each subject should not be less than 50 – i.e. 50% in theory and 50% in practical.

6. No grace mark should be allowed in any examination.
7. There should be no more than two professional university examinations in a year.
8. The performance of candidates in all evaluations and examinations should be carefully supervised.
9. Maximum number of eligible examiners from amongst the teachers may be involved in the internal evaluation examinations.
10. Written examinations should consist of MCQs, short structured essays, extended essays, etc.
11. Clinical and practical examinations should include standardized multiple station examinations wherever appropriate.
12. The first professional examination should be divided into two parts, each to be conducted by the university.
13. Any students who fails to pass the first professional MBBS Part-I and Part-II examination in three chances or does not avail the chances despite being eligible for each examination shall cease to pursue further medical education in Pakistan.
14. The final MBBS examination in Medicine, Surgery, Obstetrics and Gynaecology, and Paediatrics should not be further sub-divided.
15. The clinical examination in Medicine, Surgery, Obstetric and Gynaecology, Paediatrics, Ophthalmology, and ENT should be held in adequately equipped hospitals.
16. In all professional examinations, sufficient time should be assigned to practical work to test the thoroughness of the candidate's knowledge and practical skills.
17. At least three academic years should intervene between the dates of passing the first professional examination and the final professional examination.
18. The final professional examination is not to be taken before the close of the fifth academic year of medical students.
19. External examiners should always be associated with local or internal examiners for written, oral and practical parts of university examinations.

20. Examiners for all subjects should be appointed from amongst the approved list of examiners of the Council. The number of external examiners and internal examiners shall be equal. External examiners should not be appointed for more than three consecutive years. The number of internal and external examiners should at least be one for a group of 100(one hundred) students.
21. Preparatory leave should not exceed one month in the first, second and third professional examinations, and should not exceed two months in final professional examination.
22. The gap between two consecutive papers should not be more than two days.
23. The result of each examination should be declared within one month of the last practical examination.

#### PROFESSIONAL MBBS EXAMINATIONS:

##### 1. First Professional MBBS Part-I Examination:

To be held at the end of the 1st year in the following subjects in course work completed in the first year:

(a)	Anatomy and Histology	
	One Paper:	100 marks
	Practical and Oral Exam:	100 marks
(b)	Physiology	
	One Paper:	100 marks
	Practical and Oral Exam:	100 marks
(c)	Biochemistry	
	One Paper:	50 marks
	Practical and Oral Exam:	50 marks

- (d) Any students who fails to clear the first Professional MBBS Part-1 examination in three chances availed or un-availed after becoming eligible for each examination shall cease to become eligible for further medical education in Pakistan.

**2. First Professional MBBS Part-II Examination:**

To be held at the end of the 2nd year in the following subjects in course work completed in the second year:

- |     |                          |           |
|-----|--------------------------|-----------|
| (a) | Anatomy and Histology    |           |
|     | One Paper:               | 100 marks |
|     | Practical and Oral Exam: | 100 marks |
| (b) | Physiology               |           |
|     | One Paper:               | 100 marks |
|     | Practical and Oral Exam: | 100 marks |
| (c) | Biochemistry             |           |
|     | One Paper:               | 50 marks  |
|     | Practical and Oral Exam: | 50 marks  |
- (d) "Any student who fails to clear the First Professional MBBS Part-II Examination in three chances availed or un-availed after becoming eligible for the examination shall cease to become eligible for further medical education in Pakistan."

**3. 2nd Professional MBBS Examination:**

To be held at the end of the 3rd year in the following subjects:

- |     |  |           |
|-----|--|-----------|
| (a) | Pharmacology & Therapeutics                    | 300 marks |
|     | One Paper, Practical and Oral Exam             |           |
| (b) | Pathology General, Microbiology & Parasitology |           |
|     | One Paper:                                     | 150 marks |
|     | Practical and Oral Exam:                       | 200 marks |
| (c) | Forensic Medicine                              | 200 marks |
|     | One Paper, Practical and Oral Exam             |           |
- (d) The clinical skills in all subjects shall be taught and evaluated in third year. It should be part of internal evaluation having proportionate weightage according to the number of marks allotted to each subject. The methodology of evaluation be developed by each institution.

**3rd Professional MBBS Examination:**

To be held at the end of the 4th year in the following subjects:

- |     |   |           |
|-----|---|-----------|
| (a) | Community Medicine<br>One Paper, Practical and Oral Exam        | 300 marks |
| (b) | Special Pathology: One Paper                                    | 150 marks |
| (c) | Otorhinolaryngology (ENT)<br>One Paper, Practical and Oral Exam | 200 marks |
| (d) | Ophthalmology<br>One Paper, Practical and Oral Exam             | 200 marks |

**5. Final Professional MBBS Examination:**

To be held at the end of the 5th year in the following subjects:

- |     |  |           |
|-----|--|-----------|
| (a) | Medicine including Psychiatry<br>& Dermatology<br>Two Papers, Practical and Oral Exam  | 600 marks |
| (b) | Surgery including Orthopaedics<br>& Anaesthesia<br>Two Papers, Practical and Oral Exam | 600 marks |
| (c) | Obstetrics and Gynaecology<br>Two papers, Practical and Oral Exam                      | 400 marks |
| (d) | Paediatrics including Neonatology<br>One Paper, Practical and Oral Exam                | 200 marks |

**SECTION V****HOUSE JOB**

A house job is compulsory for Registration with the Pakistan Medical and Dental Council. It shall be of one year in duration, with 6 months in Medicine and allied disciplines, and 6 months in Surgery and allied disciplines. It must be carried out in a hospital recognised by the Pakistan Medical and Dental Council for the house job. A House Job should have a structured, and supervised training programme with opportunities for self-learning. House jobs should be evaluated and certified.

## SECTION VI

### EDUCATIONAL FACILITIES

Good education depends upon educational facilities. It is therefore necessary to provide and maintain adequate teaching facilities at the medical colleges particularly in the following fields:

1. Teaching Staff:

Properly qualified and properly committed teaching staff should be provided on the basis of a minimum teacher student ratio of 1:5 for clinical departments and 1:10 for basic sciences. Institutions should have a faculty development plan, and career structure. Good teachers should be rewarded appropriately. Teachers should be provided with adequate support staff, and equipment including access to computers. Institutions should develop organised teacher's exchange programmes with other institutions at home and abroad. Teachers training programmes should be compulsory.

