AGA KHAN UNIVERSITY

INTERNAL MEDICINE CURRICULUM

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Department of Internal Medicine
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1.0 GENERAL INFORMATION

1.1 Vision and Mission

1.1.1 Vision

Aga Khan University will be an autonomous, international institution of distinction, primarily serving the developing world and Muslim societies in innovative and enduring ways.

1.1.2 Mission

Aga Khan University is committed to the development of human capacities through the discovery and dissemination of knowledge, and application through service.
It seeks to prepare individuals for constructive and exemplary leadership roles, and shaping public and private policies, through strength in research and excellence in education, all dedicated to providing meaningful contributions to society.

To advance this mission, AKU will:

a. Offer programmes of international quality.
b. Respond to identified needs in the countries and regions that it serves.
c. Prioritize teaching and research, which will inform and underpin intellectual innovation and change.
d. Provide service to advance its educational and research mandate.
e. Foster and develop leadership capacity through its education and research programmes.
f. Assess its impact and effectiveness.
g. Promote access and equity by taking positive measures to make the University inclusive of all socio-economic groups, addressing the particular needs and circumstances of the disadvantaged; promoting the welfare and advancement of women.
h. Engage in knowledge networking and emerging technologies.
i. Add value by promoting partnership and networking across the Aga Khan Development Network and with other national and international institutions

1.2 Philosophy of the Institution

The strategy of the Aga Khan University for East Africa as stated by its founder and Chancellor, His Highness the Aga Khan, is to be a University that aims to embrace "the frontiers of scientific and humanistic knowledge, radiating intelligence and confidence, research and graduates, into flourishing economies and progressive legal and political systems."

As an international institution, the university operates on the core principles that its programmes must be accessible to all, be relevant to the local needs and that they must

have a positive impact on the people and communities they serve; above all, they must be of the highest quality. The university is committed to building an environment that fosters intellectual freedom, distinction in scholarship, pluralism, compassion, and humanity's collective responsibility for a sustainable physical, social and cultural environment.

In preparing citizens for a rapidly changing world, the university provides education with a view to develop character, values, attitudes, rational self-confidence, pragmatic wisdom and a willingness and ability to help others. Through its programmes, the university supports participants' emerging knowledge, skills and special talents; deepens participants' creative reasoning and learning abilities; and promotes a broader understanding of society, culture and politics. It also promotes content mastery, critical thinking, inquiry, discovery and exploration of knowledge across disciplines and at the boundaries of disciplines. Furthermore, it promotes a culture of honesty, collegiality, teamwork, and shared purpose whilst fostering individual learning.

Thus, the philosophy of the institution is to develop individuals who are not only educated, competent and skillful professionals in their areas of interest but are imbued with humanistic and ethical values.

1.3 University Admission Requirements

1.3.1 Minimum university entrance requirements

Successful completion of secondary school education with a Kenya Certificate of Secondary Education (KCSE) minimum mean grade of C+ and relevant cluster subjects or its equivalent grades acceptable to AKU. In addition, the university has a policy for admission into each of its categories of programmes offering certificate courses, diplomas and bachelors, masters and doctoral degrees. Requirements for admission into a Master of Medicine degree is an MBChB Bachelor's degree or its equivalent from a recognized institution of higher learning and completion of one year of medical internship.

1.3.2 Other admission requirements

Admission of candidates is merit-based. Selection is in keeping with the university's admissions policy and with the requirements of specific programmes. In granting admission to its programmes, the university is looking for high academic achievement and well-rounded individuals with a passion for learning and a desire to make positive contributions to society. For admission to a Masters in Medicine course, methods of assessment include interviews as well as tests of knowledge, critical analysis, and group interactive exercises.

1.3.3 Procedures of application for admission

a. Application for admission
b. Sitting of AKU Admissions Test
c. Oral interview
d. Recommendations from an academic entity
e. Review of recommendations by Registrar's Working Group
f. Offers of admission to successful candidates.

1.4 Academic Resources programmes offered by the University

1.4.1 Facilities and Equipment

a. Lecture rooms

The university has a large auditorium and many seminar rooms in the main wards block, at outpatient clinics and in the East Tower Administration block on the fourth, sixth and seventh floors. All seminar rooms are set up for active learning, with students seated in a group, with a front presentation area. The seminar rooms allow for small group work, problem-based learning, case studies, and frontal lecture-style teaching. Each seminar room is also designed for seminar group meetings and for video-conferencing used in blended learning. Although video-conferencing equipment is not installed in every seminar room, each room is configured to allow installation of equipment as required.

b. Library

AKU Libraries: The AKU global network of libraries supports students and faculty in their study, teaching and research needs. The library network includes ten libraries in five countries spread over three continents. The libraries provide the University community access to comprehensive and multi-disciplinary information resources in print and digital formats. Access is provided through innovative services and state-of-the-art systems.

Faculty of Health Sciences Library – Nairobi: The vision of the Faculty of Health Sciences library in Nairobi is to be a regional centre of excellence in the provision of information resources for the education of multidisciplinary healthcare professionals. The mission of the library is to support the teaching, learning and research programmes of the university by selecting, acquiring and organizing relevant and up-to-date information resources and ensuring efficient and effective dissemination to all library patrons using state of the art technologies.

The library is equipped to offer information services using modern technology. It has a dedicated resource centre with 20 computers. There is wireless internet access within the library and a dedicated section for multimedia services. The library staff regularly offers courses on information literacy to a wide variety of users ranging from students, residents, hospital staff and faculty.

As a repository of knowledge, the library is implementing AKU wide institutional repository - eCommons@AKU. This repository collects, showcases, archives, and preserves a variety of intellectual output and publications authored by the Aga Khan University community. This knowledge portal provides access to the university's research and publications in digital format on a single dedicated website. eCommons@AKU is accessible via http://ecommons.aku.edu

The library networks with other AKU libraries through a shared catalogue and an integrated library management system (Symphony). This system enables users to get automatic email notifications and log on to their personal accounts, renew materials, reserve items and communicate with the library. The user-friendly Online Public Access Catalogue (OPAC) is available via http://safari.library.aku.edu

The library has a dedicated website that is used to disseminate knowledge to a wide variety of users. The library website is used to access electronic resources subscribed by the university and to access various databases which are aimed at different user groups. The website is accessible via https://www.aku.edu/library

In addition, the library also has a portal (intranet) that is used to display resources and for internal communication with the users. The libraries across all the university campuses share electronic resources through the email and digital network. The library facilitates academic success and encourages users to develop own competencies for lifelong learning by combining new techniques and technologies with the best traditional sources. This is achieved through the utilization of ICT and Multimedia approach to the learning process. The librarians provide information literacy training programmes across the University.

c. Information and Communication Technology

Computer workspaces are available for student use in the Library. In addition, all library-seating areas are provided with power and data outlets nearby; wireless internet access is also provided throughout the library.

d. Laboratories

The university runs a well-equipped science laboratory. The facility is designed to meet the learning requirements for basic laboratory skills. The clinical laboratory at AKU will be used for practical rotations.

e. Workshops/Studios

The new University Centre will have the Clinical Skills and Simulation Center (CSSC) which will be a multi-functional suite for practical training of healthcare professionals in a variety of simulated clinical experiences, ranging from interviewing standardized patients (actors) and conducting physical examinations, to full-body high-fidelity patient simulators to simulate emergency room, ICU, and operating theatre situations. Actors will be used to simulate patient experiences with which the students develop and practice their skills with diagnosis, treatment, and patient care. The CSSC is technology rich with a wired network connectivity for various medical simulators and the computers that drive them. The CSSC is used for practical training of Faculty of Health Sciences students and for conducting Objective Structured Clinical Examinations (OSCE).

1.4.2 Reference Material

a. Core-texts in terms of numbers: 13,500
b. E-books in terms of subscriptions: In excess of 50,000
c. E-journals and accessible databases: in excess of 100,000
d. UpToDate
e. Access Medicine
f. ClinicalKey Physician
g. ClinicalKey Nursing
h. McGraw Hill-eBooks
i. Hinari

1.5 Programmes Offered by the Institution

The university offers the programes listed in Table 1:

PROGRAMME OF STUDY	DURATION	TOTAL LECTURE HOURS REQUIRED FOR GRADUATION
Post-RN Bachelor of Science in Nursing	Two and half years	2610 hours
Post-RN Bachelor of Science in Midwifery	Two and half years	2610 hours
Diploma in Kenya Registered Community Health Nurse	One and half years	2352 hours
Master of Medicine in Internal Medicine	Four years	7680 hours
Master of Medicine in Anatomic Pathology	Four years	7680 hours
Master of Medicine in Clinical Pathology	Four years	7680 hours
Master of Medicine in Surgery	Four years	7680 hours
Master of Medicine in Radiology	Four years	7680 hours
Master of Medicine in Anaesthesiology	Four years	7680 hours
Master of Medicine in Obstetrics & Gynaecology	Four years	7680 hours
Master of Medicine in Paediatrics	Four years	7680 hours
Master of Medicine in Family Medicine	Four years	7680 hours
Master of Arts in Digital Journalism	Two years	640 hours

c. Definitions

"lecture hour" means a period of time equivalent to one hour and representing one such instructional hour in lecture form, two in a tutorial or open learning session, three in a laboratory practical or practicum and five in farm or similar practice;

One instructional hour shall be equivalent to:

a. One (1) contact hour in a lecture-designed session;
b. Two (2) contact hours in a tutorial-designed or open-learning-designed session;

c. Three (3) contact hours in a laboratory-designed or practicum session; and
d. Five (5) contact hours in a farm or similar practice.

d. Academic organization of the programme reflecting academic quarters/trimesters/semesters

The program is organized by Academic Year, where each runs from January – December. Residents will have various rotations throughout the academic year as detailed below:

Year 1	**Year 2**	**Year 3**	**Year 4**
General Medicine (4 Months)	Haematology/Onco. (2 Months)	General Medicine (3 Months)	General Medicine (3 Months)
Pulmonary (2 Months)	Nephrology (1 Month)	Pulmonary (2 Months)	Nephrology (1month)
Cardiology (2 Months)	Cardiology (1 Month)	Cardiology (1 Month)	Pediatrics (2 Months)
Intensive Care Unit (1 Month)	Gastroenterology (3 Months)	Intensive Care Unit (1 Month)	Emergency Room (3 Months)
Neurology (1 Month)	Neurology (2 Months)	Endocrinology/ Diabetes (2 Months)	Dermatology (1 Month)
Rheumatology (1 Month)	Psychiatry/Elective (1 Month)	Electives/Dissertation (2 Months)	Electives/Dissertation (2 Months)
Community Medicine (1 Month)	Radiology/Nuclear Medicine (1 Month)		

2.0 The Curriculum

2.1 Title of the Programme:

Master Of Medicine In Internal Medicine (M.Med Int.Medicine)

2.2 Philosophy of the Programme

The strategy of the Aga Khan University for East Africa as stated by its founder and Chancellor, His Highness the Aga Khan, is to be a University that aims to embrace "the frontiers of scientific and humanistic knowledge, radiating intelligence and confidence, research and graduates, into flourishing economies and progressive legal and political systems."

The philosophy of the Department of Medicine at the Aga Khan University Medical College is to strengthen the discipline of internal medicine and its subspecialties, and to positively impact the diagnosis, treatment and control of diseases affecting the populations it serves. The department is committed to excellence in undergraduate and postgraduate medical education, to training primary health care professionals, to clinical, epidemiological and basic science research that expands the frontiers of medical knowledge, and to the provision of caring service to affected patients and their families.

2.3 Rationale for M.Med in Internal Medicine

2.3.1 Needs assessment/market survey/situation analysis; and

There is a serious shortage of medical specialists and sub-specialists in Kenya, including those in medicine, surgery, pathology, anaesthesia, obstetrics and paediatrics. In medicine, for example, there are only approximately 200 consultant physicians for a population of 30 million. There is a particular shortage of certain sub-specialists, including cardiologists and neurologists. Furthermore, the national capacity for training internal medicine specialists is small, at present comprising only the M.Med Programme of Nairobi University with an average intake of less than 10 students per year. Therefore, AKU Kenya, whose parent university in Karachi has a vast experience in PGME, can make a very important contribution to Kenya and the region by introducing PGME Programmes.

2.3.2 Justification for the Programme

Since the Aga Khan Network has a well-established hospital in Nairobi, in which postgraduate doctors have been receiving training for many years at the intern, SHO and registrar level, it was natural for the Aga Khan University to begin medical education in Kenya at the PGME level.

In discussion with the Ministry of Education, the particular need for anesthetists and pathologists was emphasized, and the University plans to start Programmes in these disciplines as soon as possible. Meanwhile, general medicine, general surgery and radiology were felt to have in place most of the prerequisites for residency Programmes to begin in 2003.

Internal Medicine was felt to be a particularly appropriate Programme with which to commence PGME, since general internal medicine is the fundamental medical discipline, and having this residency in place will facilitate the introduction of Programmes in other disciplines.

There are minimal opportunities for (fellowship) training in the medical subspecialties (eg neurology, cardiology, gastroenterology, etc) in Kenya. We anticipate that graduates of the general medicine residency Programme will have the opportunity to compete for admission to the subspecialty fellowship Programmes available at the Aga Khan University in Karachi, and in due course AKU expects to develop subspecialty fellowship Programmes in Kenya.

2.4 Goal of the Programme

The main goals and objectives of the Master of Medicine in Internal Medicine is to train and develop general physicians who have in-depth knowledge, competencies and attitudes for the management of patients with various types of health problems. Therefore, the main objectives of the programme are as follows: -

Assess, diagnose, treat and manage patients with various problems in the various settings.

Develop skills to access and interpret medical information using electronic media, computer information systems and the principles of evidence-based medicine.

Develop ability to manage health care services in an efficient and cost effective approach.

Develop ability to treat patients humanely and make ethical decisions regarding patient care and conduct oneself in a professional manner.

Develop competence to undertake relevant research in biomedical sciences.

2.5 Expected Learning Outcomes of the Programme

2.5.1 The expected learning outcomes of the programme

By the end of the programme, the resident will be able to:

a. Acquire the ability to care for a wide range of clinical problems. This ability is fostered by experience on general medical services, both inpatient and outpatient with exposure to a wide spectrum of diseases.
b. Develop skills in diagnosis as well as mature judgment in therapy by the study of etiology, pathogenesis, clinical presentation, and natural history of various diseases.
c. Learn to function in harmony with other members of the health care team and become proficient in interpersonal relationships and in the organization and management of patient care.
d. Develop the ability to treat patients humanely. Emphasis upon other aspects of life, with special emphasis on the family will be stressed.
e. Understand and be able to apply the basic concepts of decision-making, management techniques and clinical epidemiology. The resident will become expert in retrieval and assessment of medical literature.
f. Development of the skills to access and interpret medical information using electronic media, computer information systems and the principles of evidence-based medicine.

2.5.2 The expected learning outcomes of the specialization

The main objective of the programme is to train residents to become specialists in Demonstrate ability in policy development, analysis and management functions in providing services in medicine, critical care and pain medicine.

2.6 Modes of Delivery

Open learning, face to face, blended, distance learning

2.7 Academic Regulations for the Programme

2.7.1 Admission requirements for the proposed programme

Applicants for the program must hold the MBChB degree or an equivalent medical qualification that is acceptable to the Aga Khan University (AKU) and the Kenya Medical Practitioners and Dentists Board (KMPDB).

They must be registered or registerable with the KMPDB. They must also have completed a one-year internship and the applicants who have one-year further training will have an added advantage.

2.7.2 Course requirements

a. Student class attendance, attachment/practicum/internship, community service
   Residents are required to:
b. Attend 80% and above of common courses/ modules as well as emergency medicine specific classes.
c. Be present at all times for their scheduled clinical shifts in the Internal Medicine department, and their clinical rotations in other related departments as specified under program structure. Registrars are expected to provide patient care based on their level of training as indicated below:

Resident (R) expectations
The programme shall be competency-based and outcomes focused. The training will involve integration of biomedical sciences, common courses, and clinical rotational courses during the 4 Year period.

R1: The R1 acts as the patient's primary physician. The R1 is expected to perform a detailed history and physical exam and contribute to the development and execution of patient plans, working closely under the supervision of the senior resident and faculty member. The R1 is also required to show an understanding of the pathophysiology of various disease process in medicine and its sub-specialties. They should have a basic understanding of the role of laboratory and radiological requirements for their patients. They will be required to present patient cases to the faculty during rounds. All procedures by R1s will be performed initially via observations and subsequently under supervision.

R2: The R2, in addition to the duties above, works alongside the R1 and provided guidance as a role mode. The R2 will have increasing responsibilities on the inpatient rotations, with the ability to multitask and will be expected to attend outpatient clinics as well. The R2 is required to demonstrate their ability to perform a detailed history and physical exam with the ability to elicit subtle, but pertinent findings. The R2 is required to show an increasing understanding on the pathophysiology of various disease processes in medicine and its sub-specialties. The R2 is also required to demonstrate an increasing understanding of laboratory and radiology findings and come up with a reasonable differential diagnosis and a cost-effective management plan.