2. Department of Medical Education:

Medical Education is a science to support development of faculty, and a facility to support functions of faculty as educators and students as learners. Educational activities involve determination of strategy, use of a large variety of audio-visual aids, teaching techniques and computers. A large number of principles of learning have to be applied to the design and practice of teaching. Objective oriented and properly structured evaluation techniques have become an integral part of the educational process.

In order to bring about this overdue change in our medical educational system, and to continue developing our educational techniques, every medical college should establish a Department of Medical Education with adequate staff, space, equipment, furniture, stationery and funds. A Department of Medical Education has to be given the status of compulsory departments without which a medical college should not be recognised.

In every college the Department of Medical Education should be under a trained senior staff member for devising educational innovations, conducting teachers training programmes, continuing medical education activities and student counselling for which proper facilities be provided.

3. Lecture theaters should have adequate physical facilities for the whole class.
4. Conference rooms should be available to promote teacher-student interaction which is necessary for developing and promoting habits of group activity and team work.
5. Laboratories should be well-equipped with both simple and high technology for demonstration and experimentation and may be mono-disciplinary or multi-disciplinary.
6. Museums should be well-furnished and well-supplied with specimens and models for self-learning.
7. Libraries should be comfortable and well stocked with standard reference printed matter including access to journals. Libraries should also include books on humanities, community problems, psychology, occupational health, etc.
8. Library Science should be utilised to train students in proper reading habits and use of library. Audio-visual libraries should be developed.
9. Every college must provide training in research methodology and support properly defined and funded research studies relevant to the needs of Pakistan. Special efforts should be made to involve students in research activities.
10. Medical Colleges should develop structured and supervised Postgraduate Education Programmes with an organization within the faculty to ensure appropriate selection, training and evaluation of students. A system for internal evaluation of the training programmes, and appropriate and adequate facilities for postgraduate education should also be ensured.

11. Teaching hospitals should be adequately provided with teaching facilities in all compulsory disciplines. Clinical teachers and student should be provided with all necessary facilities such as demonstration rooms, teaching aids, appropriately equipped offices and secretarial assistance. The teaching hospitals should be administered by one of the senior teachers assisted by a hospital management committee. The Principal of the College shall be the chairperson of the hospital management committee in civil government administered colleges.
12. Community health facilities like BHUs should be acquired in the vicinity of the Colleges either on the basis of integration or collaboration for conducting part of the clinical training. For the practice of proper community-oriented health care, students should actually participate in primary health care of the community under the guidance of clinical teachers in various disciplines. It is essential that the students develop the concept of integrated problem-based health care to deal with common health problems in real community environments.
13. Adequate financial provision should be made for maintenance and development of medical colleges with effective consultation of the Principal.
14. As a rule the senior most professor should be the Principal or Dean of the College.
15. Administrative organisation of the college should be prompt, effective and a problem solving in the form of a governing body with non-lapsable budget.

**SECTION VII****STUDENTS' ACTIVITIES AND WELFARE PROGRAMMES**

No educational policy can be complete without clearly defined extra curricular activities and welfare programmes for the students such as:

1. Sports Club.
2. Literary Society.
3. Social welfare activities, conducted tours, community organization, etc.
4. Students Counselling services to deal with such problems as substance abuse.
5. Motivation against political exploitation.
6. Teacher-Student Organizations like Tutor system, Monitor system, Proctorial System and Hostel Management Committees formed on the basis of talent.
7. Student's Group Insurance system and Benevolent Fund.
8. Proper awards and adequate scholarships for purpose of incentives and assistance.
9. Student Health Services.
10. Student Exchange Programmes with other institutions at home and abroad.
11. Proper Hostel accommodation.
12. Transport facilities.
13. Language Training Programmes for proficiency in English language on a voluntary basis.

**REVISED CURRICULUM  
OF  
M.B.B.S**

**Curriculum Development Project**

Sponsored by  
**Ministry of Education  
Islamabad**



**UNIVERSITY GRANTS COMMISSION  
H-9, ISLAMABAD  
2002**

## **CURRICULUM DIVISION, UGC**

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Mr. Muhammad Younus  
Malik Ghulam Abbas  
Miss Ghayyur Fatima  
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*Composed by Nadeem A. Janjua, UGC Head Office, Islamabad*

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## PREFACE

Curriculum of a subject is said to be the throbbing pulse of a nation. By looking at the curriculum of a subject, one can judge the state of intellectual development and the state of progress of a nation. The world has turned into a global village, new ideas and information are pouring in a constant stream. It is, therefore, imperative to update our curricula by introducing the recent developments in the relevant fields of knowledge.

In exercise of the powers conferred by Sub-section (1) of section 3 of the Federal Supervision of Curricula Textbooks and Maintenance of Standards of Education Act 1976, the Federal Government vide Notification No.D773/76-JEA (Cur.), dated December 4, 1976, appointed University Grants Commission as the Competent Authority to look after the Curriculum Revision Work beyond Class XII at Bachelor level and onwards to all Degrees, Certificates and Diplomas awarded by Degree Colleges, Universities and other Institutions of higher education.

In pursuance of the above decisions and directives, the Commission is continually performing curriculum revision in collaboration with the Universities. According to the decision of the 44<sup>th</sup> Vice-Chancellors' Committee, curriculum of a subject must be reviewed after every 3 years. For the purpose, various Committees are constituted at the national level comprising senior teachers nominated by the Universities. Teachers from local degree colleges and experts from user organizations, where required, are also included in these Committees.

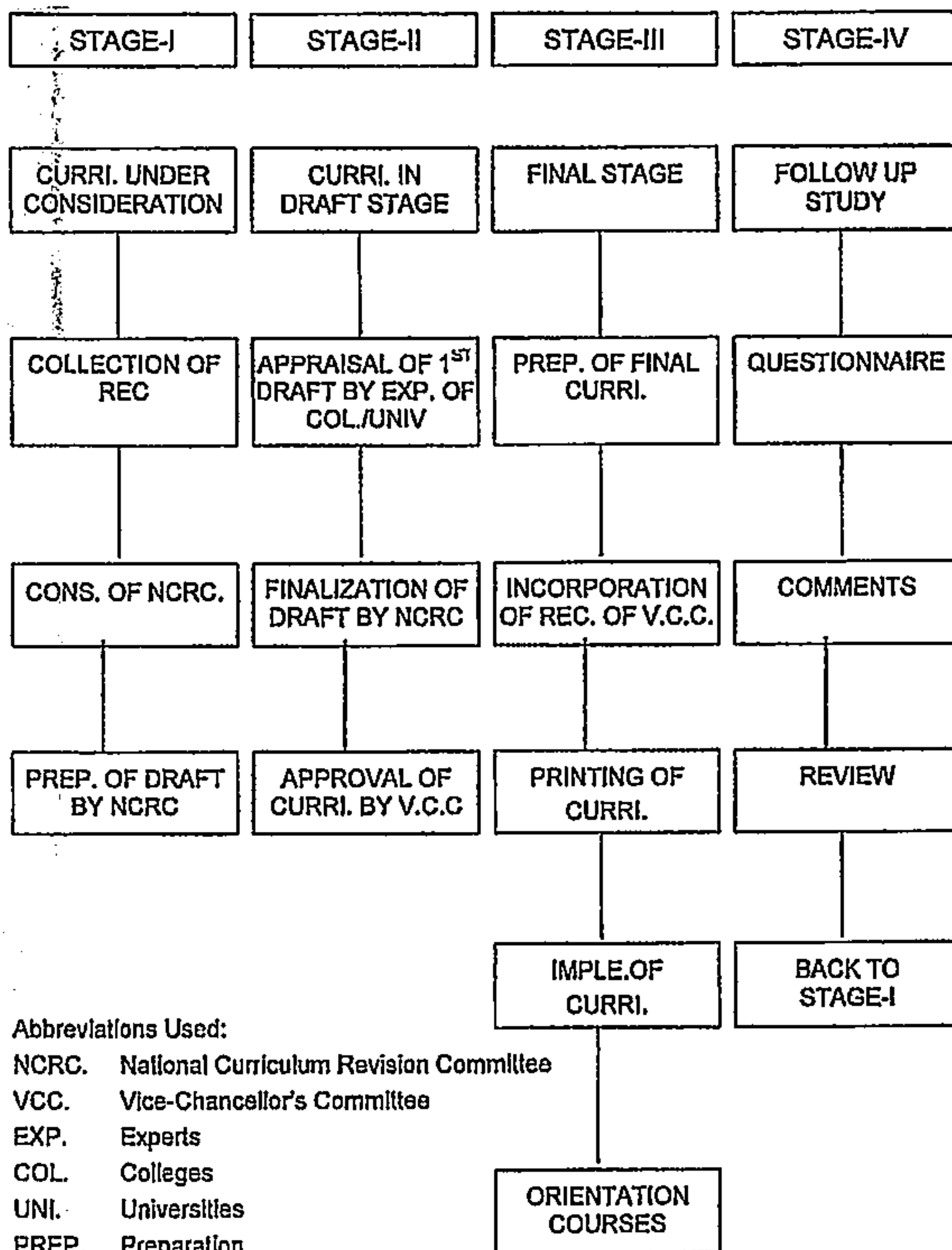
The National Curriculum Revision Committee on MBBS in its meeting held in May 2002 at the U.G.C. Islamabad revised the curriculum after due consideration of the comments and suggestions received from the Universities and Colleges where the subject under consideration is taught.

The Final draft prepared by the Curriculum Revision Committee duly approved by competent authority is being circulated for implementation by the Universities.

**(PROF. DR. ALTAF ALI G. SHAIKH)**  
**ADVISER (C&T)**

August, 2002

# CURRICULUM DEVELOPMENT



**Abbreviations Used:**

- NCRC. National Curriculum Revision Committee
- VCC. Vice-Chancellor's Committee
- EXP. Experts
- COL. Colleges
- UNI. Universities
- PREP. Preparation
- REC. Recommendations

**MINUTES OF THE MEETING OF NATIONAL CURRICULUM  
REVISION COMMITTEE HELD ON MAY 21-23, 2002 AT UGC  
ISLAMABAD  
TO FINALIZE THE DRAFT CURRICULUM OF MBBS**

Dr. A. Q. Mughal, Chairman, University Grants Commission, Islamabad opened the meeting by recitation from the Holy Quran and its translation. He welcomed the President PM&DC, Secretary, PM&DC and other distinguished guests for attending the meeting. He stated that there are three separate bodies, which are responsible for overseeing Medical Education, the Pakistan Medical & Dental Council, University Grants Commission and the universities, which affiliate the medical colleges. The UGC sets the curriculum and the PM&DC accredits these institutions.

The Chairman briefed the members about constitutional role of University Grants Commission for revising the curricula beyond Class-XII and its effective implementation. During the course of briefing he intimated that there are about 11 Councils which are established under the Acts of Parliament and assigned different jobs but only a few of them are performing their statutory obligations such as Pakistan Medical & Dental Council, Pakistan Veterinary Medical Council, Pakistan Engineering Council, Pakistan Nursing Council etc. He further stated that he is keen about holding a joint meeting of the Chairpersons of all the Councils. The Chairman thanked the Pakistan Medical & Dental Council for coordinating and providing the list of experts of different fields in medical science and thus enabled the Commission to conduct the meetings of NCRCs in 18 subjects offered for award of MBBS degree. He stressed on the participants that they should devise a curriculum so that after passing out the medical graduates serve the needs of the country. He particularly desired that curriculum should not over burden the students and that medical teachers should also keep in mind the students perspective while planning the curriculum.

Prof. Dr. M. Hayat Zafar, President, Pakistan Medical & Dental Council, after inaugural address of the Chairman, UGC expressed his gratitude for holding meeting to revise the curriculum of MBBS which was long awaited. He informed that the UGC had been gracious enough to help the Council financially and also to provide infrastructure for developing curriculum for under graduate medical degree, which is being done after a lapse of more than 25 years. This is indeed a milestone in the history of Medical Science in Pakistan. He further emphasized that while revising the curriculum, efforts may be made to make it community oriented and cater the needs of the common people. He stressed that efforts may also be made to revise the curricula of BDS and Post-graduate Medical Degrees. The Council will provide list of subject experts for the purpose.