R3: The R3 is a senior member of the team and gradually takes on a leadership, mentor and supervisory for the R1 and R2. The R3, in addition to the duties above, is required to demonstrate good interpersonal and communication skills. The R3 is also expected to demonstrate an increasing knowledge of the literature including the diagnosis, prognosis and management of various disease processes. The R3 should be able to

teach the junior resident on pathophysiology, diagnosis and management of various disease processes. The R3 should be able to articulate their findings and plan in a systematic fashion. The R3 should be able to conduct various procedures with minimal supervision. They should have the ability to comprehend the rationale, methodology and conclusions of various articles.

R4: The R4 is most senior member of the team and is expected to further build on a leadership, mentor and supervisory role. The R4 will be actively involved in teaching the junior residents. The R4, in addition to the above, is expected to have gained a solid knowledge base on various disease processes, the pathophysiology, the diagnosis and prognosis and management. The R4 will be actively involved in outpatient clinic. The R4 should be able to carry out most procedure independently and supervise the junior residents. The R4 should have a sound knowledge of literature review and the ability to analyze articles skillfully. The R4 is required to present their dissertation and acts at the level of a junior consultant.

Requirements for Credit Transfer

a. Type of certification recognized for purposes of transfer credit
   Credit acquired from master's level common courses at AKU will be accepted for transfer. No other credits from AKU or other universities will be accepted.
b. Level of courses eligible for credit transfer Masters level common course credit from AKU
c. Minimum grade required for credit transfer
   Only credits that were graded as 'pass' are transferable.

2.7.3 Student assessment policy/criteria

a. Continuous assessment tests

Formative Evaluations

These evaluations and feedback monitor; knowledge, skills, competencies and attitudes of the resident during the formal and informal teaching and during rotations. The following methods and tools are used for assessing different domains

b. End of semester assessment

Formative Evaluations

a. End of Rotation Evaluations – Assessment by supervising faculty

Summative Evaluations

a. M. Med Part I level (End of PGYII)

b. M. Med Part II level (End of PGYIV)

a. Maintenance of Learning Logs – as and when encountered with a clinical problem/question it should be recorded and later focused reading should be done to find answers to the question. This is an essential educational tool for self-directed learning. Through periodic checks, the Program Director will ensure appropriate efforts were made to search for problems/questions recorded in the diaries.

b. Reflective Diaries – these would record salient incidences; experiences and events which need special focus and reflection. Discussion with Program Director on such events is essential to reflect on every aspect to exploit the full potential of experiential learning from such incidences and encounters. These may not be just related to the clinical problem but could relate to interpersonal issues; systems issues or even ethical issues.

c. Mutual Agreed Statement of Training (MAST) - During rotations, a resident is expected to generate this statement with the faculty for the purpose of reviewing the objectives of that rotations and if/how they can be met. This statement should form the basis of evaluation and feedback.

2.7.4 Grading system

The Medical College Faculty Council has adopted "criterion based standard setting" which is an internationally accepted approach to determining examination pass marks. Marks obtained through this process shall be translated accordingly to reflect approved curricula requirements.

Examinations shall consist of a) written module and b) clinical/practical module. The pass mark for each examination module, as well as the overall pass mark shall be 50%. Each module MUST be passed separately Policy on pass mark and pass/fail criteria are summarized in the table below.

1.	50% pass mark subject to standard setting	
2.	Pass each of module A and B separately: A). Knowledge: Component 1 – MCQ; Component 2 - MEQ/EMQ/SAQ/SPOT B). Skills: Component 3 - OSCE/OSPE*/SIRE	
(a)	Module/component pass mark = 50%	
(b)	Aggregate pass mark = 50%	
3.	If aggregate and skills/practical module(s) are > 50%, failure of the knowledge module may be discussed as follows:	
i)	45% - 49%	Re-sit in 6 months the failed component(s) of the knowledge module (year progression)
ii)	40% - 44%	Re-sit whole exam in 12 months (year repeat)
iii)	<= 39%	Discretion regarding continuation
4.	If aggregate < 50% or skills module is <50%. Clear fail situation.	
ii)	40% - 49%	Re-sit whole exam (year repeat)
iii)	<= 39%	Discretion regarding continuation

2.7.5 Examination regulations

Part I M. Med examination will be taken at the end of the second year. In order to qualify for this examination, the resident should have attended at least 80% of the formal lectures, and satisfactorily completed the clinical rotations. Only candidates who have satisfactory continuous assessment results will be allowed to sit for the Part I M. Med Examination.

Part I Examination

a. Knowledge module:

Component 1:
Multiple Choice Questions (MCQs).

Component 2:
Short Answer Questions (SAQs)

b. Skills module:

Component 3:
Objective Structured Clinical Examination (OSCE).

Part II Examination

a. Knowledge module:

Component 1:
Multiple Choice Questions (MCQs)

Component 2:
SPOT Exam/ Short Answer Questions (SAQs)

b. Skills module:

Component 3:
Objective Structured Clinical Examination (OSCE)

High order clinical skills: Assessed formatively, satisfactory performance required to proceed to Components 1-3

A candidate who fails M. Med Part I with a mark of 45% or above in any of the exam components shall be allowed to resit the examination within six months and not earlier than three months from the date of the last examination.

A candidate, who fails the examination with a mark of 40% to 44% would have to be referred to Departmental Residency Training Committee for discussion on the overall performance of the resident. At the discretion of the committee, the resident may repeat the year.

A candidate scoring 39% and below would be discontinued from the program on the recommendation of Faculty Board of Examiners and Departmental Residency Training Committee.

A candidate who fails MMed Part I after a second attempt in the examination shall be discontinued from the course subject to the advice of the Academic Council.

Table 3. Pass/Fail Criteria

1.	50% pass mark subject to standard setting	
2.	Pass each of module I and II separately I: Knowledge: Component 1 – MCQ. Component 2 - MEQ II: Skills: Component 3 - OSCE	
a	Module/component pass mark = 50%	
b	Aggregate pass mark = 50%	
3.	If aggregate and skills/practical module(s) are > 50%, failure of the knowledge module may be discussed	
a.	45% - 49%	Re-sit in 6 months the failed component(s) of the knowledge module
b.	40% - 44%	Re-sit whole exam in 12 months (year repeat)
c.	<= 39%	Discretion regarding continuation
4.	If aggregate < 50% or skills module is <50%. Clear fail situation.	
a.	40% - 49%	Re-sit whole exam (year repeat)
b.	<= 39%	Discretion regarding continuation

2.7.6 Moderation of examinations

a. The Chair of the Internal Medicine Department will be the Chief Internal Examiner (CIE). He/She will oversee the setting and organization of exams, and appoint Internal and External examiners

b. Internal examiners will be Internal Medicine lecturers from Aga Khan University Hospital, who will be invited by the CIE to invigilate the summative M.MED exams for Part I and Part II.

c. External examiners will be regional or international Internal medicine Lecturers that will be appointed by the Dean of the Medical College upon recommendation by the CIE. In addition to moderating exams, they will ensure that the standards set by the PGME are consistently maintained

2.7.7 Graduation requirements

The Master of Medicine in Internal Medicine will be awarded by the Aga Khan University to those residents who successfully complete the program as outlined herein.

2.7.8 Classification of degrees

A resident who has undertaken all the prescribed and approved courses for the master of Medicine in Internal Medicine and satisfied all the requirements as specified in the curriculum and the examination rules and regulations governing postgraduate M.MED degree programmes shall be awarded the M.MED degree.

2.7.9 Description of thesis/dissertation/project

a. Institution definition of thesis/dissertation/project

A thesis or dissertation is an original research document submitted in support of candidature for a given degree or professional qualification presenting the author's research and findings. The basic purpose and objective of writing a dissertation is to develop skills in M. Med trainees for:

a. Collection and compilation of original and authentic data.

b. Analyzing and reviewing relevant literature available on the subject (both national and international)

c. Developing medical writing habits as an art for writing scientific articles in medical journals.

Rationale of thesis/dissertation/project

To equip students with knowledge, qualitative and quantitative skills and aptitude that will enable them to analyze a disease occurrence/health problem, measure determinants of health, quantify intervention outcomes, plan and implement a research project.

a. **Facets of thesis/dissertation/project**

a. Literature review
b. Development of a research question/ hypothesis
c. Proposal development
d. IRB submission and review
e. Data Collection
f. Data Analysis
g. Manuscript Preparation
h. Manuscript publication
i. Thesis / dissertation defense

b. **Thesis/dissertation/project regulations**

a. Two examiners, 1 internal and 1 external shall assess the dissertation
b. A dissertation on a topic relevant to the area of specialization will be an essential requirement of training and eligibility for appearing in the Part II examination.
c. Appropriate research methods shall be used for the dissertation. The research project proposal shall be presented before the department board of examiners and submitted for approval at the beginning of the year 3 of residency. This must be approved by the Research and Ethics committee of the Faculty of Health Sciences.
d. The dissertation shall be presented for critique informally at departmental level before members of the faculty and be subjected to peer review before being written and submitted for marking (three months) before the date of the Part II examination.
e. Two copies of the bound and signed dissertation (according to dissertation guidelines of the university) should be submitted.
f. No pass mark will be assigned to this paper. Instead, an evaluation checklist according to prescribed university examination rules and regulations will be used to determine approval or rejection. A failed dissertation shall disqualify the candidate from appearing in the examination. Corrections made prior to the examination and accepted by the Examiners may permit the candidate to proceed to the final examination.

2.8. Course Evaluation

Residents will be asked to submit a standard evaluation form after every rotation known as the Student Evaluation of Teaching (SET). This form is used to evaluate both the course instructors and course content. Specific aspects include:

a. Instructor availability

b. Feedback and guidance provided by the instructor regarding their clinical work, course assignments and projects

c. Organization of the course/ rotation

d. Communication of course expectations

e. Quality and diversity of the learning experiences provided e.g. discussions, small group projects, simulations, educational technology

f. Overall resident satisfaction with the course instructor

g. Whether course outcomes were met

An annual program review will be carried out based on resident evaluations, and outcomes will be used to improve the quality of the curriculum.

Course faculty as a group will be required to submit an annual Self-Assessment Report (SAR) of the training program which critically evaluates the following:

a. Requirements of stakeholders, stakeholder satisfaction

b. Goals and objectives; expected learning outcomes

c. Curriculum design and evaluation

d. Program content, organization

e. Didactic teaching strategies

f. Student feedback

g. Quality of academic and support staff

h. Facilities and infrastructure

i. Student profile, graduate achievements and feedback

The AKU-wide Networks of Quality, Teaching and Learning, set up by the Provost in 2013, aim to support excellence in our academic programmes to ensure a strong student learning experience that enables AKU graduates to meet their programme learning outcomes. These integrated networks consist of:

a. The Quality Assurance and Improvement (QAI) network that supports internal quality assurance processes for all academic programmes that include periodic cyclical review of all programmes (self and peer assessments) every five years; as per the AKU Academic Quality Framework aligned to the 18 cell IUCEA/CUE framework outlined in their "Road Map to Quality" (policy 030) https://www.aku.edu/qtl/resources/Documents/030_Academic%20Quality%20Framework%20-%20Polices%20and%20Procedures-Revised.pdf.

The Quality Assurance Review Committee monitors this process, including resulting annual improvement plans, and reports to the Provost. AKU is also an active member of EAQAN (the East African Quality Assurance Network).

b. The Teaching and Learning (TL) network, which includes the Blended and Digital Learning (BDL) network: Together these networks aim to support faculty to continually promote the highest quality teaching and engaged learning experience for students. A suite of faculty development activities, including the application of technology in teaching (AKU uses Moodle as a platform for its Virtual Learning Environment), are offered to faculty including a compulsory instructional skills course for all faculty. The AKU Teaching and Learning Framework creates a shared understanding of teaching excellence at AKU aligned to best practice worldwide (policy 031) https://www.aku.edu/qtl/Documents/Updated%20Teaching%20%20Learning%20Framework.pdf).

AKU is also an active member of Kenya's AFELT (the Association for Faculty Enrichment in Learning and Teaching).

AKU is the first university in Kenya to be accredited by Advance HE (UK) that allows faculty to benchmark its teaching to international best practice and gain Higher Education Academy (UK) Teaching Fellowships (https://www.aku.edu/news/pages/News_Details.aspx?nid=NEWS-001625).

2.9 Management and Administration of the Programme

The programme will be offered at the Aga Khan University and University Hospital Nairobi, Kenya. Each residency programme has a Programme Director responsible for the programme administration. S/he is responsible to the Department Chairman and the Director, Postgraduate Medical Education.

Each programme has a standing Department Residency Training Committee (DRTC) chaired by the Programme Director, and including other faculty members, the chief resident and a resident representative. The DRTC plans, organizes, monitors and adjusts the programme on an ongoing basis. It reports to the Postgraduate Medical Education Committee and the Chair of the department. Quality control measures are in place and the university is committed to a continuous process of evaluation and improvement.

2.10 Courses/Units Offered for the Programme

Table 3. Courses and rotations covered during the 4 Year programme

Page No.	Medical Curriculum (MC) Code	Course	Minimum Months in 4 years
67	710	General Internal Medicine/Geriatric	As divided as below
69	711	Cardiology	6
70	712	Dermatology	1
71-73	713	Endocrinology/Diabetes	3
74	714	Gastroenterology	3
75	715	Hematology	2
76	716	ICU	4
78	717	Infectious Disease/HIV	3
80	718	Nephrology	3
82	719	Neurology	3
83	720	Oncology	3
84	721	Palliative Care	1
85	722	Psychiatry	1
87	723	Pulmonary	3
88	724	Rheumatology	1
89	725	A+E	2
90	726	Electives	2
29	727	Research	2

2.10.1 Courses covered

A matrix showing the courses that are covered by each expected learning outcome for the programme and specialization/option area.

Program learning outcomes	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Apply the scientific method of systematic problem solving, evidence-based decision making in emergency medicine and commitment to lifelong learning.	COM 713 COM 715			
Communicate effectively with patients, family members and fellow consultants regarding a patient's pertinent medical problems and to articulate the management plan.	COM 711 COM 712 COM 713 COM 715			
Interact with patients and fellow workers in a way that demonstrates the exemplary application of professional values.				
Collaborate with the community, public health and government leadership to develop solutions to health problems that result into premature death and disability e.g. disasters and mass casualty incidents	COM 714			
Collaborate with the community, public health and government leadership to develop solutions to health problems that result into premature death and disability e.g. disasters and mass casualty incidents	COM 714			

A list of the common courses, core courses, specialization/option area courses and electives.

COURSE CODE	COURSE TITLE	UNITS
	COMMON COURSES	
COM 710	Research methods & biostatistics	1
COM 711	Bioethics and jurisprudence	1
COM 712	Information communication and technology (ICT)	1
COM 713	Health systems management	1
COM 714	Introduction to medical education and professional skills	1

2.10.2 Total credit hours, lecture hours, contact hours and course units required for graduation

The program is offered over four academic years. An academic year runs from January to December every year. In order to rationalize the time allocation for the various courses including rotations that are covered for the training of residents in internal medicine, the following considerations were made:

a. Number of weeks in a year 52
b. Total teaching weeks per year 44
c. Total hours for the 44 weeks (44x40) 1760
d. Total number of hours for the 4 years 7040

In order to give units to the courses covered in the programme, the following criteria have been used:

1 unit = 16 hours of lectures
or
32 hours of tutorials
or
48 hours of practicals/self-directed learning (SDL)

2.11 Duration and Structure of the Programme

The minimum duration for the programme will be 4 years with a maximum duration of 6 years for residents who may be allowed to take one re-sit Examination for Part I and also one re-sit for Part II Examination. Following the successful completion of training, the graduate will continue to work under supervision for a period of two years in an institution approved by the Kenyan Medical Practitioners and Dentists Board before being awarded a license to practice independently as an Emergency Medicine specialist in Kenya.

2.12.1 COM 710 RESEARCH METHODS & BIOSTATISTICS 1 UNIT

2.12.2 Purpose

To provide the methods and tools for a successful dissertation, which includes methods for the critical appraisal of the literature, an introduction to the concepts and principles of research, and ethical conduct of research using human subjects.

2.12.3 Course Objectives

a. Using the selected dissertation topic, the resident is able to formulate and undertake a critical appraisal of the literature
b. Apply the principles for responsible and ethical conduct of research using human subjects
c. Identify and apply the appropriate research design, method and analysis to the selected dissertation topic
d. Understand and apply methods for data collection, quality control and data management to their dissertation research
e. Able to communicate effectively through presentation, successful defense and submission for publication of the outcome of dissertation research.

2.12.4 Course Content

The research methods course is divided into four modules as described below:

Module	Title	Duration
Module 1	**Introduction to research**	**15.5 HRS**
Module 2	**Introduction to epidemiology**	**34.5 HRS**
Module 3	**Introduction to qualitative research**	**9.5 HRS**
Module 4	**Biostatistics in health research**	**14 HRS**

2.12.4.1 Module I: Introduction to Research (15.5 HRS)

2.12.4.1a Purpose

To provide a broad introduction to the concepts and principles of research, ethical conduct of research using human subjects and to impart skills necessary for the development of research questions and scientific writing.

2.12.4.1b Expected Learning Outcomes

By the end of this course, the resident will be able to:

a. Complete and get certification for the responsible conduct of research (RCR) course
b. Formulate research questions, critically appraise literature and synthesize evidence for their research topics
c. Describe the key features of different sections of a scientific publication
d. Explain the different steps of a scientific research process
e. Draft and refine the background/literature review sections of their dissertation proposal
f. Develop a dissertation research concept paper

2.12.4.1c Course Content

A: Ethical conduct of research (Online self-study course)

a. Responsible Conduct of Research (RCR)

B: Research questions and literature skills (15.5 hours)

Introduction to research and steps in the research process – 1.5 hours Definition and characteristics of research. Step-by-step planning for research: conceptualizing a research study; putting together a study team; development of research question and hypothesis; reviewing literature; writing the study protocol; obtaining ethical approval; planning for data collection; data analyses; writing the study report; submitting for publication and other forms of dissemination.

Formulating Research Questions – 3.0 hrs: Identifying research questions; characteristics of a good research question; components of a research question (PICO); refining research questions; operationalizing research questions; FINER criteria of research questions (1.0 hrs).

Workshop: mentored session to refine dissertation research questions (2.0 hrs)

Sources of and acquisition of literature – 3.0 hrs: Importance of structured literature search, steps in systematic search of literature: defining inclusion criteria for literature, identifying sources of literature, searching online databases – generating search terms, Medical Subject Headings (MeSH) database, building search strategies/queries, limiting/expanding search results (1.0 hrs).

Workshop: mentored session to source literature for dissertation topics. (2.0 hrs).

Individual work/study: resident to work with supervisor on comprehensive search for and acquisition of literature relevant to the dissertation topic.

Critical appraisal of healthcare literature – 3.0 hrs: Appraising journal articles for: publication bias, authorship, journal ranking and impact factors, critical appraisal skills and checklists for different study designs – systematic reviews, randomized controlled trials, non-randomized trials, cohort (longitudinal) studies, cross-sectional studies, case-control studies, qualitative research, cost-effectiveness studies, appraising websites: website content, sources and structure (1.0 hrs).

Workshop: mentored session to critically review manuscripts for a selection of dissertation topic (2.0 hrs).

Individual work/study: resident to work with supervisor on literature review and draft the background/literature review section of the dissertation proposal.

Introduction to summarizing evidence – 2.0 hrs: Concept of evidence-based medicine, hierarchy of medical evidence, systematic review and Cochrane collaboration (1.0 hrs).

Workshop: evidence summary case study presentation (1.0 hr)

Individual work/study: resident to work with supervisor on literature review and draft the background/literature review section of the dissertation proposal.

Introduction to scientific writing – 3.0 hrs: Writing different sections of a scientific article: Title, Authors and Affiliation, Abstract, Introduction, Methods, Results, Discussion and Conclusions, Acknowledgments, and References, Review of Aga Khan University Dissertation Guidelines (1.0 hrs).

Workshop: individually mentored session to draft the dissertation research concept paper (2 hours).

Individual work/study: resident to work with supervisor on completion of dissertation research concept paper.

2.12.4.1d Mode of Delivery

a. Lectures
b. Mentored group and individual workshops working on dissertation research questions and concept papers

2.12.4.1e Instructional Materials/Equipment

a. Textbooks
b. Journal articles
c. Moodle platform for online discussions
d. Multimedia technology e.g. Laptops, Projectors, Video conference

2.12.4.1f Course Assessment

a. Responsible Conduct of Research (RCR) course certification
b. Individual and class assignment (group work)
c. Draft of background/literature review section of the dissertation proposal
d. Development of a dissertation research concept paper

2.12.4.1g Core Reading Materials

a. Responsible Conduct of Research online course: https://about.citiprogram.org/en/series/responsible-conduct-of-research-rcr/
b. Systematic Reviews: CRD's guidance for undertaking reviews in health care (2008). Centre for Reviews and Dissemination, University of York, UK
c. Strauss, Sharon E., Richarson, W., Glasziou, Paul, et al. (2005). Evidence-based medicine: How to practice and teach EBM, 3rd Editon. London: Elsevier.
d. Young JM and Solomon MJ (2009). How to critically appraise an article. Nature Clinical Practice (Gastroenterology & Hepatology): vol 6 no 2
e. Browner WS (2012). Publishing and presenting clinical research, 3rd Edition. Lippincot, Williams & Wilkins. Philadephia PA, USA.

2.12.4.1h Recommended Further Readings

a. Khan KS, Kunz R, Kleijnen J, Antes G (2003). Systematic Reviews to Support Evidence-Based Medicine. How to Review and Apply findings of Health Care Research. London: RSM Press

b. Khan KS, Kunz R, Kleijnen J, Antes G (2003). Five steps to conducting a systematic review. J R Soc Med 2003;96:118–121
c. International Child Health Review Collaboration: Reviewer's Toolkit (Last updated 23/03/06)

2.12.4.2 Module 2: Introduction to Epidemiology (34.5 HRS)

2.12.4.2a Purpose of the course

To provide an introduction to epidemiology by exposing residents to the principles, methodologies, uses, and applications of epidemiological methods in biomedical, clinical, and population health research

2.12.4.2b Expected Learning Outcomes

By the end of this course, the resident will be able to:

a. Describe and apply key concepts and principles of epidemiology to dissertation research
b. Apply epidemiological measurements to dissertation research
c. Define and apply appropriate epidemiological study designs to dissertation research
d. Identify and apply appropriate epidemiological analyses to dissertation research topics
e. Identify and account for key sources of error inherent in the design and conduct of dissertation research
f. Develop a full dissertation research proposal

2.12.4.2c Course Content

Introduction to Epidemiologic concepts and principles – 1 hrs: Definition, history and scope of epidemiology; applications and strategies of epidemiology; role of epidemiology.

Measurement of disease and health in populations – 3.5 hrs: Definitions of health and disease in epidemiologic research; rationale for measurement of health and disease; components of an epidemiologic measurement; key measures of disease frequency; estimation of key measures of frequency (prevalence and incidence); risk

vs. rate; mortality measurements; risk/rate vs. odds; introduction to measures of association (1.5 hrs).

Workshop on measures of disease in populations: mentored group workshop to apply appropriate outcome measures to dissertation research questions (2.0 hrs).

Individual work/study: resident to work with supervisor on relevant methodology section of the dissertation proposal.

Introduction to Common research designs – 19 hrs: Descriptive studies - Case reports/series & descriptive cross-sectional studies (1.5 hrs); Analytic Studies I - Analytic cross-sectional and case-control studies (2 hrs); Analytic Studies II - Cohort studies (1.5 hrs); Experimental/Intervention studies (2 hrs); Screening, epidemiologic surveillance and outbreak investigation (2 hrs); Diagnostic and screening test utility studies (2 hrs); Introduction to systematic reviews (2 hrs).

Workshops on common research designs: mentored group sessions on application of appropriate research design to dissertation research (6 hours).

Individual work/study: resident to work with supervisor on relevant methodology section of the dissertation proposal.

Issues in Epidemiologic studies – 8 hrs: Measurement Error (validity and reliability) (1 hr); Selection and Information bias (1.5 hrs); Confounding and interaction (2 hrs: Causality (1.5 hrs)

Workshop: mentored session to identify and address sources of measurement error, bias and confounding in design and implementation of dissertation research (2 hours).

Individual work/study: resident to work with supervisor on relevant methodology section of the dissertation proposal.

2.12.4.2d Mode of Delivery

a. Lectures
b. Mentored group workshops to develop appropriate sections of dissertation research proposals.

2.12.4.2e Instructional Materials/Equipment

a. Textbooks
b. Journal articles
c. Moodle platform for online discussions
d. Multimedia technology e.g. computers, projectors, video conference

2.12.4.2f Course Assessment

a. Individual and class assignment (group work)
b. Development of a dissertation research proposal

2.12.4.2g Core Reading Materials

a. Bonita R, Beaglehole R, Kjellström T (2006). Basic Epidemiology: 2nd edition. Geneva WHO
b. Hulley SB et al (2013). Designing Clinical Research: 4th Edition. Lippincot Williams & Wilkins
c. Hennekens CH & Burning JE (1987). Epidemiology in Medicine: Little Brown & Co.
d. Olsen J, Christensen K, Murray J, Ekbom A (2010). An Introduction to Epidemiology for Health Professionals. Springer Series on Epidemiology and Health.

2.12.4.2h Recommended Further Readings

a. Porta M (2014). A Dictionary of Epidemiology: 6th Edition. International Epidemiological Association
b. Rothman K, Greenland S, & Lash TL (2013). Modern Epidemiology, 4th Edition. Lippincott Williams & Wilkins.
c. U.S. Department of Health and Human Services. Principles of Epidemiology in Public Health Practice (An Introduction to Applied Epidemiology and Biostatistics) 3rd *Edition.* (2012). Centers for Disease Control and Prevention (CDC). Office of Workforce and Career Development. Office of Workforce and Career Development. Atlanta, GA

2.12.4.3 Module 3: Introduction to Qualitative Research (9.5 HRS)

2.12.4.3a Purpose of the Course

The purpose of this course is to introduce residents to the field of qualitative research and equip them with knowledge, skills and techniques necessary to undertake independent research using this methodology.

2.12.4.3b Expected Learning Outcomes

By the end of this course, the resident will be able to:

a. Develop basic understanding of qualitative research
b. Deepen knowledge of research designs in qualitative research
c. Describe sampling and data collection approaches in qualitative research
d. Analyze and interpret qualitative data

2.12.4.3c Course Content

Introduction to Qualitative Research – 30 mins: Defining qualitative research and differentiating it from quantitative research

Qualitative research designs – 30 mins: Narrative research, Grounded theory, phenomenology, ethnography, case study

Sampling in qualitative research – 30 mins: Population, sample, sampling frame, sample size, non-probability sampling methods: convenience, purposive, quota and snowballing

Qualitative research methods – 3.5 hrs: In-depth interviews, Focus group discussion, Participant observations, Non-Participant observations (1.5 hrs)

Workshops on practical application of the methods including developing appropriate questions (an interview guide) for In-depth interviews and Focus group discussions (2 hours).

Individual work/study: resident to work with supervisor in choosing appropriate design and method for their research proposal

Analyzing & interpreting qualitative data – 4.5 hrs: Transcription, Thematic content analysis, Framework analysis, using computer software in analysis, improving rigour in analysis, organizing & interpreting data (2 hrs)

Workshops: practical application of the analytical methods including use of NViVo software (2.5 hrs)

Individual work/study: resident to work with social scientist and supervisors on analysis of qualitative data

2.12.4.3d Mode of Delivery

a. Lectures
b. Mentored Group discussions
c. Role play on interviewing techniques
d. Documentary videos on interviewing & analysis

2.12.4.3e Instructional Materials/Equipment

a. Textbooks
b. Journal articles
c. Moodle platform for online discussions
d. Multimedia technology e.g. Laptops, Projectors, Video conference

2.12.4.3f Course Assessment

a. Individual and group assignment
b. Development of a research proposal

2.12.4.3g Core Reading Materials

a. Green J & Thorogood N; (2009). Qualitative Methods for Health Research (2nd Ed). SAGE publications
b. Jane Ritchie & Jane Lewis; (2003). Qualitative Research Practice. A Guide for Social Science Students and Researchers. SAGE publications
c. Creswell JW; (2013). Qualitative Inquiry and Research Design: Choosing among five approaches (3rd Ed). SAGE publications

d. Alan Bryman & Robert G.Burgess; (1994). Analyzing qualitative data. Routledge Publications
e. Lacey Anne & Luff, Donna; (2001). Trent Focus for Research and Development in Primary Health Care: An Introduction to Qualitative Analysis. Trent Focus
f. Saldaña J; (2009). The Coding Manual for Qualitative Researchers. Sage publications
g. Bazeley, P. & Jackson, K. (2013). Qualitative data analysis with NVivo (2nd Ed). Sage Publications
h. Silverman D; (2009). Interpreting Qualitative Data *(3rd* Ed). SAGE Publications

2.12.4.3h Recommended Further Readings

a. Creswell, JW; (2013). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th Ed). Sage Publications
b. Natash Krueger, R. A., & Casey, M.A. (2000). Focus Groups. A Practical Guide for Applied Research. Sage Publications
c. Natasha M, Cynthia W, Kathleen MM, Greg G, Emily N; (2005). Qualitative Research Methods: A Data Collector's Field Guide. Family Health International
d. Mays N and Pope C. Assessing quality in qualitative research. BMJ Qualitative research in health care. 2000; 320:50-52
e. Allison T, Peter S, Jonathan C. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care. 2007, 19(6): 349–357
f. Golafshani N. Understanding reliability and validity in qualitative research. The Qualitative Report, 2003; 8:597-607

2.12.4.4 Module 4: Biostatistics in Health Research (14 HRS)

2.12.4.4a Purpose of the Course

To provide an introduction to biostatistical approaches by exposing residents to the principles, methodologies, uses, and applications of statistical methods in biomedical and clinical research

2.12.4.4b Expected Learning Outcomes

By the end of this course, the resident will be able to:

a. Apply basic statistical concepts to the dissertation research.
b. Apply the statistical principles in designing, analyzing and conducting dissertation research.
c. Use basic analytical techniques to generate results.
d. Interpret results of the commonly used analyses in written reports.
e. Demonstrate statistical reasoning skills correctly and contextually.

2.12.4.4c Course Content

Introduction to Biostatistics – 3 hrs: Introduction to statistics and its application to health studies. Definition and interpretation of various common statistical methods used for different types of data: t-test, chi squared tests, correlation and linear regression, logistic regression, Poisson regression, generalized linear models, Kaplan Meier estimates and cox regression models. (2 hrs)
Introduction to power and sample size calculations. (1 hr)

Descriptive Statistics – 3 hrs: Definition and interpretation of various descriptive measures for centrality and dispersion. Determine outliers of data sets and understand how they affect the various numerical measures. Analyze and/or compare different sets of data using graphs, charts, tables, and numerical measures, and write about them in clear and precise sentences using statistical terminology. Understanding of the different types of distributions. Organizing and reporting data by means of various tables, charts, and graphs. (1.5 hrs)

Workshop on Descriptive Statistics applied to dissertation research data (1.5 hrs)

Statistical Methods – 9.5 hrs:
Students' t-test, chi squared tests, correlation and linear regression (1.5 hr)
Logistic regression, Poisson regression (1 hr)
General linear models, Kaplan Meier and cox regression models (1 hr)

Workshops on Statistical Methods
In depth analysis of dissertation data using common statistical methods for different types of data.
Students' t-test, chi squared tests, linear regression (2 hours)
Logistic regression, Poisson regression (2 hours)
General linear models, Kaplan Meier and cox regression models (2 hours)

Data Management Practices – 2 hrs: Explain the basics of data management focusing on best practices that will allow researchers to plan and implement their data management strategies to reach their research goals.
Describe how study design will influence data management strategies and also introduce quality control measures to improve the quality of data.

Individual Study: Resident to work with supervisor and biostatistician on the analysis of the data

2.12.4.4d Mode of Delivery

a. Lectures
b. Group Workshop and individual study on statistical methods

2.12.4.4e Instructional materials/equipment

a. Textbooks
b. Journal articles
c. Moodle platform for online discussions
d. Multimedia technology e.g. Laptops, Projectors, Video conference

2.12.4.4f Course Assessment

a. Individual and group assignment
b. Developing an analysis report on students dissertation

2.12.4.4g Core Reading Materials

a. Altman, D.G (1990). Practical statistics for medical research: CRC press
b. Daniel, W.W., & Cross, C.L. (1995). Biostatistics: a foundation for analysis in the health sciences

2.12.4.4h Recommended Further Readings

a. Rao, S., Richard J,. (2012) Introduction to Biostatistics and Research methods, (5th ed.). New Delhi: PHI Learning

b. Blauman, A,. (2011) Elementary statistics: A step by Step approach, (8th ed.). New York: McGraw Hill
c. Dawson, B. (2004), Basic & clinical biostatistics, (4th ed.). New York: Lange Medical Books.
d. Glantz, S. (2001), Primer of biostatistics, (5th ed.). New York: McGraw Hill.
e. Pagano M. (2000), Principles of biostatistics, (2nd ed.), Pacific Grove, Duxbury.
f. Wassertheil-Smoller, S. (2003), Biostatistics and epidemiology: a primer for health and biomedical professionals, (3rd ed), New York: Springer-Verlag.
g. Hosmer Jr, D.W., Lemeshow, S., & Sturdivant, R.X. (2013). Applied logistic regression : John Wiley & sons

Final course assessment for all modules

a. Formative and CATS: 40%
b. Final exam: 60%

2.13.1 COM 711 BIOETHICS AND JURISPRUDENCE 1 UNIT

Bioethics and Jurisprudence stands at the intersection of ethics and the law in medicine.