Dr. Altaf Ali G. Shaikh, Adviser (C&T) informed the members about the procedure and objectives of the meeting which was a follow-up of the earlier meetings and the rationale for revising the curriculum of MBBS for Medical Institutes of Pakistan. He explained that the task of this Committee is to update the curriculum which deals with the instructional strategies and assessment are to be decided by respective universities. He paid tributes to the following subject experts/members of preliminary meetings of National Curriculum Revision Committee (NCRCs) and members of Community Oriented Medical Education (COME) in 18 medical subjects for contributing in an excellent way towards revision of existing curriculum of MBBS.

### **ANATOMY**

1. Dr. Rasheeda Raza,  
Professor of Anatomy,  
Liaquat Ali Khan Medical College, Karachi.
2. Dr. Muhammad Zia Iqbal,  
Professor of Anatomy,  
Sindh Medical College,  
Karachi.
3. Dr. Tassadiq Hussain,  
Professor of Anatomy,  
Rawalpindi Medical College,  
Rawalpindi.
4. Brig. Liaquat Minhas,  
Professor of Anatomy,  
Army Medical College,  
Rawalpindi.
5. Dr. Afzal Alamgir,  
Professor of Anatomy,  
Ayub Medical College,  
Abbottabad.

### **ANAESTHESIOLOGY:**

1. Prof. Tipu Sultan,  
Professor of Anaes.,  
Dow Medical College,  
Karachi.

2. Prof. Sakina Jaffary,  
Professor of Anaes.,  
Pakistan Institute of Medical Sciences,  
Islamabad.

3. Dr. Asghar Ali Randhawa,  
Professor of Anaes.,  
Punjab Medical College,  
Faisalabad.

### **ORTHOPAEDIC**

1. Prof. Syed Muhammad Awais,  
Professor of Orthopaedic Surgery,  
King Edward Medical College, Lahore.

2. Prof. Khalid Hassan Baloch,  
Professor of Orthopaedic Surgery,  
Bolan Medical College,  
Quetta.

3. Prof. Anis Uddin Bhatti,  
Associate Professor of Orthopaedic Surgery,  
Jinnah Post-graduate Medical Centre,  
Karachi.

### **DERMATOLOGY:**

1. Dr. Sabrina Sohail,  
Department of Dermatology,  
Dow Medical College, Karachi.

2. Prof. Zamaz Wahid,  
Professor of Dermatology,  
Dow Medical College,  
Karachi.

### **FORENSIC MEDICINE:**

1. Dr. Mian Abdul Rashid,  
Assistant Professor of Forensic  
Medicine,  
Rawalpindi Medical College,  
Rawalpindi.

2. Prof. Muhammad Umer Memon,  
Professor of Forensic Medicine,  
Liaquat University of Medical Sciences,  
Jamshoro.

### **BIO-CHEMISTRY**

1. Prof. Shaukat Ali Orakzal,  
Professor of Biochemistry,  
Ayub Medical College,  
Abbottabad
2. Prof. Dr. Jawaid Altaf Baig,  
Professor of Biochemistry,  
Peoples Medical College for Girls  
Nawabshah
3. Prof. Dr. Zafar Ali Pirzado  
Professor of Biochemistry,  
Chandka Medical College, Larkana
4. Dr. Mudassir Ahmed Khan,  
Assistant Professor of Biochemistry,  
Khyber Medical College,  
Peshawar

### **PHYSIOLOGY**

1. Prof. Shoaib Tauheed,  
Professor Physiology,  
Dow Medical College,  
Karachi.
2. Dr. Hamid Javaid Qureshi,  
Professor Physiology,  
Nishtar Medical College,  
Multan.
3. Prof. Dr. Muhammad Akram,  
Professor of Physiology,  
King Edward Medical College, Lahore.
4. Lt. Col. Dr. Muhammad Muzhar Hussain,  
Associate Professor,  
Department of Physiology,  
Army Medical College,  
Rawalpindi.

## **PATHOLOGY**

1. Prof. Zubair Ahmed Zaidi,  
Professor of Pathology,  
Dow Medical College,  
Karachi.
2. Prof. Abdul Latif soomro,  
Professor of Pathology,  
Liaquat University of Medical & Health Sciences,  
Jamshoro.
3. Prof. Dr. Aquilla Bhutta,  
Head, Department of Pathology,  
Fatima Jinnah Medical College,  
Lahore
4. Dr. Liaquat Ali,  
Professor Microbiology,  
Khyber Medical College,  
Peshawar.

## **OPHTHALMOLOGY**

1. Prof. Nazir Asi,  
Professor of Ophthalmology,  
Kind Edward Medical College,  
Lahore.
2. Dr. Zia-ul-Islam,  
Professor of Ophthalmology,  
Khyber Medical College,  
Peshawar.
3. Dr. Abdul Waheed Memon,  
Professor of Ophthalmology,  
Chandka Medical College,  
Larkana.
4. Prof. Manzoor A. Mirza,  
Professor of Ophthalmology,  
Dow Medical College,  
Karachi.

5. Prof. Tahseen-un-Nabi,  
Professor of Ophthalmology,  
Nishtar Medical College,  
Multan.
6. Prof. Dr. Tariq Aziz,  
Head of Ophthalmology Department,  
Jinnah Post-graduate Medical Centre,  
Karachi.

### **MEDICINE**

1. Prof. Shabbir Hussain,  
Professor of Medicine,  
Sindh Medical College,  
Karachi.
2. Prof. Mazhar-ul-Haq Atique,  
Professor of Medicine,  
Bahawalpur Medical College,  
Bahawalpur.

### **OBSTETRIC & GYNAECOLOGY**

1. Dr. Pushpa Srichand,  
Professor of Obst. & Gynae,  
Liaquat University of Medical Sciences,  
Jamshoro, Hyderabad.
2. Dr. Seeda Majeed,  
Professor of Obst. & Dynae,  
Khyber Medical College,  
Peshawar.
3. Prof. Hassan Fatima Jaffary,  
Professor of Obst. & Gynae,  
Sindh Medical College,  
Karachi.

### **PHARMACOLOGY**

1. Prof. Mehar Ali,  
Professor of Pharmacology,  
Jinnah Post-graduate Medical Centre,  
Karachi.

2. Prof. Nirmal Das,  
Professor of Pharmacology,  
Bolan Medical College,  
Quetta.
3. Prof. Khurshid Ahmed Qureshi,  
Professor of Pharmacology,  
Quaid-e-Azam Medical College,  
Bahawalpur.
4. Prof. Abdul Wadood,  
Professor of Pharmacology,  
Khyber Medical College,  
Peshawar.