2.13.2 Purpose

The course aims to enable the learner to identify, navigate through and resolve the ethical and legal dilemmas that inevitably arise in the practice of medicine and in the delivery of healthcare generally. This course enables the learner to effectively adapt to the dynamism of present-day medical practice, as well as anticipate future ethical and legal challenges in healthcare that continue to arise as a result of developments in science, technology and society.

2.13.3 Learning Outcomes

By the end of the Bioethics and Jurisprudence course, the M. Med student will be able to:

a. Appraise and apply appropriately the ethical and legal principles relevant to interactions with patients and colleagues.
b. Demonstrate professionalism and integrity in their practice of medicine.
c. Exhibit competence in anticipating and mitigating ethical dilemmas in healthcare.
d. Justify, from an ethical and legal perspective, decisions taken in resolving ethical dilemmas and in interactions with patients and colleagues generally.
e. Explain and evaluate inter-sectoral actions that have an impact on health.
f. Propose policy and legislative changes that enhance health and well-being.

2.13.4 Course Content

The course is delivered as eight modules, which are comprised of 3 - 4 lessons in each module, as described below:

Module	Title	Content
	Introduction to Bioethics and Jurisprudence	Definitions, Foundations and principles, Selected topics
Module 1	**Respect for Autonomy**	Respect for Persons Informed Consent Non-Consensual Treatment, Minors and consent
Module 2	**Non-Maleficence**	Withholding v. Withdrawing Treatments, Ordinary v. Extra-ordinary Treatments The Groningen Protocol Futility and Advance Directives
Module 3	**Beneficence**	Truth-telling and Integrity Compassion and Availability Life-long Professional Competence & Professional-Patient Relationships
Module 4	**Confidentiality**	Elements of Confidentiality: ethical, legal, Exceptions I&II
Module 5	**Justice**	Theories of Justice Freedom and Responsibility, Legal Elements of Justice, Priorities
Module 6	**Research and experimentation**	Ethical Codes, Design of experiments, consent in research and experimentation
Module 7	**Controversial issues**	Surrogacy, The Status of the Embryo and Embryo Research, Organ and Tissue Transplants, Donations and Sales, Euthanasia
Module 8	**Clinical negligence**	Clinical Negligence, Standard of Care II & Causation

A. Introduction to Bioethics and Jurisprudence

Class 1:

a. Definitions: Ethics and Bioethics
b. Refining Bioethics
c. The Four Major Principles of Bioethics
d. Ethical Foundations of Bioethics

Class 2:

a. Introduction to selected topics in Bioethics: Confidentiality
b. Ethical and Legal Elements of Confidentiality
c. Some Exceptions to Confidentiality
d. Introduction to Clinical Negligence

B. Modules

a. **Module One: Respect for Autonomy**

Lesson I: Respect for Persons I

a. The Tuskegee Syphilis Study
b. Paternalism and Moralism
c. Defects in Autonomy (Control; Reasoning; Information; Stability of Desires over time)

Lesson II: Informed Consent

a. The meaning of Consent
b. Consent in mentally competent adults
c. Maximally Autonomous Decisions
d. Montgomery v Lanarkshire Health Board [2015] UKSC 11

Lesson III: Non-Consensual Treatment

a. The Unconscious Patient
b. The Defence of Necessity
c. Capacity to Decide on Treatment
d. Re MB (Medical Treatment) [1997] 2 FLR 426
e. Re C [1994] 1 WLR 290

Lesson IV: Minors and Consent

a. Proxy Consent and the Consent of Minors
b. Mature Minors and Gillick Competence
c. The Court of Protection case in London (2015) involving a terminally-ill teenager and decided by Mrs. Justice Hogg
d. People ex rel. Wallace v Labrenz 104 NE 2d 769

c. Module Two: Non-Maleficence

Lesson I: Withholding v. Withdrawing Treatments

a. The Omission -- Commission Distinction
b. Causal vs. Moral Responsibility
c. `*The ethics of forgoing life-sustaining treatment: theoretical considerations and clinical decision making*' – Article by Jos Welie and Henk ten Have

Lesson II: Ordinary v. Extra-ordinary Treatments

a. Is there is a distinction between ordinary and extra-ordinary treatment?

A critique of:

b. *'Ordinary and Extraordinary Treatment - Hydration and Nutrition'* – Article by Dr. Michael Asciak
c. 'Body Architects' – Video by Dr. Natasha Vita-More
d. 'The Intelligence Pill' – A hypothetical case

Lesson III: The Groningen Protocol

a. The Groningen Protocol and the Principle of Non-Maleficence
b. Perspectives and critiques of the Groningen Protocol
c. *'Physician-hastened death in young children: Getting to underlying assumptions'* – Article by Lester Liao and Daniel Chan

Lesson IV: Futility and Advance Directives

a. Advance Directives: Living Wills and the Durable Power of Attorney
b. Surrogate Decision-making without advance directives
c. Medical Futility
d. *In the Matter of Baby "K" (three Cases)*, 16 F.3d 590 (4th Cir. 1994)

d. Module Three: Beneficence

Lesson I: Truth-telling and Integrity

a. Truth-telling in the doctor-patient relationship
b. Moral dilemmas in disclosure
c. Integrity in Research and the Consequences of Research Fraud

Lesson II: Compassion and Availability

a. The Mid Staffordshire NHS Foundation Trust Public Inquiry
b. Compassion in healthcare – Discussed through '*Compassion is not the answer to failings in the NHS*' – Article by Anna Smajdor
c. Managing the stress of involvement in emotionally demanding situations: *'Compassion Fatigue'* – Article by Romayne Gallagher

Lesson III: Life-long Professional Competence & Professional-Patient Relationships

a. Continuing Professional Development
b. Ethical breaches in the doctor-patient relationship
c. The doctor in society: Ethical and legal breaches
d. Regulatory oversight from the Kenya Medical Practitioners and Dentists Board (KMPDB) and the Medical Council of Tanganyika (MCT)

e. Module Four: Confidentiality

Lesson I: Elements of Confidentiality: Ethical

a. Ethical Codes (The Hippocratic Oath; The Declaration of Geneva; The International Code of Medical Ethics).
b. The Scope of Confidentiality
c. Confidentiality versus Privacy
d. The Nature of Medical Confidentiality
e. Justification for Obligations of Confidentiality

Lesson II: Elements of Confidentiality: Legal

a. The Common Law Duty of Confidentiality
b. The Public Interest in maintaining confidences
c. Circumstances Justifying a Breach of Confidentiality
d. *Coco v AN Clark (Engineers) Ltd* [1969] RPC 41
e. *A-G v Guardian Newspapers Ltd (No.2)* [1990] AC 109
f. *W v Egdell* [1989] EWCA Civ 13)

Lesson III: Exceptions I

a. Disclosure to protect the patient
b. Compulsory Disclosure – By a court of law; the police and other relevant authorities
c. Compulsion by the law- Notifiable Infectious Diseases (*The Medical Practitioners and Dentists (Private Practice) Rules – Third Schedule; The Public Health Act*).
d. *Duncan v Medical Practitioners Disciplinary Committee* [1986] 1 NZLR 513
e. *C v. Dr Cairns* [2003]

Lesson IV: Exceptions II

a. Consequences of a Breach of Confidence
b. *'Should healthcare professionals breach confidentiality when a patient is unfit to drive?'* – Article by Daniel Sokol
c. Physician Impairment (What it is; detecting impairment; what to do when you suspect a colleague; solutions/help for impairment).

f. Module Five: Justice

Lesson I: Theories of Justice

a. Aims of Justice in healthcare
b. Theories: (Utilitarian; Libertarian; Communitarian; Egalitarian)
c. Norman Daniels's Fair Equality of Opportunity

Lesson II: Freedom and Responsibility

a. '*Moral Responsibility for (Un)healthy Behaviour'* – Article by Rebecca Brown
- Moral Responsibility for unhealthy behaviour
- The Burden on Healthcare
- Socio-economic factors and Health
- The Psychology of Health Behaviour

b. Morally defensible strategies to encourage positive behavioural changes in health

Lesson III: Legal Elements of Justice

Analysis and Evaluation of:

a. The Constitution of Kenya (Articles 21 and 43)
b. The Constitution of the United Republic of Tanzania (Article 14)
c. The International Code of Medical Ethics
d. *Soobramoney v Minister of Health (Kwazulu-Natal)* (CCT 32/97) [1997] ZACC 17

Lesson IV: Priorities

a. Preferences and Risks: Whom should we treat?
b. Can we determine the contribution of various types of risks to a person's current health status?
c. Prioritising Scarce Medical Resources: A question of Liberty or Justice?

g. Module Six: Research and Experimentation

Lesson I: Ethical Codes

a. Defining Research, and Experimentation

Critical evaluation of:

b. The Nuremberg Code: Critical evaluation of
c. The Declaration of Helsinki
d. The International Covenant on Civil and Political Rights

e. *'The Nazi Hypothermia Experiments: Forbidden Data?'* – Article by David Bogod.

Lesson II: Design of Experiments

Discussion and Evaluation of:

a. Important considerations when designing experiments or research (Research Ethics Committees; Research Merit and Integrity; Confidentiality; Risk; Financial Considerations; Groups of Subjects; Controlled Trials; Use of Placebos).

b. *Abdullahi v Pfizer, Inc.* 562 F.3d 163 (2d Cir. 2009).

Lesson III: Consent in Research and Experimentation

a. The Standard of Consent

b. Elements of Consent

c. Research involving subjects who are physically or mentally incapable of giving consent; the 'Do Not Enrol' list.

d. Research on children

e. *'Hospitals want to test drug with no consent'* – Article by Chelsea Conaboy

h. Module Seven: Controversial Issues

Lesson I: Surrogacy

a. Types of Surrogacy

b. Parenthood and Parental Orders in The Human Fertilisation and Embryology Act 1990 (and as amended in 2008).

c. Surrogacy Contracts: Legality and Enforceability

d. Commercial Surrogacy

e. *H (A Child: Surrogacy Breakdown)* [2017] EWCA Civ 1798

f. ***'India outlawed commercial surrogacy – clinics are finding loopholes'* – Article by Sharmila Rudrappa.**

Lesson II: Organ and Tissue Transplants, Donations and Sales

a. Sources of organs for transplantation

b. Ethical Issues that may arise in transplantation and donation:

- The living donor
- The minor as a donor: (*Curran v Bosze* 566 NE 2d 1319 (Ill, 1990); *Strunk v Strunk* 445 SW 2d 145 (Ky, 1969).
- The donor as a Vendor
- Cadaver Donations
- Presumed Consent v. Required Requests
- Public Attitudes towards organ donation

c. '*Family loses fight to keep son's organs from donation'* – Article by Alison Manning.

Lesson III: The Status of the Embryo and Embryo Research

a. When does life Begin?
b. The Potentiality Argument
c. The Right to Life (Constitution of Kenya, Article 26).
d. Are embryos human beings? – Perspectives from religion, law and morality.

Lesson IV: Euthanasia

a. Distinguishing between Euthanasia and Assisted Suicide

A critique of euthanasia – Moral, legal and other perspectives through the following articles:

b. *'Identical twins die after seeking euthanasia when they discovered they would go blind and never see each other again'* – Article by John Hall.
c. '*By the time you read this, I will be dead'* – Article by Richard Savill.
d. *'Belgium Extends Euthanasia Law to Kids'* – Article by Charlotte McDonald-Gibson.

i. Module Eight: Clinical Negligence

Lesson I: Duty of Care & Standard of Care I

a. Is there a malpractice crisis in Kenya and/or Tanzania?
b. Establishing Clinical Negligence: The Essential Elements
- Duty of Care
- Breach of the Duty of Care
- Harm arising from the Breach.

c. The Standard of Care
- *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582
- *Bolitho v City and Hackney Health Authority* [1998] AC 232, HL
- *Montgomery v Lanarkshire Health Board [2015] UKSC 11*

d. Does the law make any allowance for inexperience?
- *Nettleship v Weston* [1971] 2 QB 691, CA

Lesson II: Standard of Care II & Causation

a. Real-life Examples: The Courts' Interpretation of the Essential Elements of Clinical Negligence:
- **Misdiagnosis:** *Chin Keow v Government of Malaysia* [1967] 1 WLR 813; *Langley v Campbell* (1975); *Tuffil v East Surrey Area Health Authority* (1978).

- **Treatment:** *Hucks v Cole (1968) 12 Sol Jo 483); Dwyer v Roderick* (1983) 127 Sol Jo 806; *Prendergast v Sam and Dee* [1989] 1 Med LR 36.

b. Causation: Relating the Injury to clinical negligence:

- *Barnett v Chelsea and Kingston Hospital Management Committee* [1969] 1 QB 428
- *Ashcroft v Mersey Regional Health Authority* [1983] 2 All ER 245
- *Hotson v East Berkshire Health Authority,* [1987] 2 All ER 90, HL

c. Criminal Negligence (Gross Negligence Manslaughter): *R v Adomako* [1995] 1 AC 171, HL

d. Damages for Negligence

e. Contributory Negligence

2.13.5 Mode of delivery

The Bioethics and Jurisprudence Course is delivered in the following ways:

a. Face-to-face lectures

b. Online via the University's Moodle Platform:

- The facilitator uploads the relevant reading material and/or videos to the platform. The learners access these and each learner responds individually to the questions asked.
- The Moodle platform also allows for the learners to engage with each other and with the facilitator in the course of the lesson. An interdependent approach to learning is therefore made possible.
- The Moodle platform enables the learner to engage with the lesson in his/her own time, provided it falls within the timelines set by the facilitator. Self-directed study is therefore enhanced

2.13.6 Instructional materials/equipment

Access to the internet is crucial for both the learners and the facilitator in the Bioethics and Jurisprudence course.

2.13.7 Course assessment

a. By the learners' **participation** in the lessons, as judged by the attainment of a **minimum 80%** pass-mark; AND

b. By the **strength** and **originality** of argumentation and reasoning; ability to draw on relevant factual information, legal and other resources; and the **application** of ethical and legal principles to problems and situations arising, or anticipated.

2.13.8 Core reading materials

a. Beauchamp, T.L. and Childress, J.F. (2001). *Principles of Biomedical Ethics* (5th Edition) (New York: Oxford University Press).

b. Brazier, M. and Cave, E. (2011). *Medicine, Patients and the Law* (5th Edition) (London: Penguin Books).

c. Harris, J. (2001). *The Value of Life: An Introduction to Medical Ethics* (London: Routledge).

d. Mason, J.K., McCall Smith, R.A. and Laurie, G.T. (1999). *Law and Medical Ethics* (London: Butterworths).

2.13.9 Recommended reference materials

a. *Journal of Medical Ethics;*
b. *Bioethics* (Wiley Online Library),
c. *BioMed Central - (BMC Medical Ethics)*
d. *The Hastings Centre* and the *Kennedy Institute of Ethics* also publish informative articles on ethics on a regular basis.

2.14.1 COM 712 INFORMATION COMMUNICATION AND TECHNOLOGY (ICT) 1 UNIT

Prerequisite: Computer Navigation/Microsoft Office

2.14.2 Purpose

The course is designed to provide the necessary information technology and information retrieval skills to M. Med students to allow them to effectively use information technology for patient care, education and research.

Course structure
The course is comprised of two parts:

Part 1. Information Literacy
Part 2. Computer Literacy

Part 1: Information Literacy

2.14.2a Purpose

To provide the learner with the necessary information literacy/retrieval skills to become a life-long leaner; characterized by the efficient, discriminating and responsible use of information and technology.

2.14.2b Expected learning outcomes
By the end of the course, the student will be able to:

a. Identify the various library, electronic and digital information resources available
b. Formulate successful information search strategies
c. Practice steps in evidence based medicine
d. Utilize information in a legal and ethical manner
e. Demonstrate appropriate citing and referencing in academic writing

2.14.2c Course content
a. Advanced information searching and retrieval:
   a. Sources of information
   b. Online searching/Internet search tools
   c. Online search techniques and strategies
   d. Evaluation of information resources

b. Evidence Based Practice

a. Introduction & Steps in Evidence Based Practice
b. Formulating clinical questions
c. Evidence Based Practice resources
d. Evidence (Information) Pyramid/Study design

c. Referencing skills
a. Referencing/citation styles (Vancouver)
b. Reference management systems (Endnote, Zotero, Mendeley)

d. Legal and ethical dimensions of information
a. Plagiarism prevention/detection (Turnitin)

e. Identifying, accessing and retrieving library and information resources
a. Library OPAC
b. FHS Library Portal
c. VPN – off campus access to e-resources
d. AKU Library Portal
e. E-commons (AKU Institutional repository)

f. Accessing, navigating and searching online Health Databases
a. Medline
b. HINARI
c. Cochrane
d. ClinicalKey
e. UpToDate
f. Access medicine

Reference Management
a. Endnote Software

2.14.2d Core reading materials

a. De Brun, C. 2009. Searching skills toolkit: finding the evidence. Chichester, UK ; Hoboken, NJ : Wiley Blackwell

b. Greenhalgh, T. 2014. How to read a paper: the basics of evidence – based medicine. Chichester, West Sussex : John Wiley & Sons Inc.

c. Hartman, K. 2005. Searching and researching on the internet and the world wide web
4th ed. Oregon Franklin Beedle & Ass. Incorp.

2.14.2e Further reading

a. Heneghan, C & Badenoch, D. 2006. Evidence- based Medicine toolkit. Massachusetts: BMJ Publishing Group. Limited.

b. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS.1996. Evidence based medicine: what it is and what it isn't. BMJ. Jan 13;312(7023):71-2. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2349778/pdf/bmj00524-0009.pdf

c. Torres, M. & Saetre, TP. 2010. Information Literacy Education: a process approach. New Delhi: Chandos Publishing

2.14.2f Part 2: Computer Literacy

2.14.2g Purpose

To enable the learner to use Information Technology effectively in the course of delivering patient care.

2.14.2h Learning Outcomes

By the end of the course, the student will be able to:

a. Apply correct skills to operate computer and health information systems and technology in the delivery of healthcare

b. Describe the use of information technology in healthcare

c. Demonstrate the use of Information Technology in patient care continuum.

d. Identify legal and ethical issues of privacy and data protection in the use of technology

e. Recognize government policies guiding the use of information technology in healthcare

2.14.2i Course content

a. Introduction to Computer Architecture and Support

a. Define a computer
b. Functional architecture and organization of a computer system
c. Operating Systems
d. Storage devices
e. Internet and e-mail technology
f. Introduction to Networking and Data Communications
g. Computer Ergonomics

b. Health Information Systems

a. Information System
b. Types of information systems
c. Health Management Information Systems (HMIS)
d. Use of computers in healthcare
e. Organization of health information systems in Kenya
f. The government policy on the use of ICT in healthcare

c. Telehealth

a. Introduction & Overview of Telehealth
b. Telecommunications Systems in Use in Telehealth
c. Data and information standards in telehealth
d. Ethical and Legal Aspects of Telehealth

d. Data Privacy, Security and Ethics in Health Informatics

a. Data privacy, Data protection, data access, conservation of data, data accuracy, informed consent, International Data Transfer,
b. Authentication, Confidentiality, Integrity, Encryption
c. Breaches and data loss: System Hacks and Attacks
d. Processes and Systems Business Continuity management
e. Ethical issues in information processing: Why violation of privacy is wrong, Ethics vs new technologies

2.14.2j Core Reading Materials
Introduction to Computer Architecture and Support

a. Capron H.L. 5th Edition, Computers: Tools for an information Age, Addison Wisely
b. Ritchec, Fundamentals of operating systems, DP publication Limited

Further reading

a. Edwards J. & Lewis, Business Computing Primer, Pitman
b. Dick D, PC Support Hand book, Dumbreck Publishing
c. Onunga J., The Internet: Information systems Academy
d. Southerland K., Understanding the Internet: A clear Guide to Internet
e. Technologies, Butterworth –Heinemann

Telehealth

a. Telemedicine and Telehealth: Principles, Policies, Performance and Pitfalls, by Adam W. Darkins and Margaret A. Cary. Free Association Books, London, 2000. No. of pages 316. ISBN 1-853-43518-X

Further reading

a. Handbook of Telemedicine (Studies in Health Technology and Informatics), by Olga Ferrer-Roca, IOS Publishers Inc, ISBN-10: 9051994133
b. Essentials of Telemedicine and Telecare, by AC Morris ISBN-10: 0471531510, ISBN-13: 978-0471531517

Mode of Delivery

a. Lectures
b. Small group work and discussions
c. Practical workshops at workstations /devices
d. Demonstrations

Instructional material and/or equipment

a. Resource Centre with workstations and devices
b. Computers
c. Projector

Course Assessment

a. Practical assessment of information literacy and retrieval skills
b. Research & Publications output
c. Evidence based clinical practice

2.15.1 COM 713 HEALTH SYSTEMS MANAGEMENT 1 UNIT

2.15.2 Purpose

To enable the learners (residents) to manage effectively the available resources in health systems for the delivery of quality health care.

2.15.3 Course Objectives

By the end of the course, the resident will be able to:

a. Plan and manage health resources effectively and efficiently, particularly finances, human resources, information, assets and medical supplies
b. Monitor and manage the quality of health services according to the health policy framework
c. Effectively lead teams, communicate with stakeholders and deal with legal issues in the health sector
d. Effectively carry out roles and responsibilities in global health issues
e. Apply effective management principles and practices to solve problems at various levels of health care delivery

2.15.4 Course Content:

The course is divided into three parts:

a. Resource management in health sector
b. Health service management
c. Health services management and leadership

a. Resource management in health sector

System and service and what is the difference, World Health Organization's 6 building blocks of health system, resource and systems management in health sector in the context of population health, Alma Ata 1978, MDGs and SDGs, Health inequities, supply-side limitations of the building-blocks

Health Management Information System: What is HMIS and its need, components and standards of HMIS, routine data flow in government HMIS, instruments of data

collection, the district health information system (DHIS), its software, functionality, and potential, utility and challenges of HMIS, use of HMIS data for research, and mHealth.

Human Resource Management in Health Sector: Importance of human resource in health (HRH), HR components and functions, global scenario, human resource in health and health inequity, sub Saharan and East African context, proportion of health professionals in East Africa and its challenges, global and local challenges in human resource management---brain drain, what can be done, new trends in HRH

Financial management in health sector: Components, statements of profit and loss, balance sheet, cash flow, assets, liabilities, equity, payrolls, payables, planning and budgeting, and grants, budget process and components and types of budgeting, types and components of grants, financial documentation, reporting and auditing, types of health insurance, financing for health care

Assets and Supplies management: Operations and role of Material Management Department (MMD), components and sections of MMD, procurement and warehousing, inventory (stocks/non-stocks), imports, duties and levies, suppliers, tendering, capex, contracts, monitoring and evaluation, network and group purchase

b. Health service management

Clinical services—Quality, management, and audit
Value of quality service delivery, Joint Commission International Accreditation, need, processes, indicators, monitoring and significance, quality of care, models/assessments frameworks, audit cycle, learning healthcare systems

Health Policies and Guidelines
Organization and strategic framework, importance and need of policy, differentiate between policy, practice and guidelines, their advantages and disadvantages, development, origin and stakeholders of health policy, assumptions for policy development, policies and guidelines in public and private health sector, elements of good public policy, critical elements of policy development, amendment and elimination of policy, MDGs and SDGs--what, why and how? Devolution and its implication on health---Kenyan context

Information for clinical service and patient management

Need for appropriate patient information, electronic medical and health records, mhealth, telemedicine, current urban and rural health set ups in public and private health sector, target of patient management information, quality, access, safety, cost and efficiency, functionality, benefits and dissemination of electronic health records of patients, records of patient management in public and private sector

Clinical governance and audit

Clinical Governance (CG), components of CG, education and training in CG, what is clinical audit, CG is the key to good quality, research and development, risk management, benefits and challenges of CG, role of CG in the private sector (e.g. Aga Khan) and potential of CG in government health sector

c. Health services management and leadership

Management, Leadership and Governance in health sector

How to be a good health manager, learning the components of basic management skills for good leadership, leading, managing and governing, differing leadership and management styles in public and private health sectors, role of good leadership for efficient management in resource poor settings, team working

Legal issues in health system (proposed)

Infection control/environmental control legislation, lawsuits, legal and insurance cover for providers, breaches in health data/information, patient protection acts and rights, medical malpractice and local laws, physician-patient relationship and risk management.

Use of media and communication in health sector (proposed)

Health in social media and communications increases audience knowledge and awareness of a health issue, influences behaviors and attitudes towards a health issue, demonstrate healthy practices, increases demand and/or support for health services and presents reason against misconceptions about health and inappropriate practice on wider scale, influences and impact on children's health, health literacy, risk communication (fright factors/media triggers)

Public Health and Global health (proposed)

Need, purpose and how to integrate and promote coordination between various sectors for holistic and sustainable human development (inc WHO's Health in All Policies), role of health sector in multisectoral development, the concept of integration in SDGs and its interconnected links between goals, determinants of health

2.15.5 Mode of delivery

a. Face-to-face didactic large group teaching
b. Interactive small group teaching and group project work
c. Case-based discussions
d. Practical: Field visit to County/ Rural Health Facilities – Level 4, Level 3 and Level 2 facilities

Purpose of field visit: to integrate theoretical knowledge by interaction with government health officers, community health committees, community health workers, local leadership.

2.15.6 Instructional materials/equipment:

a. Reflective journals
b. Projectors; power point presentations
c. E-learning (Moodle Board)
d. Web based learning resources
e. Video based learning resources
f. Practical visit/ field trip: transport, refreshments, local collaboration/ community health workers
g. County Level II/ III/ IV facilities

2.15.7 Course assessment:

Formative Continuous Assessment: 30 %
Summative assessment Synopsis + (exam) 70 %

a. Written submission of 1000 words:

Residents will submit a synopsis at the end of second year of their residency program

Assignment title:
Review ONE specific aspect of health management, (a building block of the health system in which you work), that affects your department/ institution.
Describe the current and existing situation in the department or institution. Applying the basic principles of best management practice, suggest ways in which the situation can be improved. Justify your choices, explaining how will your suggested approach will help improve department or institutional functioning

	Learning Outcome	Assessment	Formative	Summative
a.	Effectively contribute towards planning and management of health resources, particularly finances, human resources, information, assets and medical supplies (Module I)	End of Course MCQ exam Reflective journal Peer learning	 Y	Y
b.	Monitor and manage the delivery of quality health services using the current policies, guidelines, audits and accreditations (Module II)	End of Course MCQ exam Reflective journal Peer learning	 Y	Y
c.	Effectively manage media and communication in health sector, bring into line with contemporary legal guidelines in health sector to promote population health care (Module III)	End of Course MCQ exam Reflective journal Peer learning	 Y	Y
d.	Comprehend the utility of effective management principles and practices at various levels of health care delivery, in both public and private sector and be able to apply one of these management principles in their own work settings (Module IV)	End of Course MCQ exam Reflective journal Peer learning Submission of Synopsis	 Y Y	Y

2.15.8 Core reading materials:

a. http://www.who.int/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf
b. http://www.nationalplanningcycles.org/sites/default/files/country_docs/Kenya/health_information_system_policy.pdf
c. http://erepo.usiu.ac.ke/bitstream/handle/11732/784/06880631.pdf?sequence=4&isAllowed=y
d. http://www.who.int/hrh/tools/planning/en/
e. Stefane M Kabene et al, The importance of human resources management in health care: a global context. Hum Resour Health. 2006; 4: 20. Published online 2006 Jul 27. doi: 10.1186/1478-4491-4-20

2.15.9 Recommended further reading

a. http://www.worldbank.org/en/topic/health/brief/human-resources-health
b. Devolved health resource management policy guidelines on Human Resources for Health, Ministry of Health, Kenya February 2015
c. Human Resource Strategy in health sector 2014-2018, Ministry of Health, Kenya
d. http://www.ache.org/pubs/chap1-3gapenski5th.pdf
e. http://www.health.go.ug/docs/MOMHSM_2012.pdf
f. http://apps.who.int/medicinedocs/documents/s19623en/s19623en.pdf
g. http://www.who.int/management/quality/assurance/en/
h. http://www.who.int/hrh/documents/en/quality_accreditation.pdf
i. http://www.health.go.ke/resources/policies/
j. https://www.healthresearchweb.org/files/KenyaHealthpolicyfinalversion.pdf
k. http://www.who.int/topics/health_policy/en/
l. https://www.scribd.com/document/81697004/Patient-Information-Management-System-PIMS
m. https://www.ihs.gov/RPMS/PackageDocs/PIMS/bdg_0530.1009u.pdf
n. https://en.wikipedia.org/wiki/Clinical_governance
o. B. Levy, T. Rockall. The role of clinical audit in clinical governance. Volume 27, Issue 9, September 2009, Pages 367-370
p. http://www.who.int/hiv/pub/imai/om_10_leadership_management.pdf
q. http://www.who.int/management/FrameworkBrochure.pdf
r. http://samples.jbpub.com/9780763742911/42910_FMxx_00i_0xx.pdf
s. Video: *Supervision Prescription*

2.16.1 COM 714 INTRODUCTION TO MEDICAL EDUCATION AND PROFESSIONAL SKILLS 1 UNIT

2.16.2 Purpose

This course is designed to enable residents to navigate the competency-based educational model that underpins postgraduate medical education at Aga Khan University Hospital, and to familiarise them with the educational approaches, tools and assessment methods aligned to it. The course will illustrate and expose them to competencies beyond the clinical knowledge domain – and give them practical training in general professional and life skills relevant for successful specialist practice beyond M.Med.

2.16.2a Course structure:

Year	Module	Credit hours	Timing
PGY1	Introduction to Medical Education	12	January
PGY1	Professional Skills I	12	August
PGY2	Presentation Skills	12	January/ February
PGY3	Professional Skills II	12	January
PGY1– 4	Generic Professional Skills	15	Monthly

2.16.2b Module 1: Introduction to Medical Education

2.16.2c Purpose

This module will enable residents to navigate the competency-based educational model that underpins postgraduate medical education at Aga Khan University Hospital, and to familiarise them with the educational approaches, tools and assessment methods aligned to it.

2.16.2d Expected learning outcomes

By the end of this course the student will be able to:

a. Describe the global shifts in medical education and relate these to the way medicine is taught at Aga Khan University

b. Explain the different roles of the facilitative teacher and the self-directed learner key to this model
c. Relate the principles of adult learning and reflective, experiential learning to their own learning
d. Describe the link between assessment and feedback *for* learning and *of* learning
e. Recognise the specific assessment tools used at AKU and employ them practically in their learning
f. Identify their preferred learning style and explain it relevance and impact on their first few months of residency and beyond

2.16.2e Course content

a. A new paradigm for 21st century medical education – why is medicine taught as it is at AKU?
b. Roles and expectations of the teacher and learner in this model
c. Principles of Adult Learning – the key differences between learning as a child and as an adult
d. Reflection in learning – tools that enable reflection and reflective learning
e. The importance of assessment and feedback in medical education: definitions, tools and how to use them effectively
f. Teaching and Learning Styles – What different teaching and learning styles are there and how do they affect learners?
g. Identifying your own learning style and its effect on your education

2.16.2f Mode of delivery

a. Interactive didactic lectures
b. Small-group exercises and group work
c. Reflection and discovery learning
d. Independent self-study

2.16.2g Module II: Professional Skills I & II

2.16.2h Purpose

This course will expose residents to and illustrate professional competencies beyond the clinical knowledge domain – and give them training in general professional and life skills relevant for successful specialist practice during and beyond M. Med.

2.16.2i Expected learning outcomes

By the end of this course, the student will be able to:

a. Identify and define the seven Aga Khan University graduate attributes and distinguish their significance for their postgraduate studies
b. Describe the general professional competencies that lie beyond the clinical knowledge domain and explain their relevance for successful medical practice
c. Exhibit these general professional competencies and behaviours in their habitual practice
d. Show effective leadership and mentorship within their peer group(s) and/ or in the wider community
e. Show awareness of the career planning choices and options available after M. Med
f. Demonstrate an awareness of appropriate work-life balance and effective stress management strategies

2.16.2j Course content: Professional Skills I

a. Communication Skills I
b. Understanding team dynamics for effective team working
c. Dealing with conflict
d. Balancing service and education in postgraduate training
e. Time management and work life balance – getting it right
f. Survival skills for resident

2.16.2k Professional Skills II

a. Leadership – definitions, styles, pitfalls of leadership
b. Effective leadership in the 21st century
c. Financial management for the resident – managing your finances effectively for short, medium and long-term goals
d. Mentorship – definitions, roles and types of mentorship, making mentorship work
e. Mentorship – what is and what it is not
f. Planning your career – life after the M. Med and beyond

2.16.2l Mode of Delivery

a. Interactive didactic lectures
b. Small-group exercises and interactive group work
c. Reflection and discovery learning
d. Independent self-study
e. Practical simulations / role play / debriefing sessions

2.16.2m Module III: Presentation Skills

2.16.2n Purpose

This course is designed to equip residents with effective presentation skills – for clinical, research and educational domains pertinent to their postgraduate studies.