### **PAEDRIATRICS**

1. Prof. Iqbal Memon,  
Professor of Paeds.,  
Dow Medical College, Karachi.
2. Dr. Tariq Bhatti,  
Professor of Paeds.,  
King Edward Medical College,  
Lahore.
3. Prof. Abdul Hameed,  
Professor of Paeds.,  
Khyber Medical College,  
Peshawar.
4. Dr. Imran Iqbal,  
Professor of Paeds.,  
Nishtar Medical College, Multan.

### **RADIOLOGY**

1. Prof. Nawaz Anjum,  
Professor of Radiology,  
Post-graduate Medical Institute,  
Lahore.
2. Dr. N.A. Javed Siddiqui,  
Professor of Radiology,  
King Edward Medical College,  
Lahore.

## **E.N.T.**

1. Prof. M. Iqbal Hussain Butt,  
Professor of ENT  
Allama Iqbal Medical College,  
Lahore.
2. Prof. Azam Hussain Yosifani,  
Professor of ENT & Principal,  
Peoples Medical College,  
Nawabshah.
3. Dr. Najam-ul-Hasnain Khan,  
Associate Professor of ENT,  
King Edward Medical College,  
Lahore.

## **PSYCHIATRY**

1. Prof. Dr. Musarrat Hussain,  
Head, Department of Psychiatry,  
Jinnah Post-graduate Medical Centre, Karachi.
2. Prof. Dr. M.H. Mubashar,  
Head, Institute of Psychiatry,  
Rawalpindi General Hospital, Rawalpindi.
3. Dr. Asma Hamayun,  
Professor, Institute of Psychiatry,  
Rawalpindi General Hospital, Rawalpindi.

## **SURGERY**

1. Prof. Dr. Tariq Saeed Mufil,  
Convener  
Head, Department of Surgery,  
Ayub Medical College & Teaching Hospital,  
Abbottabad.
2. Prof. Dr. Waseem Ahmed,  
Secretary  
Prof. of Surgery,  
King Edwards medical College,  
Lahore.

## **COMMUNITY MEDICINE**

1. Prof. Dr. M. Saqib Lodhi,  
Head, Department of Community Medicine,  
Ayub Medical College, Abbottabad.
2. Prof. Dr. Maqsood Ahmed,  
Head of Community Medicine,  
Punjab Medical College,  
Faisalabad.
3. Prof. Dr. Shaheena Manzoor,  
Head, Department of Community Medicine,  
Fatima Jinnah Medical College for Women,  
Lahore.
4. Prof. Dr. D.S. Akram,  
Head, Paed. Department, Civil Hospital/  
National Coordinator, C.O.M.E.  
Dow Medical College,  
Karachi.
5. Prof. Dr. Capt. Ejaz Ahmed Shah,  
Head, Department of Community Medicine,  
Quaid-e-Azam Medical College, Bahawalpur.
6. Dr. Akbar Afridi,  
Head, Deptt. of Community Medicine,  
Khyber Teaching Hospital,  
Peshawar.
7. Dr. Naheed Hymayun Shaikh,  
Associate Professor,  
Head, Department of Community Medicine,  
Aliama Iqbal Medical College, Lahore.
8. Dr. Rukhsana Zubari,  
Family Medicine Division,  
Department of Community Health Sciences,  
The Aga Khan University, Karachi.
9. Dr. M. Masood Kadir,  
Assistant Professor & Head Public Health Practice Division,  
Department of Community Health Sciences,  
The Aga Khan University, Karachi.

10. Dr. Saima Hamid,  
Instructor, Health Services Academy,  
Bewal Plaza, Blue Area, Islamabad.
11. Dr. Capt. Meher F. Hansotia,  
Associate Professor and  
Head, Department of Community Medicine,  
Dow Medical College, Karachi.

Dr. Shalkh suggested that the members may choose someone from amongst them to Chair the meeting for formal deliberation. The members then unanimously consented to appoint Dr. Jan Muhammad Memon, Vice-Chancellor, Liaquat University of Medical & Health Sciences, Hyderabad as Convener but he proposed the name of Dr. N.A. Jafarey, Vice-Chancellor, Zia-ud-Din Medical University to act as Convener being senior most amongst the participants. The members then selected Prof. Eice Muhammad, Principal, Allama Iqbal Medical College, Lahore as Secretary of the Committee.

The Convener and Secretary of the Committee after taking the charge, constituted three groups comprising the following:-

#### GROUP-1

#### Basic Sciences and Allied Ist, 2<sup>nd</sup> & 3<sup>rd</sup> year

1. Brig. Muhammad Aslam, Convener  
Army Medical College,  
Rawalpindi.
2. Prof. Jamsheer Talati,  
The Aga Khan University,  
Karachi.
3. Prof. Hamid Javid Qureshi,  
Principal, Nishtar Medical College,  
Multan.
4. Prof. Abdul Shakoor Qazi,  
Director, Jinnah Postgraduate Medical Centre,  
Karachi.
5. Prof. M. Akbar Ch.,  
Principal,  
Fatima Jinnah Medical College,  
Lahore.

6. Prof. Shahnaz Javaid Khan,  
Deputy Dean, Postgraduate Medical Institute,  
Lahore.

7. Prof. Obaid Ullah Khawaja,  
Principal,  
Punjab Medical College,  
Faisalabad.

**GROUP-2**  
**Medicine & Allied subjects**

1. Prof. Eice Muhammad Convener  
Principal,  
Allama Iqbal Medical College,  
Lahore.

2. Dr. Rukhsana Zubari,  
Associate Professor,  
The Aga Khan University, Karachi.

3. Prof. S. Humayun Shah,  
Head, Department of Pathology,  
Ayub Medical College,  
Abbottabad.

4. Prof. Abdul Baqi Durrani,  
Professor of Medicine,  
Bolan Medical College,  
Quetta.

5. Dr. Ch. Muhammad Amjad,  
Assistant Professor,  
Health Services Academy,  
Islamabad.

**GROUP-3**  
**Surgery & Allied subjects**

- |    |  |          |
|----|--|----------|
| 1. | Prof. Jan Muhammad Memon,<br>Vice-Chancellor,<br>Liaquat University of Medical & Health Sciences,<br>Hyderabad.    | Convener |
| 2. | Prof. Lt. Gen. @ Dr. Syed Azhar Ahmed,<br>Vice-Chancellor,<br>Baqai Medical University,<br>Karachi.                |          |
| 3. | Prof. Ghulam Qadir Kazi,<br>Dean, Faculty of Medicine,<br>Isra University, Hyderabad.                              |          |
| 4. | Prof. Akbar Haider Soomro,<br>Principal, Sindh Medical College,<br>Karachi.  |          |
| 5. | Prof. Umer Ali Khan,<br>Principal, Khyber Medical College,<br>Peshawar.  |          |
| 6. | Prof. Muhammad Daud Khan,<br>Rector, Khyber Ins, of Ophth.,<br>Peshawar.   |          |
| 7. | Prof. Khalid M. Durrani,<br>Federal Post-graduate Medical Institute &<br>National Health Research Complex, Lahore. |          |

The meeting was also attended by Brig. Liaquat Ali Minhas, Lt. Col. Idrees Farooq Butt, Army Medical College, Rawalpindi, Prof. Dr. Naseem Ullah, Principal, Rawalpindi Medical College, Rawalpindi, Prof. Dr. Khalida Waheed, Prof. of Gynae & Obst. Rawalpindi Medical College, Rawalpindi and Prof. M. Hanif, Professor of Medicine, Rawalpindi Medical College, Rawalpindi.

Dr. Naseem Ashraf, Minister of State and Chairman, National Commission for Human Development also graced the occasion with his presence on 22.5.2002. He addressed the Vice-Chancellors, Medical Universities and Principals of Medical Colleges. He lauded the joint efforts of Pakistan Medical & Dental Council and the University Grants Commission for painstaking job of refurbishing the curricula of MBBS which was long awaited. He emphasized that revised curricula must be based on Community Oriented Medical Education (COME).

These three groups deliberated upon the revised draft syllabus of 18 subjects along with the comments/suggestions received on it for incorporation in the final draft curriculum. Keeping in view the comments/suggestions received from the expert, the NCRC finalized the draft curriculum of MBBS, which is annexed.

**(Dr. Eice Muhammad)**  
**Secretary**

**(Prof. N.A. Jafarey)**  
**Convener**

## **INTRODUCTION:**

After discussing the general objectives of the MBBS programme the participants broke up in three groups. Group I for the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year programme Group-II for the Medicine and Allied disciplines and Group-III for Surgery and Allied disciplines. After deliberations each group presented their recommendations to the full committee. This document represents the consensus of the committee members. As the main task of the committee was to finalise the syllabus, the recommendations of the group relating to instructional strategies, scheduling of various examinations and assessment methods are given as annexures, to be decided by the universities.

## GUIDING PRINCIPLES

*"We must make improvements in Education"*

DR. A.Q. MUGHAL

21.05.2002

1. The present exercise is to revise and update Section-III, the curriculum part of the existing PMDC Regulations published in August 1998.
2. Section 1, General Education Objectives is a preamble to the proposed curriculum.
3. Medical Education is a life long process and this MBBS curriculum is part of a continuum of education starting from pre-Medical education, MBBS, and proceeding to house-job, post-graduation, professional development and CME.
4. Many areas of content extend in to more than one discipline. Genetics, Biostatistics, Infectious Diseases, Diabetes Mellitus, Ethics are a few example of this overlap.  
It is therefore suggested that in order to avoid
  - i. an important aspect being left out, and
  - ii. unnecessary duplication.All the teachers of all the disciplines to be covered in that academic year (or Semester) should together plan the details of the academic programme.
5. This document lays down general principles and guidelines in a flexible framework, which allows universities to determine the ways of teaching and students' assessment within the bounds of a uniform National Curriculum.
6. The University Grants Commission will monitor whether the curriculum is being implemented by public & private universities; and will assist universities to implement the curriculum by providing resources, funds for facilities, and opportunities for teachers education to public sector universities only;
7. It is important to build an indigenous curriculum, which builds a competent and confident graduate who serves society's needs. Stakeholders opinion should be invited
  - a) Society's thinking should be incorporated
  - b) Student's opinion should be obtained
  - c) The general attributes which would assist a student to serve society will also need to be developed through the National Curriculum
8. The curriculum should aim
  - a) for application of knowledge and problem solving rather than only recall of factual knowledge.

- b) to define the psychomotor skills that the students should be able to perform themselves and differentiate them from those that should be observed.
9. The overall curricular document should emphasize areas that the student must know, incorporate new fields of knowledge, and yet ensure that the student is not overburdened and, hence, should eliminate some topics.
- a) Additional compulsory courses should be balanced by the reduction of information overload by deleting obsolete material or those more relevant to postgraduate studies.
  - b) Taking into consideration the rapid changes occurring in the field of Bio-medical Sciences, institutions wishing to add topics may do so. Advanced courses may be placed as elective opportunities.
  - c) Repetitive teaching of the same contents by different disciplines should be eliminated.
  - d) It is not necessary to expect the student to know every thing, because of the ready availability of knowledge; therefore, the curriculum will be continuously refined to state principles and concepts; and clearly define what the student *must* know.
  - e) Additional subjects such as English, Information Technology, Ethics, may be added by the universities as optional subject.
10. The Instructional Strategy for implementing this curriculum and assessment are the responsibility of the concerned universities. Multiple methods of instruction should be encouraged. There should be flexibility in implementation, allowing implementation according to staff, faculty and resources.
- a) The curriculum should be student centered utilizing active processes for learning and should not make the student a passive recipient.
  - b) The curriculum should be attractive (and therefore should have early clinical involvement).
  - c) Integration in education would reflect graduate function in real-world practice settings. Therefore the National Curriculum Revision Committee (NCRC) *strongly advocates* the gradual and sequential introduction of integrated teaching; and therefore recommends
    - i. That the curriculum move towards concurrent teaching of basic sciences in an organ based system;
    - ii. The introduction of a case-of-the-course which involves a clinical presentation which requires students to integrate knowledge from multiple disciplines/subjects;
    - iii. Integration of clinical and preventive sciences, where students are provided experiences to manage undifferentiated health problems.

The university faculty should decide the order in which to teach subjects and the grouping of subjects in each examination.

d) The desired humanistic attributes of a caring doctor with effective communication skills should be defined, methods that build these attributes should be included and tested, including trust-building in a professional patient-doctor relationship.

e) In order to facilitate the learning process the students should be given more free time for self-study.