2.16.2o Expected learning outcomes

By the end of this course the student will be able to:

a. Describe their own innate presentation style and define key strengths and areas for improvement
b. Prepare, plan and deliver an educational presentation on a topic of their choice
c. Seek feedback on their presentation style and content to incorporate relevant changes to address the areas identified for improvement
d. Apply modern technology effectively to enhance their presentations

2.16.2p Content

a. Why good presentation skills are so important – getting your point across successfully
b. Presentation of self – how do you come across?
c. Preparing to make a presentation – planning and structure of effective
d. PowerPoint and beyond – using modern technology to enhance your presentation skills
e. Evaluation – how to use feedback to improve your presentation style and content

2.16.2q Mode of Delivery

a. Interactive didactic lectures
b. Small-group exercises and interactive group work
c. Peer feedback
d. Reflection and discovery learning
e. Independent self-study

2.16.2r Instructional materials and/or equipment

a. AV equipment,
b. Computers
c. Simulation
d. Rehearsal spaces
e. Scenarios – Actors and actors' scripts

2.16.2s Course Assessment

a. In-training work-place assessments: CEX, DOPS, MAST, 360 feedback, end of rotation reports, quarterly ISASFs
b. Common professional skills OSCE exam: an in-training OSCE examination for the general professional competencies administered at the end of PGY1 and PGY3
c. Module assignment tasks

2.16.2t Core reading

Textbooks, journals and e-materials

a. *Generic skills in medical education: developing the tools for successful lifelong learning* Deborah Murdoch-Eaton & Sue Whittle Medical Education 2012: 46: 120–128
b. *Advanced Patient Communication Skills for Doctors* Maguire, Woolfson and Cole. Oxford Medical Training
   Available at: https://www.medicalinterviewsuk.co.uk/bookstore/advanced-patient-communication-skills-doctors/

2.16.2u Recommended reference materials

a. *The Developing Physician — Becoming a Professional* Stern, DT., Papadakis, M. N Engl J Med 355; 17 2006
www.nejm.org
b. Health Professions Education: A Bridge to Quality Ann C. Greiner and Elisa Knebel, Editors, Committee on the Health Professions Education Summit
Available at: http://www.nap.edu/catalog/10681.html
ISBN: 0-309-51678-1, 192 pages, 8 1/2 x 11, (2003)

2.17.1 MC 710: General Internal Medicine and Geriatrics

2.17.2 Purpose

To comprehend the fundamentals of general internal and geriatric medicine and its application, pathophysiology, diagnosis, prognosis and management in inpatient and outpatient clinical medicine.

2.17.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Gain exposure to a variety of acute and chronic medical problems
b. Improve history and physical skills
c. Develop skills in evaluation, diagnosis and management of common acute and chronic medical disease
d. Enhance communication and discussion skills within the general medicine teams
e. Enhance communication and counselling skills for education of patients and family members
f. Effective communication with ancillary staff to enhance patient care
g. Provide holistic and comprehensive care to the patient. Use laboratory and radiological studies wisely in aiding diagnosis and management in patients.
h. Implement primary and secondary preventative strategies for various disease processes
i. Effectively communicate with subspecialist to ensure best patient care
j. Structured teaching round to implement effective learning

k. Understand the effects of nutrition on patient care and wellness

l. Understand clinical pharmacology and toxicology of commonly used drugs

m. Appreciate antibiotic therapy and the application of anti-bio gram used at various institutions.

n. Focus, understand and appreciate management of disease presentations, patterns, diagnosis and management in the elderly.

o. Develop skills in the end of life care.

General Internal Medicine Outpatient clinic

a. Gain exposure to various acute and chronic outpatient disease processes

b. Improve skills in history taking and physical exams in the outpatient setting.

c. Develop skills in evaluation, diagnosis and treatment of common acute and chronic medical diseases

d. Interpretation of labs and imaging within the outpatient setting.

e. Enhance communication with patients and their families

f. Initiate appropriate subspecialty consults when needed

g. Ensuring appropriate follow up for patients

2.17.4 Course Content

Approach to various disease in adults including diagnosis, prognosis, management and treatment of these diseases. Understanding the pathophysiology and consequence of the aging process and the treatment of diseases in the elderly, take a relevant history, perform a complete physical examination, arrive at appropriate differential diagnosis, request and interpret appropriate laboratory and radiological tests, formulate an acceptable plan or management, manage patients in the ambulatory setting, identify general medical conditions that require urgent treatment, coordinate management of the critically ill, pharmokinetics and pharmodynamics of important drugs, drug classification and formulations, drug indications and administrations, interactions and side effects of commonly used drugs, metabolism and elimination patterns of common used drugs, drug toxicity and overdose, adjusting drugs to hepatic and renal clearance, drug monitoring, role of facility specific anti-biograms and drug resistance patters relating to antibiotic use, improving of communication and interpersonal skills.

2.17.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.17.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.17.7 Course assessment: Mini-CEXs, procedural logs and CATS, periodic faculty, peer and 360 evaluations.

2.17.8 Core reading: Harrison's Principle of Internal Medicine, Goldman Cecil's Medicine, Bates' guide to Physical Exam, Oxford Textbook of Medicine, JAMA, Annals of Internal Medicine, BMJ and NEJM.

2.17.9 Recommended reference materials: Harrison's Principle of Internal Medicine, Goldman Cecil's Medicine, Bates' guide to Physical Exam, Oxford Textbook of Medicine, JAMA, Annals of Internal Medicine, BMJ and NEJM.

2.18.1 MC 711: Cardiology

2.18.2 Purpose

To comprehend the concept of cardiovascular medicine and its application, including disease pathophysiology, diagnosis and management in inpatient and outpatient clinical medicine

2.18.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Develop skills to evaluate and manage patients with disease of the cardiovascular system.
b. Show a good understanding of various cardiovascular disease processes
c. Reliably recognize cititical illness and appropriately seek assistance
d. Familiarity with the mechanism, clinical manifestation and diagnosis strategies for patients with acute and chronic disease of the heart
e. Master technical skills for central line placement, atrial line placement
f. Be qualified in BLS and ACLS
g. Understanding and interpretation of electrocardiograms
h. Implement primary and secondary preventive strategies specific to cardiovascular medicine and to appropriately refer patients to subspecialties
i. Show an understanding of the various diagnosis and therapeutic options for patients with cardiovascular disease at various stages including but not limited to cardiac catherization, primary angioplasty, thrombolytic, functional stress testing, echocardiograms and tilt table testing.
j. Educate patients regarding ongoing treatment and possible future interventions

2.18.4 Course Content: Anatomy and physiology of the heart and cardiovascular system, approach to the patient with chest pain and suspected cardiovascular disease,

interpretation of ECGs, arrhythmias, conduction defects, diagnosis and management of: ischemic heart disease, coronary risk factors, heart failure, cardiogenic shock, acute rheumatic fever and heart disease, valvular heart disease, infective endocarditis, cardiomyopathies, pericarditis, constrictive pericarditis, hypertension, disease of the aorta, peripheral vascular disease, hyperlipidemia, preventative cardiology, role of various cardiac imaging, role of cardiac risk testing and risk stratification, preoperative cardiovascular medicine.

2.18.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.18.6 instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.18.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.18.8 Core reading: Braunwald's Heart Disease, Textbook of interventional Cardiology, Mayo Clinic Cardiology Concise Textbook, The ESC Textbook of Cardiovascular Medicine, Rapid Interpretation of EKGs, JACC, JAMA, BMJ and NEJM.

2.18.9 Recommended reference materials: Braunwald's Heart Disease, Textbook of interventional Cardiology, Mayo Clinic Cardiology Concise Textbook, The ESC Textbook of Cardiovascular Medicine, Rapid Interpretation of EKGs, JACC, JAMA, BMJ, and NEJM.

2.19.1 MC 712: Dermatology

2.19.2 Purpose

To better understand and appreciate the pathology, pathophysiology, diagnosis and treatment of various adult related dermatological diseases.

2.19.3 Expected learning outcomes:

By the end of this course, the resident will be able to:

a. Appreciate and learn the diagnostic evaluation, differential diagnosis and approach to management of dermatologic diseases including skin cancer
b. Learn to distinguish benign skin lesions and malignant skin lesions.
c. Learn principles and techniques for procedures of related to Dermatology such as, but not limited to skin biopsies.
d. Learn use of the microscope to interpret wet mounts and smears
e. Develop an understanding of skin signs of systemic diseases

f. Recognize rare conditions and learn appropriate referrals to dermatology specialty

2.19.4 Course Content: Approach, diagnosis, management and treatments, including procedures, of various dermatological disorders in adults including skin cancer, urticaria, rash, photosensitivities, blisters, ulcers, alopecia, eczema, psoriasis, lichen planus, pigmentation, disorders of the nails, skin manifestations of the systemic diseases, malignant dermatological disorders. An understanding of the drugs used in the treatment of various dermatological disorders.

2.19.5 Mode of delivery: inpatient rounds, dermatology clinics, didactic lectures, case based learning, group based learning and practice OSCEs

2.19.6 Instructional materials and/or equipment: recorded lectures and reading material on moodle.

2.19.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.19.8 Core reading: Rook's Textbook of Dermatology, Andrew's Disease of the Skin, Clinical Dermatology 6th Edition, ABC's of Dermatology 6th Edition.

2.19.9 Recommended reference materials: Rook's Textbook of Dermatology, Andrew's Disease of the Skin, Clinical Dermatology 6th Edition, ABC's of Dermatology 6th Edition, JAMA Dermatology.

2.20.1 MC 713: Endocrine and Metabolic System

2.20.2 Purpose of the course

To comprehend the basic principles and practice of Endocrinology with emphasis on diagnosis, treatment and management of various endocrine conditions.

2.20.3 Expected Learning Outcomes

By the end of this course, the resident will be able to:

a. Describe the structure and functions of the Endocrine glands
b. Explain and demonstrate a clear understanding of the pathology and Pathophysiology of disorders affecting the endocrine glands
c. Describe the presentation of endocrine disorders and their sequlae.
d. Describe and interpret key investigations relevant to the diagnosis of various endocrine disorders.

e. Identify the most important drugs used in the treatment of various endocrine disorders, noting their mode of action side effect profile and indication for use.
f. Define basic principles and rationale of management for various endocrine disorders.

2.20.4 Course Content : Anatomy and physiology of the endocrine glands, diagnostic approach to a patient with suspected diseases of the endocrine system, anterior and posterior pituitary disorders that include: hypopituitarism with various hormone deficiencies, prolactinomas, growth hormone excess and acromegaly, reproductive disorders including sexual maturation disorders: puberty, hypogonadism, transgender, menopause, polycystic ovarian syndrome, gynecomastia and hirsutism, thyroid disorders including: hypothyroidism, hyperthyroidism and sick euthyroid, disorders of the adrenal glands: addison's, cushing's syndrome, primary hyperaldosteronism, congenital adrenal hyperplasia, pheochromocytoma, parathyroid disorders: hyperparathyroidism and hypoparathyroidism, hypothalamic disorders including: diabetes insipidus and syndrome of inappropriate ADH secretion, multiple endocrine neoplasia, polyglandular syndromes, porphyria's, amyloidosis, disorders of bone metabolism: osteoporosis, osteopenia, genetic obesity syndromes and familial dyslipidemia.

2.20.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.20.6 Instructional materials and/or equipment: presentations, recorded lectures and reading material on Moodle.

2.20.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.20.8 Core reading material: Harrisons Principles of Internal Medicine, Oxford Textbook of Endocrinology and diabetes, Lange: Pathophysiologic basis of disease, Williams Textbook of endocrinology, Hormones and the Endocrine System: Kleine, Bernhard, Rossmanith, Winfried G, Journals: IDF journal, Diabetes Care, Diabetalogia, JAMA, BMJ, NEJM, 2018 ADA standards of medical care in diabetes and EASD practice guidelines

2.20.9 Recommended reference materials: Harrisons Principles of Internal Medicine, Oxford Textbook of Endocrinology and diabetes, Lange: Pathophysiologic basis of disease, Williams Textbook of endocrinology, Hormones and the Endocrine System: Kleine, Bernhard, Rossmanith, Winfried G, Journals: IDF journal, Diabetes Care, Diabetalogia, JAMA, BMJ, NEJM, 2018 ADA standards of medical care In diabetes and EASD practice guidelines, Up-to-date online reference.

2.21.1 MC 713.2: DIABETES

2.21.2 Purpose of the course

To comprehend the basic principles and practice of Diabetes with emphasis on diagnosis, treatment and management of various diabetes conditions.

2.21.3 Expected Learning outcomes

By the end of this course, the resident will be able to:

a. Describe the structure and function of the endocrine pancreas.
b. Explain the pathology and pathophysiology of diabetes mellitus.
c. Explain the underlying pathophysiologic mechanisms responsible for both macro and microvascular complications seen in diabetes mellitus.
d. Explain the pathophysiologic mechanisms underlying the acute diabetic complications such as: Hypoglycemia, diabetic ketoacidosis and hyper-osmolar hyperglycemic state.
e. Describe the clinical presentation of diabetes mellitus and the underlying pathophysiology of the clinical signs and symptoms.
f. Describe and interpret the relevant investigation used in the diagnosis, follow up and prognostication of diabetes mellitus.
g. Identify and classify the most important drugs used in the treatment of diabetes mellitus as well as outlining their mechanism of action, side effect profile and indications for use.
h. Describe the management algorithm for diabetes mellitus as per the 2017 American diabetes association (ADA) standards of clinical care and the European association for the study of diabetes EASD guidelines.

2.21.4 Course content: Pathophysiology of the endocrine pancreas, investigations pertaining to diabetes mellitus and its complications, diagnosis and management of acute diabetic complications such as: Hypoglycemia, diabetic ketoacidosis and hyper-osmolar hyperglycemic state, diagnosis and management of both macro and microvascular complications in diabetes mellitus, Type 1, Type 2, Latent Autoimmune diabetes of the Adult, Monogenic diabetes, secondary diabetes and gestational diabetes, acute complications of diabetes: hyper-osmolar hyperglycemic state, diabetic ketoacidosis, hypoglycemia, diabetic foot, diabetic eye disease, renal complications of diabetes, diabetic neuropathy, cardiovascular disease in diabetes and risk stratification, erectile dysfunction, obesity and insulin resistance.

2.21.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.21.6 Instructional materials and/or equipment: presentations, recorded lectures and reading material on Moodle.

2.21.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.21.8 Core reading material: Harrisons Principles of Internal Medicine, Oxford Textbook of Endocrinology and diabetes, Lange: Pathophysiologic basis of disease, Williams Textbook of endocrinology, Hormones and the Endocrine System: Kleine, Bernhard, Rossmanith, Winfried G, Journals: IDF journal, Diabetes Care, Diabetalogia, JAMA, BMJ, NEJM, 2018 ADA standards of medical care in diabetes and EASD practice guidelines

2.21.9 Recommended reference materials: Harrisons Principles of Internal Medicine, Oxford Textbook of Endocrinology and diabetes**,** Lange: Pathophysiologic basis of disease**,** Williams Textbook of endocrinology**,** Hormones and the Endocrine System: Kleine, Bernhard, Rossmanith, Winfried G, Journals: IDF journal, Diabetes Care, Diabetalogia, JAMA, BMJ, NEJM, 2018 ADA standards of medical care in diabetes and EASD practice guidelines**,** Up-to-date online reference.

2.22.1 MC 714: Gastroenterology, Liver and Gut Disease

2.22.2 Purpose

To better understand the fundamentals and principles of gastroenterology, liver and gut disease and their application, pathophysiology, diagnosis and treatment in inpatient and outpatient clinical medicine

2.22.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Develop a solid foundation in the pathophysiology, diagnostic evaluation, differential diagnosis and approach to management of gastrointestinal and liver diseases.
b. Learn the appropriate assessment of elevated liver enzymes and their clinical implications.
c. Learn the need of appropriate laboratory test in managing patients with various gastrointestinal disease
d. Learn the indications, appropriate use and complications of various gastrointestinal procedure.

e. Understand the appropriate use to other radiology studies related to gastrointestinal disease
f. Learn appropriate and cost-effective preventative, surveillance and screening techniques for gastrointestinal malignancies and diseases
g. An understanding of the need and management of liver transplantation.

2.22.4 Course Content: Approach to various liver and gut disease in adults including diagnosis, prognosis, management and treatment. Such disease include but are not limited to acid peptic disease, biliary tract disease, pancreatic disorders, liver disease, inflammation and enteric infectious diseases, liver and GI malignancies, motility and functional illnesses, nutrition, screening guidelines and women digestive diseases.