11. This document represents the first phase in an ongoing effort to improve medical education across the country.

a) At this stage curricular content and general guiding principles have been enunciated.

b) In the next phases detailed definition of the depth of study will be refined.

c) At this stage general terminal competencies are listed after the General Education Objectives, the preamble to the proposed curriculum.

12. With time, Universities should move towards a uniform system of assessment.

# I. SYLLABUS OF FIRST PROFESSIONAL MBBS PART-I

## A. ANATOMY

1. Brief history of Anatomy. Different disciplines of the subject.
2. Anatomical nomenclature-descriptive terms.
3. Skeletal system-bones.
  - \* Axial skeleton
  - \* Appendicular skeleton
  - \* Functions of bone
  - \* Classification on the basis of shape, development, region and structure
  - \* General concepts of development & ossification of bones
  - \* Parts of young bone
  - \* Blood supply of long bone
  - \* Applied Anatomy of bones
4. Joints.
  - \* Structural classification
  - \* Regional classification
  - \* Functional classification
  - \* Characteristics and classification of Synovial joints
  - \* Movements of Synovial joints
  - \* Anatomy of joints with reference to dislocation, sprain and inflammation
5. Muscle
  - \* Parts of a muscle
  - \* Classification
  - \* Blood supply and nerve supply of muscle
  - \* Neuromuscular junction
  - \* Applied anatomy of muscle with reference to spasm, paralysis, atrophy and regeneration
6. Cardiovascular system
  - \* Introduction to C.V.S
  - \* Types of circulation
  - \* Anastomosis
7. Introduction to lymphatic system
  - \* Lymph node
  - \* Lymph capillary
  - \* Functions

8. Nervous system
  - \* Introduction to CNS
  - \* Different parts of CNS with their brief functions
  - \* Peripheral nervous system (cranial and spinal nerves)- introduction
9. Autonomic nervous system
  - \* Introduction to parasympathetic and sympathetic nervous system.
10. Skin and fascia
  - \* Skin, Superficial and deep fascia, Introduction
11. Techniques to study Anatomy
  - \* Introduction to radiograph
  - \* Radio opaque media
  - \* Special X-ray techniques like Barium Meal, Angiography, Ultrasound, C.T.Scan and MRI.
12. Embalming & museum keeping

## GENERAL HISTOLOGY

- Histology will be taught concurrently with Anatomy throughout the course.
- Underlying principles of histological techniques and staining specific tissues should be explained.
- Most of teaching will be done on stained and mounted sections and every type of normal tissue will be covered.

1. Cell
  - \* Cell as a whole
  - \* Cell Membrane
  - \* Interior of cell
  - \* Nucleus
2. Microscopy
3. Epithelial tissues
4. Connective tissue proper
5. Cartilage
6. Bone
7. Muscular tissue
8. Nervous tissue & Nervous System

- The nervous system
- \* Cerebral cortex

- \* Cerebellar cortex
- \* Spinal cord
- 9. Lymphoid organ
- 10. Circulatory system
- 11. Integuments
- 12. Routine histological techniques

## **GENERAL EMBRYOLOGY**

Embryology should be taught with the object of making students understand and grasp those fundamental principles, which result in better comprehension of the structural organization in the body. Stress should be laid on those developmental processes such as growth and differentiation, which have a direct gearing on clinical subjects. The genesis of congenital malformations should be one of the chief aims. All details should be kept on the essential outlines.

1. Male & female reproductive systems
2. Cell Division and Gametogenesis
3. Fertilization, cleavage, blastocyst formation and Implantation
4. Development during second week
5. Development during third week
6. Embryonic period
7. Foetal period
8. Foetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and placenta)
9. Introduction to Genetics and teratogenesis
10. Perinatology

## **GROSS ANATOMY**

During study of Gross Anatomy, emphasis should be given on applied points, radiological anatomy, surface anatomy and cross-sectional anatomy

- **UPPER LIMB**
  - 11 weeks with 3 demonstrations /tutorials per week
- **LOWER LIMB**
  - 11 weeks with 3 demonstrations /tutorials per week
- **THORAX**
  - 8 weeks with 3 demonstrations /tutorials per week

## **ANNEXURE FOR ANATOMY**

Examination is to be conducted into TWO Parts:

- **FIRST PROFESSIONAL EXAMINATION PART-I: To Be Held at the end of First Year ——— 30 weeks duration**
- **FIRST PROFESSIONAL EXAMINATION PART-II: To Be Held at the end of Second Year -----30weeks duration**

### **REGIONS TO BE COVERED IN EACH PART**

- **GENERAL ANATOMY**
- **GENERAL HISTOLOGY**
- **GENERAL EMBRYOLOGY Including teratogenesis**
- **UPPER LIMB**
- **LOWER LIMB**
- **THORAX**

### **PART-II**

- **SPECIAL HISTOLOGY**
- **SPECIAL EMBRYOLOGY**
- **ABDOMEN AND PELVIS**
- **HEAD & NECK**
- **NEUROANATOMY**

### **BOOKS RECOMMENDED**

Latest editions of the books recommended should be consulted.

### **ANATOMY**

1. **GRAY'S ANATOMY to be used as a reference book**
2. **CUNINGHAM'S MANUAL OF PRACTICAL ANATOMY**
3. **CLINICAL ANATOMY BY SNELL**
4. **CLINICALY ORIENTED ANATOMY BY K.L.MOORE**

### **HISTOLOGY**

1. **JANCQUERA TEXTBOOK OF HISTOLOGY**
2. **COLOURD ATLAS OF HISTOLOGY BY DEFIERO**

## **EMBRYOLOGY**

1. LANGMAN'S EMBRYOLOGY
2. CLINICALY ORIENTED DEVELOPMENTAL ANATOMY BY K.L.MOORE

## **RECOMMENDATIONS**

Learning in the anatomy should be through dissection/dissected parts/  
models.

Evaluation should consist of: -

1. Continuous Internal assessment
2. MCQs
3. Short essay questions
4. Viva voce examination

## **B. BIOCHEMISTRY**

### **1. Introduction of Biochemistry:**

#### **Biochemistry of the Cell:**

- a) Introduction to cell (Biochemical point of view)
- b) Scientific methods to study the cell biochemistry
- c) Biochemical composition of the cell

### **2. Biochemistry of the Cell and Body Fluids:**

- a) Ionization of water & weak acids, bases
- b) Concept of pH, and pH scale
- c) Dissociation constant & titration curve of weak acids, the concept of pK values
- d) Buffers, their mechanism of action
- e) Henderson-Hasselbalch Equation (No derivation)
- f) Types of particles, solution,
- g) Importance of selectively permeable membranes, Osmosis, Osmotic pressure, surface tension, viscosity & their importance related to body fluids

#### **Carbohydrates:**

- a) Definition, biochemical function and classification
- b) Structure and functions of Monosaccharides, and their derivatives
- c) Disaccharides, their important examples
- d) Oligosaccharides, their combination with other macromolecules
- e) Polysaccharides, their important examples and biochemical role
- f) The biomedical importance of carbohydrates

#### **Proteins:**

- a) Definitions, Biomedical importance and classification of proteins based on
  - Physicochemical properties
  - Functional
  - Nutritional
  - Structural

- b) Amino acids, their structure, properties & functions
- c) Classification and nutritional significance of amino acids
- d) Dissociation, titration and importance of amino acid in pH maintenance.
- e) Structure of proteins and their significance
- f) Separation of proteins e.g. salting out, Electrophoresis, Chromatography, Centrifugation
- g) Immunoglobulins and its biomedical significance
- h) Plasma Proteins & their clinical significance

#### Nucleotide & Nucleic Acid:

- a) Chemistry and structure of nucleosides and their biochemical role.
- b) Nucleotides, structure, their derivatives and their biochemical role.
- c) Synthetic derivatives of purine and pyrimidines, their role in health and disease
- d) Nucleic acids, their types, structure and functions

#### Lipids:

- a) Definition, biomedical function
- b) Classification of lipids
- c) Phospholipids, Glycolipids, Sphingolipids and their Biochemical Significance
- d) Fatty acids, chemistry, classification and biochemical function
- e) Essential fatty acids
- f) Eicosanoids, their classification and functions in health and disease
- g) Steroids, Sterol e.g. Cholesterol, their chemistry, functions and clinical significance
- h) Lipid peroxidation and its significance

#### Biological Membrane:

- a) Biochemical composition
- b) Biochemistry of cell membrane, chemical composition, importance of lipid and proteins in membranes, chemistry of signals and receptors
- c) Biochemistry of membrane transport mechanism, active transport, passive transport, simple and facilitated diffusion

#### Enzymes:

- a) Introduction, definition, mechanism of catalysis
- b) Coenzymes, co-factors

- c) Isoenzymes, their clinical importance
- d) Factors affecting enzymes activity, Michaelis-Menten Equation, Lineweaverburk equation and their application in enzyme kinetics (no derivation of equations)
- e) Enzyme inhibitors and their classification & biomedical importance
- f) Application of enzyme in clinical diagnosis and therapeutic use

#### Prophyrins & Hemoglobin:

- a) Chemistry and biosynthesis of porphyrins and its disorders (Porphyrrias)
- b) Structures, functions and types of hemoglobin
- c) Oxygen binding capacity of hemoglobin, factors affecting and regulating the oxygen binding capacity of hemoglobin
- d) Degradation of heme, formation of Bile pigments, its types, transport and excretion
- e) Hyperbilirubinemia, their biochemical causes and differentiation, jaundice and its types
- f) Hemoglobinopathies (Hb-S, Thalasemia etc.) and their biochemical causes.

#### Vitamins:

- a) Introduction, classification
- b) Chemistry, Biochemical Functions, Deficiency manifestations, daily allowances and source of water soluble and fat-soluble vitamins
- c) Hypervitaminosis

#### Biochemistry of Digestive Tract:

- a) Introduction of digestion and absorption
- b) Introduction, composition, functions, daily secretion, stimulants and depressants of:
  - Saliva
  - Gastric Juice & HCL
  - Pancreatic Juice
  - Bile Juice
  - Succus Entericus
- c) Digestion and absorption of carbohydrates, proteins, nucleic acid and lipids.
- d) Biochemical disorders of GIT, e.g. achlorhydria, peptic ulcers, lactose intolerance, cholelithiasis and related disorders.

**Mineral & Trace Elements:**

- a) Classification and Biochemical role of:
- Macro minerals (Na, K, Ca, Cl, PO<sub>4</sub>)
  - Micro minerals (Fe, Zn, Mg, Se, I, Cu, Cr, Cd, Mn)

**Laboratory Practicals MBBS PART-I**

1. Introduction to use of laboratory facilities / equipments
2. Basic techniques and fundamental informations
3. Preparation of solutions-Normal solution and Normal saline
4. Experiments on Carbohydrates qualitative analysis
5. Experiments on proteins-qualitative analysis
6. Experiments on Fats-qualitative analysis
7. Chemical analysis of Urine-Normal and abnormal specimens

## C. PHYSIOLOGY

Basic Concepts	Clinical/Applied Concepts	Hours
General Physiology/Cell		10
Functional organization of human body	Abnormalities of the cell and its organelles	
Homeostasis		
Control systems in the body		
Cell membrane and its functions		
Intercellular Connections		
Cell organelles		
Transport through cell membrane		
Genetics		
Blood		22
Composition and General Functions		
Plasma Proteins		
Red Blood Cell (Erythropoiesis)	Anaemia	
Haemoglobin & Blood Indices, Iron metabolism, Fate of Hb.	Blood indices in various disorders	
White Blood Cells, Leucopoiesis, functions	Leucopaenia, Leucocytosis	
Platelets	Thrombocytopaenia	
Haemostasis	Clotting disorders (Haemophilia etc.)	
Blood Groups, Blood Transfusion & complications	Blood grouping/cross matching & significance	
Reticuloendothelial System -- Spleen	Immunity	
Nerve and muscle		20
The neuron-structure & functions		
Properties of Nerve Fibers	Nerve conduction studies	
Physiology of action Potential including compound action potentials	EMG	
Conduction of Nerve impulse, Nerve degeneration and regeneration	Nerve Injury	
Synapses		
Structure of the Muscle		
Skeletal muscle contraction	Rigor Mortis & Contractures	
Isometric and isotonic contraction		
Smooth muscle contraction		
Neuromuscular Transmission	Myasthenia Gravis	