2.22.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.22.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.22.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.22.8 Core reading: Yamada's Textbook of Gastroenterology, Textbook of Clinical Gastroenterology and Hepatology 2nd Edition, Current Diagnosis and Treatment in Gastroenterology 2nd Edition, American Journal of Gastroenterology, Journal of Gastroenterology, Gastroenterology Journal.

2.22.9 Recommended reference materials: Yamada's Textbook of Gastroenterology, Textbook of Clinical Gastroenterology and Hepatology 2nd Edition, Current Diagnosis and Treatment in Gastroenterology 2nd Edition, American Journal of Gastroenterology, Journal of Gastroenterology, and Gastroenterology Journal.

2.23.1 MC 715: Hematology

2.23.2 Purpose

The better understand and develop the competencies required to recognize, investigate and appropriately manage patients presenting with hematological manifestations of systemic disease or primary hematological disorders.

2.23.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Detail the structure and function of the hematopoietic and reticular systems.
b. Outline the pathophysiology of hematological disorders
c. Illustrate some of the common presentations of hematological disorders
d. Select appropriate investigations relevant to symptoms haematological disorders and interpret the results
e. Devise an appropriate management of patients presenting with symptoms suggestive of haematological disease
f. Understand the mode of action of drugs used, side effects and indications

2.23.4 Course Content: Physiology of the hematopoietic and reticular systems, Pathophysiology of haematological disorders, pathophysiology of haematological manifestations of systemic disorders, approach to the patient presenting with symptoms suggestive of hematological disorders, iron deficiency, megaloblastic and hemolytic anemia, haemoglobinopathies; bone marrow failure syndromes, acute and chronic leukemia, lymphomas, myeloproliferative neoplasms, venous thromboembolism, acquired and inherited bleeding disorders

2.23.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.23.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.23.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.23.8 Core Reading and Reference Material: Hoffbrand's Essential Hematology, 6th Edition by A. Victor Hoffbrand, Paul A. H. Moss**,** Up to Date, Hematology articles in peer-reviewed journals

2.24.1 MC 716: Intensive Care Medicine

2.24.2 Purpose

To better understand the fundamentals and principles of intensive care medicine and its application to patient diagnosis, prognosis and treatment.

2.24.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Learn to recognize and to treat the major clinical syndromes and diseases encountered in intensive care medicine
b. To learn the appropriate use, interpretation, and troubleshooting of invasive monitoring equipment used in the ICU.
c. To learn the appropriate indication for intubation and use of mechanical and non-mechanical ventilatory support.
d. Learn the different mode of ventilator support
e. Understand the role of sedative used pre and post intubation
f. Understanding the role and mechanism for vasopressor support
g. Develop effective communication skills when addressing critically sick patient and their families, especially end of life conversations
h. Learn to when to order and to interpret various laboratory and radiology studies and their significance in intensive care medicine.
i. Learn the appropriate indications for bronchoscopy and other invasive procedures.
j. Develop skills in common diagnostic and therapeutic procedures such as thoracentesis and chest tube placement.
k. Role and mode of nutrition in ICU patients
l. Understanding and practicing safe best practices to prevent infections in patients especially during various procedures.

2.24.4 Course Content: Interpretation of electrocardiograms, basic interpretation of chest-xray and other radiological modalities, assessment and management of the airway, including optimal use of mechanical ventilation, pathophysiology and management of respiratory failure, management post respiratory failure, assessment and management of hypotension and shock, indications for and use of invasive hemodynamic monitoring, indications for and use of sedatives, analgesics, and neuromuscular-blocking agents, indications for and use of vasopressors and inotropic agents, assessment and management of delirium and acute neurologic syndromes, assessment and management of gastrointestinal bleeding and liver failure, assessment and management of life-threatening infections, including appropriate antimicrobial selection, toxicologic syndromes and their management, including management of drug overdose rational use of laboratory and other diagnostic tests, appropriate use of blood products in the critically ill, prevention and treatment of nosocomial infections, infection control process relevant to the ICU, assessment and management of electrolyte disorder, assessment and management of endocrine emergencies, assessment and management of acute renal

failure including use of renal replacement therapy, prevention of stress ulceration and thromboembolism in the critically ill patient, an understanding of the commonly used scoring systems for assessment of severity of illness, identification and minimization of risk of critical incidents and adverse events, including complications of critical illness, nutritional assessment and therapy in the ICU, including the use of total parenteral nutrition, issues in end-of-life care including the withholding and withdrawing of life-sustaining therapies, legal and ethical principles in ICU medicine, an appreciation of the role of services such as physical and occupational therapy, role and importance of a multidisciplinary team, advance directives, code status and family conference.

2.24.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.24.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.24.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.24.8 Core reading: West's Respiratory Physiology, Marino's ICU text book, Oxford Textbook of Medicine, Oxford Handbook of Critical Care, Core Topics in Critical Care, Current Diagnosis and Treatment in Critical Care, Oh's Intensive Care Manual, ICM Journal, AJRCCM, JAMA, NEJM, BJA Education, Chest.

2.24.9 Recommended reference materials: Textbook of Critical Care, Civetta, Taylor and Kirby's Critical Care, Harrison Pulmonary and Critical Care Medicine

2.25.1 MC 717: Infectious Diseases and HIV Medicine

2.25.2 Purpose

To understand the fundamentals of infectious disease and HIV medicine and its application, including disease pathophysiology, diagnosis and management in inpatient and outpatient clinical medicine

2.25.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Describe the pathogenesis, clinical presentation, epidemiology and management of diseases caused by locally and globally relevant pathogens, including viral, bacterial, fungal and parasitic organisms
b. For patients with disease involving a specific organ system(s), determine whether the illness is of an infectious or other etiology
c. For each major organ system and symptom complex, prioritize the relevant infectious agents and provide a rationale how the priorities are arranged.
d. For patients with fever, rash, shock, lymphadenopathy, or other systemic diseases, provide a prioritized differential diagnosis including infectious and non-infectious diseases
e. Determine the optimal vaccines or preventive medications for a general patient and those with geographic or disease-related risks and provide medical and lay answers to defend their use
f. Apply geographic considerations to the differential diagnosis of infectious conditions
g. Describe the mechanism, resistance mechanisms, antimicrobial activity spectrum, toxicities and clinical uses for antimicrobial agents used locally and for others in widespread use globally
h. Provide a reason for antimicrobial treatment for patients with proven or suspected infections, including considerations of dose, cost and duration, route of administration and alternative approaches for management
i. Formulate diagnostic approaches for patients with suspected infection, including comments on the sensitivity, specificity, interpretation and cost effectiveness of the approach
j. Provide high quality and cost effective diagnosis and treatment for patients with infections
k. Recognize hospital acquired infections and institute efforts to prevent them
l. Recognize and manage the complications of malaria
m. Evaluate patients with suspected immunocompromised status and determine what kinds of infections they are at risk for based on the type and level of immunocompromised
n. Assess the level of risk for various immunocompromised patients and develop diagnostic and therapeutic interventions based on that risk
o. Critique different testing and approaches for the diagnosis of HIV infection
p. Demonstrate effective counselling for patients with newly diagnosed HIV infection as well as those with established HIV infection, especially regarding adherence to antiretroviral therapy

q. Describe the mechanisms of action, toxicity, viral resistance, drug interactions and efficacy for antiretroviral drugs and implement appropriate therapy based on these factors
r. Evaluate HIV-infected patients for opportunistic infections and other complications and implement therapy to treat and/or prevent these complications
s. Diagnose and treat the broad range of manifestations of tuberculosis
t. Provide prevention and treatment for non-communicable diseases that complicate HIV infection, including malignancies and cardiovascular, metabolic and renal disease
u. Assess patients with Hepatitis B or C (including HIV coinfection) for treatment

2.25.4 Course Content: Approach to a patient with suspected infectious disease including: fever of unknown origin, interpretation of investigations pertaining to infectious disease. Causes, diagnosis, prevention and management of: viral infections including; viral haemorrhagic fever, measles, mumps, rubella, herpes infection, chicken pox / herpes zoster, Infectious mononucleosis, cytomegalovirus infection, SARS, bacterial Infections including: streptococcal infections, scarlet fever, staphylococcal infection, anthrax, typhoid & paratyphoid fevers, food poisoning, dysentery, brucellosis, plague, cholera, leptospirosis, tuberculosis, Lyme disease, relapsing fevers, rickettsial infections, fungal infections including: histoplasmosis, coccidiodomycosis, blastomycosis, protozoal infections including: malaria, yellow fever, trypanosomiasis, helminthic infections including: cestode infections, schistosomiasis, nematode infections, sexually transmitted diseases including: syphilis, gonorrhoea; drugs used in patients with infectious diseases HIV medicine: Virology and Immunology of Human immunodeficiency virus, approach to a patient with suspected HIV infection, diagnosis and management of HIV & AIDS, prevention, diagnosis and treatment of opportunistic infections including: cytomegalovirus Infections, tuberculosis & atypical TB, fungal infections, candidiasis, cryptococcal Infections, toxoplasmosis, pneumocystis pneumonia, herpes infections. Diagnosis and Management of AIDS related malignancies including: Kaposi's sarcoma, lymphoma, drugs used in HIV &AIDS and AIDS related conditions.

2.25.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.25.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle,

2.25.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.25.8 Core reading: Harrison's Principles of Internal Medicine, Up to Date, Lancet, NEJM, JAMA, Lancet Infectious Diseases, Clinical Infectious Diseases.

2.25.9 Recommended additional reference materials: Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases.

2.26.1 MC 718: Nephrology, Fluid and Electrolyte Balance

2.26.2 Purpose

To better comprehend the fundamentals of nephrology and fluid/electrolyte balance with emphasis on pathophysiology, diagnosis and management.

2.26.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Understand the pathophysiology, workup and management of patients with fluid and electrolyte disorders
b. Comprehend, diagnose and manage patients with primary, secondary and resistant hypertension.
c. To better understand acid base pathophysiology, including the interpretation of various related test and the appropriate management of such disorders
d. To learn the pathophysiology, mechanisms, clinical manifestations, and diagnostic strategies for patients with acute and chronic diseases of the kidney.
e. Understanding the pathophysiology, workup and treatment of various of glomerular disease processes
f. Understanding the role HIV plays in renal disease
g. To understand and manage patients with various renal calculi
h. Learn to implement reno-preventive strategies and to refer patients to subspecialists at the appropriate time in their disease.
i. To develop familiarity with principles, clinical indications, complications and performance of nephrologic procedures including acute and chronic hemo- and peritoneal dialysis, renal biopsy, vascular access placement, slow dialysis, and plasmapheresis.
j. To better understand the indications for renal transplantation and the ongoing management of a patient s/p kidney transplant.

2.26.4 Course Content: Approach to various renal diseases in adults including diagnosis, prognosis, management and treatment of hypertension, chronic kidney disease, end stage renal disease, acid base disorders, renal tubular acidosis, glomerulonephritis, pulmonary-renal syndromes, analgesic nephropathy, pyelonephritis,

urinary tract infections, renal malignancies, renal stone physiology, fluid and electrolyte disorders, glomerular disease disorders , HIV renal disease, tubulointerstitial and polycystic kidney disease. Treatment modalities such as hemodialysis, peritoneal dialysis and renal transplant medicine.

2.26.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.26.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.26.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.26.8 Core reading: Oxford Textbook of Clinical Nephrology, Schrier's Diseases of the Kidney, Brennner and Rector's The Kidney, Lange Current Diagnosis and Treatment, Nephrology and Hypertension, JAMA, BMJ, NEJM.

2.26.9 Recommended reference materials: Oxford Textbook of Clinical Nephrology, Schrier's Diseases of the Kidney, Brennner and Rector's The Kidney, Lange Current Diagnosis and Treatment, Nephrology and Hypertension, JAMA, BMJ, NEJM, Journal of American Society of Nephrology.

2.27.1 MC 719: Neurology

2.27.2 Purpose of the course

To better understand and gain a clear understanding of the basic principles and practice of Neurology enabling him/her to positively impact the accurate diagnosis, treatment and management of Neurological conditions.

2.27.3 Expected Learning Outcomes

By the end of this course, the resident will be able to:

a. Describe the structure and functions of the central and peripheral nervous systems.
b. Explain and demonstrate a clear understanding of the pathology and pathophysiology of disorders affecting the central and peripheral nervous systems.
c. Recognise and describe the presentation, both typical and atypical, of the central and peripheral nervous system disorders, as well as of neurological emergencies.
d. Describe and interpret key investigations relevant to the diagnosis of central and peripheral nervous system disorders.
e. Describe the management of disorders of the central and peripheral nervous systems, including the most important drugs used, their modes of action, side effects and indications.

f. Define basic principles of Neurology practice along with recognition of the attendant common ethical, cultural and social scenarios and their management.

2.27.4 Course Content: Anatomy & Physiology of the central and peripheral nervous systems, Approach to the patient with suspected diseases of the nervous system, interpretation of investigations of neurological disorders and their relevance in diagnosis and prognostication of disease, principles of diagnosis and management of various disorders of the central and peripheral nervous systems including seizure disorder, cerebrovascular accidents, sub-arachnoid haemorrhage, cortical venous thrombosis, multiple sclerosis, parkinson's disease and other key movement disorders, motor neuron disease, Guillain Barre syndrome, myasthenia gravis, peripheral neuropathies, muscular dystrophies, spinal cord disorders, meningitis, encephalitis, poliomyelitis, cerebral abscess, prion diseases, rabies, tetanus, dementia, intracranial neoplasms, paraneoplastic syndromes, acute confusional state and altered mental states, early identification and management of neurological emergencies and drugs used in the treatment of various neurological disorders and their potential adverse effects.

2.27.5 Mode of Course delivery: Inpatient rounds, clinic hand on learning, didactic lectures, case base learning, group based learning and practice OSCEs

2.27.6 Instructional Material: recoded lectures and reading material on Moodle.

2.27.7 Course Assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.27.8 Core reading: Harrison's Principles of Internal Medicine, Bates' Guide to Physical Exam, Oxford Textbook of Medicine, Adams and Victor's Principles of Neurology, Merritt's Neurology, JAMA, Stroke, BMJ, NEJM, Practical Neurology journal.

2.27.9 Recommended reference materials: Harrison's Principles of Internal Medicine, Bates' Guide to Physical Exam, Oxford Textbook of Medicine, JAMA, BMJ, NEJM, Practical Neurology journal, Up to Date.

2.28.1 MC 720: Oncology

2.28.2 Purpose of the course

To comprehend and better understand the fundamentals and the principles of basic medical oncology and hematology

2.28.3 Expected Learning outcomes:

By the end of this course, the resident will be able to:

a. Describe the basic cell biology and pathophysiology of cancer
b. Understand The Principles of Molecular biology in diagnostic and therapeutic aspects of Cancer
c. Demonstrate the appropriate use of Technology Platforms in Oncology practice.
d. Explain and Understand Cell cycle related Mechanism of Cancer Chemotherapy
e. Recognize the clinical presentation and pathophysiology of Oncologic emergencies
f. Define basic principles of oncology practice along with recognition of ethical and social requirements

2.28.4 Course Content:

Basic Cell Biology, Pathophysiology of Cancer, communication skills in cancer, Ethical issues in cancer practice and research, Information technology tools in cancer, epidemiology and screening recommendations for cancers, Approaching a Patient with suspected cancer, Oncologic Emergencies, interpretation of cancer related investigations, Principles of Molecular Targets and their Therapeutic application, principles of response assessment, Cancer treatment settings.

Principles of Diagnosis and management of common cancers: Breast cancer, lung cancer, prostate cancer, Gastric cancers, colorectal cancers, thyroid cancers, liver cancers, cervical cancer, Bone cancers and Sarcomas.

2.28.5 Mode of delivery: inpatient rounds, clinic hands on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.28.6 Instructional Material: recorded lectures and reading on Moodle.

2.28.7 Course Assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.28.8 Core Reading: Washington Manual of Medical Oncology Vol 4 , Textbook of Medical Oncology 4th edition, Oxford Textbook of Oncology, Stephens and Aigner's Basic Oncology, Web Based Resources: http://www.uptodateonline.com , British Columbia Site: http://www.bccancer.bc.ca/ , National Comprehensive Cancer Network Site : http://www.nccn.org

2.28.9 Reference Material: DeVita, Hellman, and Rosenberg's Cancer: Principles & Practice of Oncology (Cancer Principles and Practice of Oncology)

2.29.1 MC 721: Palliative Care

2.29.2 Purpose

To comprehend the fundamentals of palliative care medicine focusing of pathophysiology, diagnosis, prognosis and treatment of chronic life-limiting illnesses. Understanding the value and importance of a team effort to provide not only medical treatment but spiritual and psycho-social support to the patient and their family.

2.29.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Understand the concept of palliative care medicine
b. Differentiate between palliative care and hospice care
c. Understand the trajectory of chronic illness and how palliative care plays a role
d. Learn the symptoms patient face with chronic illness and treatment of such symptoms
e. Learn the symptoms patients suffer at the end of life and treatment of such symptoms
f. Understand the team concept of palliative care and the various resources the team members can provided including spiritual and psych-social counselling.
g. Understand the concept of sharing importance news with patients and their families.
h. Familiarity with the concept of breaking bad news to patients
i. Learn the concept of family meetings and how to organize and conduct them
j. Understand the role of respite care, inpatient palliative as well as outpatient palliative care
k. Learn basic knowledge of opioid use and conversion.

2.29.4 Course Content: Pathophysiology, diagnosis, prognosis and treatment of various chronic life-limiting illness including but not limited to: dementia, COPD, end stage renal and liver disease, end stage heart failure, various cancers, strokes and bleeds. Pain and other symptom management including nausea, constipation, shortness of breath, anorexia, cachexia. Management and conversion of opioids. End of life conversations and conversation on sharing important news. Palliative sedation and discussion of goals of care and advance directives. Role of artificial nutrition including role of PEGs.

2.29.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.29.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.29.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.29.8 Core reading: The Palliative Care Handbook, A Clinician's Guide to Palliative Care, Hospice Concepts, Palliative Care Medicine, American Journal of Palliative Care, JAMA, BMJ and NEJM.

2.29.9 Recommended reference materials: The Palliative Care Handbook, A Clinician's Guide to Palliative Care, Hospice Concepts, Palliative Care Medicine, American Journal of Palliative Care, JAMA, BMJ and NEJM.

2.30.1 MC 722: Psychiatry and Mental Health

2.30.2 Purpose

To better understand and appreciate the pathology, pathophysiology, diagnosis and management of various adult mental health disorders.

2.30.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Appreciate the acute evaluation of a patient with suspected mental health disorders
b. Understand the value of a detailed psychiatry history in evaluation of a patients
c. Appreciate the spectrum of various mental health disorders, their relationship and how to differentiate between them.
d. Understand the role of non-pharmacotherapy, such as but not limited to cognitive behavioral therapy, in treating patients with mental health disorders
e. Understand the vast pharmacotherapy is treating specific conditions
f. Appreciate the need for neurocognitive testing in appropriate settings
g. Appreciate the role of depression and its effects on other comorbidities. Appreciate and understand the role of screen for depression and other mental health disorders
h. Understand the role of other health providers, such as nurses, social workers and psychologist, in addressing needs of patients with mental health disorders.
i. Recognize conditions that require appropriate referrals to the mental health specialist.

2.30.4 Course Content: Approach, diagnosis, management and treatments of various mental health disorders in adults including understanding the spectrum on mental health disease and how to differentiate and treat them. Such disease include but are not limited to: Depression, Psychosis, Bipolar disorders, Schizophrenia, Anxiety, Phobias, Hysterical disorders, Drug abuse, Alcoholism and Delirium Tremens, Anorexia nervosa, Bulimia nervosa, Sleep disorders, Suicide and Para suicide; Management of various Psychiatric tract disorders including; drugs, psychotherapy and cognitive behavioral therapy.

2.30.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.30.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.30.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.30.8 Core reading: DSM 5, Mental Disorders in Older Adults, Mental Health and Mental Illness 7th Edition.

2.30.9 Recommended reference materials: DSM 5, Mental Disorders in Older Adults, Mental Health and Mental Illness 7th Edition, JAMA Psychiatry.

2.31.1 MC 723: Pulmonology/Respiratory Medicine

2.31.2 Purpose

To be better understand the anatomy, physiology, pathogenesis, pathophysiology, pathology and pharmacology of the respiratory system and its application to inpatient and outpatient respiratory medicine

2.31.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Gain exposure to a variety of acute and chronic respiratory problems in the inpatient and outpatient settings.
b. Develop skills in history taking, physical evaluation, diagnosis and management of common acute and chronic Respiratory Conditions in adults and geriatric population
c. Provide holistic and comprehensive care to adult and geriatric patients with respiratory Disorders
d. Implement primary and secondary preventative strategies for various respiratory disease processes
e. Learn to recognize and to treat the major clinical syndromes and diseases encountered in respiratory medicine.
f. To learn the appropriate indication for intubation and use of mechanical and non-mechanical ventilator support.
g. Develop effective consulting skills, and learn when to appropriately refer to respiratory medicine.

h. Learn to interpret pulmonary function testing, blood gases, laboratory findings, chest x-rays, and CT examinations of the thorax.
i. Learn the appropriate indications for bronchoscopy and other invasive procedures.
j. Develop skills in common diagnostic and therapeutic procedures such as thoracentesis and chest tube placement.

2.31.4 Course Content: Approach to various respiratory diseases in adults including diagnosis, prognosis, management and treatment including complications of: bronchial asthma, emphysema, chronic bronchitis, respiratory failure, bronchiectasis, cystic fibrosis, pneumonia (hospital and community) acquired, pulmonary tuberculosis, aspergillosis, pulmonary hypertension, lung cancer, interstitial lung disease, ARDS, pulmonary embolism and others. Focus on the anatomy and physiology of the lungs and respiratory system. Interpretation of the radiological investigations including: chest x-ray, CT chest, pulmonary function test and arterial blood gases. Drugs used in treatment of various respiratory disorders.

2.31.5 Mode of delivery: inpatient rounds, clinic hands on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.31.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.31.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.31.8 Core reading: West's Respiratory Physiology and West's Respiratory Pathophysiology, Harrison's Principles of Internal Medicine, Goldman Cecil's Medicine, Bates' Guide to Physical Exam, Oxford Textbook of Medicine, JAMA, BMJ, NEJM. Chest. Lancet Resp

2.31.9 Recommended reference materials: Harrison's Principles of Internal Medicine, Goldman Cecil's Medicine, and Bates' Guide to Physical Exam, Oxford Textbook of Medicine, JAMA, BMJ, NEJM, Chest and Lancet Resp.

2.32.1 MC 724: Rheumatology and Immunology

2.32.2 Purpose

To better comprehend the fundamentals of rheumatology and immunology including the pathophysiology, diagnosis and management of various related conditions and diseases.

2.32.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Review and improve musculoskeletal history and exam skills and differentiate joint complaints as either articular, periarticular, or radiating pain.
b. Distinguish, diagnose and manage inflammatory from mechanical joint pain.
c. Recognize patterns of common forms of arthritis and their systemic involvement
d. Have a working knowledge of rheumatology/immunology laboratory tests and their relationship to various rheumatological/immunological disorders.
e. A comprehension of a rheumatological/immunological focused history and physical exam including the required laboratories and radiological test required for a diagnosis.
f. A basic understanding on common immunological conditions and their systemic manifestations.
g. An understanding of the anatomy and cellular functions of the immune system.
h. Acquire an approach to the diagnosis and treatment of common rheumatologic conditions, in particular regional conditions such as rotator cuff tendonitis and plantar fasciitis.
i. Recognize potential serious rheumatologic illness and the appropriate triaging/treatment
j. Review and improve arthrocentesis and injection skills

2.32.4 Course Content: Approach to various rheumatologic/immunologic diseases in adults including diagnosis, prognosis, management and treatment of bone and cartilage disorders, non-articular and regional musculoskeletal disorders, inherited and acquired muscle diseases, metabolic bone disorders, crystal arthropathies, normal functions and disorders of the immune system, drugs and their side effects used in rheumatology and immunology conditions and other miscellaneous rheumatic/immunologic disorders

2.32.5 Mode of delivery: inpatient rounds, clinic hand on learning, didactic lectures, case based learning, group based learning and practice OSCEs

2.32.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.32.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.32.8 Core reading: Oxford Textbook of Rheumatology, Kelley's Textbook of Rheumatology, Current Diagnosis and Treatment Rheumatology LANGE, Basic Immunology, Functions and Disorders of the Immune System.

2.32.9 Recommended reference materials: Oxford Textbook of Rheumatology, Kelley's Textbook of Rheumatology, Current Diagnosis and Treatment Rheumatology LANGE, Basic Immunology, Functions and Disorders of the Immune System, Journal of Rheumatology, Clinical Rheumatology, British Journal of Rheumatology, African Journal of Rheumatology and American Journal of Immunology.

2.33.1 MC 725: Accident and Emergency (A&E)

2.33.2 Purpose

To better understand and appreciate the diagnosis, differential diagnosis and management of patients with various acute and chronic illnesses in the acute setting

2.33.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Appreciate and learn the diagnostic evaluation, differential diagnosis and approach to management of various acute and chronic illnesses in the acute setting.
b. Better understand the role of adequate triaging especially in a busy A+E
c. Appreciate the role of various laboratory and radiology testings and how they differ in the acute setting. Learn to interpret these studies.
d. Learn to come up with vast differential diagnosis
e. Learn to present patients focusing on the acute illness

2.33.4 Course Content: Various acute and chronic illnesses such as cardiac arrest, arrhythmias, myocardial infarction, strokes, hypertension, shock, respiratory failure, seizures, sepsis, acid-base disorders, endocrine abnormality, hepatobiliary disease, coagulation disorders, hypo and hyperthermia syndrome, motor vehicles accidents, falls, acute psychiatric disorders, intoxicant and poisons and others conditions.

2.33.5 Mode of delivery: didactic lectures, discussions with staff, assigned readings.

2.33.6 Instructional materials and/or equipment: assigned reading, Moodle lectures.

2.33.7 Course assessment: Mini-CEXs, procedural logs and CATS, periodic faculty, peer and 360 evaluations.

2.33.8 Core reading: Tintinalli"s Emergency Medicine, Rosen's Emergency Medicine, Lange Clinical Emergency Medicine

2.33.9 Recommended reference materials: Tintinalli"s Emergency Medicine, Rosen's Emergency Medicine, Lange Clinical Emergency Medicine, Emergency Medicine Journal, American Journal of Emergency Medicine, Journal of Emergency Medicine.

2.34.1 MC 726: Elective

2.34.2 Purpose

This is a rotation where the resident choose an area of interest with the intent to gain a better in depth understanding on the disease processes, pathophysiology, diagnosis and treatment related to the area of interest or the rotation.

2.34.3 Expected learning outcomes

By the end of this course, the resident will be able to:

a. Appreciate and learn the diagnostic evaluation, differential diagnosis and approach to management of diseases in the elective chosen.
b. Show a better understand the pathophysiology of the disease in the elective chosen
c. Show a better understanding of the socio-economic challenges to care and access of the elective rotation
d. Participate in consults and outpatient clinic in the elective chooses
e. Participation on article critiques relevant to the elective
f. Participation in research activities related to the elective
g. Improve of system and practice based learning
h. Improve on communication techniques

2.34.4 Course Content: Approach, diagnosis, management and treatments, including procedures related to the elective of choice.

2.34.5 Mode of delivery: inpatient rounds, outpatient clinics, didactic lectures, case based learning, group based learning and practice OSCEs

2.34.6 Instructional materials and/or equipment: recorded lectures and reading material on Moodle.

2.34.7 Course assessment: Mini-CEXs, procedural logs, OSCEs and CATS, periodic faculty, peer and 360 evaluations.

2.34.8 Core reading: as per the elective chosen

2.34.9 Recommended reference materials: as per the elective chosen.

Special instructions:

a. All elective will be approved by the Program Director.
b. Residents are allowed to arrange for external and international elective.
c. All resident wishing to pursue an external or international electives need a plan in advance, including a point of contact and are responsible for the fare, cost of living and other finances involved.
d. There will be no night call and weekend coverage expected of the residents on electives

3.0 APPENDICES

3.1 Appendix I: Verification of Academic Resources

a. The university has a large auditorium and many seminar rooms in the main wards block, at outpatient clinics and in the East Tower Administration block on the fourth, sixth and seventh floors. All seminar rooms are set up for active learning, with students seated in a group, with a front presentation area. The seminar rooms allow for small group work, problem-based learning, case studies, and frontal lecture-style teaching. Each seminar room is also designed for seminar group meetings and for video-conferencing used in blended learning. Although video-conferencing equipment is not installed in every seminar room, each room is configured to allow installation of equipment as required.

b. Checklist of Equipment and Teaching Materials

c. List of core texts and journals

Basic Sciences Courses

Ahya, S.N. (Ed). Manual of Medical Therapeutics
Berg, J.M. Biochemistry : W. H. Freeman and Co., 2002

Ganong, W.F. Review of Medical Physiology : Appleton & Lange, 1993.

Snell R.S. Clinical Anatomy .- 7th ed. : Lippincott Williams & Wilkins, 2003.

Trevor, A.J. Katzung & Trevor's Pharmacology : McGraw Hill, 1998.

Walter, J.B. Walter & Israel General Pathology : W.B. Saunders, 1996.

Common Courses

Albert D.M. Physicians Guide to Healthcare Management

Campbell. Medical Statistics - A Common Sense Approach.- 3rd ed. : John Wiley & Sons, 1999

Gordis, L. Epidemiology : W.B. Saunders, 2004

Handbook of Medical Ethics. A BMA Publication : The Association, 1981

Kuzma, J.W. Basic Statistics of the Health Sciences. – 2nd ed. : Mayfield Publishing Co., 1992

Peterkin, A. Staying Human during Residency Training : Canadian Medical Association, 1998

Peterkin, A. Staying Human during Residency Training : Canadian Medical Association, 1998

Sackett, D. Clinical Epidemiology: a basic science and clinical medicine : Lippincott Williams & Wilkins, 1991

Swinscow, T.D. Statistics at Square One. – 10th ed. : BMJ Books, 2001

Clinical Rotational Courses

Bongard, F.S. Current critical care: Diagnosis and Treatment : McGraw Hill, 2002.

Braunwald, E. Harrison's Principles of Internal Medicine (vol. 1 & 2). – 15th ed. : McGraw Hill, 2001.

Chilvers (Ed). Davidson's Principles and Practice of Medicine. – 19th ed. : Churchill Livingstone, 2003

Crawfold, M. Current Diagnosis and Treatment in Cardiology. – 2nd ed. : McGraw Hill, 2003.

Feldman, M. Sleisenger & Fordtran's Gastrointestinal and Liver Disease: Pathophysiology / Diagnosis / Management. – 7th ed. : W.B. Saunders, 2002

Forbes, C.G. A color atlas of clinical medicine. – 3rd ed. Mosby, 2003

Gelder, M.G. New Oxford Textbook of psychiatry " Oxford University Press, 2003.

Goldman, L. (Ed) Cecil Textbook of Medicine. – 22nd ed. : W.B. Saunders, 2003.

Hess, D.R. Essentials of mechanical ventilation. – 2nd ed. : McGraw Hill, 2002.

Kumar, Clinical Medicine. – 5th ed. : W.B. Saunders, 2002.

Longmore, M. Oxford Handbook of Clinical Medicine : Oxford Press, 2002

Munro, J.F. Macleod's Clinical Examination.- 10th ed. : Churchill Livingstone, 2003. Oxford Textbooks of Medicine

Seaton, A. Crofton and Douglas's Respiratory Disease (vol. 1 & 2). – 5th ed. : Blackwell Science Ltd., 2000.

Swash, M. Hutchinson's Clinical Methods. – 21st ed. : W.B. Saunders, 2002

Tierney, L. Current Medical Diagnosis & management : McGraw Hill, 2002.

Volta, S.D. Cardiology (clinical medical series) : McGraw Hill, 1999

Journals

Academic Medicine (*Published by Lippincott Williams & Wilkins)*

American Heart Journal *(Published by Elsevier Science)*

Annals of Internal Medicine *(Published by American College of Physicians)*

British Medical Journal *(Published by BMJ Publishing Group)*

Chest *(Published by American College of Chest Physicians)*

Circulation (*Published by Lippincott Williams & Wilkins)*

Clinical Infectious Diseases *(Published by University of Chicago Press)*

East African Medical Journal *(Published by Kenya Medical Association)*

Gastroenterology *(Published by Elsevier Science)*

Hospital Practice

Lancet *(Published by Elsevier Properties)*

Mayo Clinic Proceedings *(Published by Mayo Foundation for Medical Education and Research)*

Medical Clinics of North America *(Published by Elsevier Science)*

New England Journal Medicine *(Published by Massachusetts Medical Society)*

Postgraduate Medical Journal *(Published by BMJ Publishing Group)*

Quarterly J Medicine *(Published by Oxford University Press)*

3.2 Appendix II: List Academic Staff
3.3 Appendix III: University Policy on Curriculum Development
3.4 Appendix IV: University Examination Regulations
3.5 Appendix V: University Student Evaluation of Teaching Policy
3.6 Appendix VI: Staff Research Publications
3.7 Appendix VII: School Projected Enrolment