Emergency Physicians for Tomorrow

Fellowship Curriculum 2017

Hong Kong College of Emergency Medicine

Hong Kong College of Emergency Medicine

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Contents

HONG KONG COLLEGE OF EMERGENCY MEDICINE

INTRODUCTION

Emergency Medicine (EM) is a rapidly expanding and exciting specialty, which our College has witnessed in the past 20 years since its establishment. It is fundamentally a broad-based specialty in which timely management is critical. However, in addition to breadth, EM specialists also aim at increase our depth in specific areas within the realm of our specialty. The establishment of the Toxicology Board in 2016 is a milestone in the creation of subspecialty practice. So, an emergency physician, or specialist in EM, needs to demonstrate a specific set of required competencies that define this field of medical practice. The goal of training in emergency medicine is to develop trainees into specialists who are competent to accept and exercise the highest responsibility in the field of emergency medicine.

Our College and its Education Committee (EC) has deliberated in the past on the attributes of a competent specialist in EM. The following 6 key areas are identified as core domains in the maturation towards a competent Emergency Physician:

1. Medical knowledge and Clinical Skills
2. Patient Care
3. Professionalism and other Ethical and Legal Issues
4. Education and Research
5. Communication, Collaboration and Interpersonal Skills
6. Organizational, Planning and Management Skill

Upon satisfactory completion of the specialist training program, the doctor should be able to demonstrate sound knowledge, skill and attitude in the:

- recognition, resuscitation, stabilization, evaluation and care of the critically ill or injured patient;
- arrangement of appropriate follow-up or referral as required;
- prehospital care of acutely ill or injured patients;
- administration of emergency department;
- teaching of emergency medicine; and
- research in areas relevant to the practice of emergency medicine.

IFEM in its document on Model Curriculum for Emergency Medicine Specialists pointed out that "there is no globally recognized, standard curriculum that defines the basic minimum standards for specialist trainees in emergency medicine." Different localities will need to develop its own curriculum to suit its vision and mission. So, the College needs to define our own curriculum to train specialists who can provide good emergency care for the people of Hong Kong.

In October 2016, HKCEM established the Curriculum Review Group to look into the development of a more well-defined curriculum in which there are detailed illustrations of competence requirement, content of learning, learning experience and assessment. The membership of the group is as follows:

- Dr T W Wong (Chair)
- Dr Abraham Wai (Vice Chair)
- Dr Gordon Wong
- Dr Matthew Tsui
- Dr C L Lau
- Dr Y F Choi

The group has taken references from curricula adopted by other EM colleges and consulted College subcommittees in the process. It builds on the existing training framework of the College and tries to define more clearly the modern requirements of training in EM. The group note that the modern trend in curriculum planning emphasizes more on the outcomes/competencies expected at the end of training than the process. Methods and strategies of learning and assessment should be formulated with such outcomes in mind.

The document has four main sections. The first section describes the learning experience, which is the present framework of training and oversight. We suggest that learning should be trainee-led. The EC has introduced the e-portfolio, which is designed to encourage a learner-centred approach with the support of educational supervisors. The e-portfolio contains tools to identify educational needs, enables the setting of learning goals, and facilitates reflective learning and personal development.

The second section is the outcome/competency-based curriculum. This section of the curriculum outlines the competences in the 6 key areas that trainees must achieve and when that should happen. Since different pathways are available to trainees in entering training and organizing electives, year-by-year milestones are not used. Instead, the two main milestones adopted are completion of basic training and higher training.

The third section describes the content of training in relation to medical knowledge and skill. Since the field of practice for EM is wide, it may not be possible to cover all clinical situations. It is also well known that medical knowledge is doubling in a rapid pace and new contents may need to be added. This section can provide some guidance to trainees and trainers on the more core areas that should be covered.

The final section is on assessment. This is an area that is rapidly evolving and many new assessment tools will be available to us. The traditional HKCEM examinations are mapped to the curriculum and have been used to provide summative assessments of clinical topics in the past. Assessment, however, should be a continuous process in the curriculum. There will be regular appraisal meetings with training supervisors where competence progression as set out within the curriculum and reflected in the e-portfolio will be reviewed. Workplace based assessments are also recommended by the Curriculum Review Group. Other assessment tools may be needed for non-clinical competences e.g. communication, professionalism, management.

As our specialty is evolving all the time, it is envisaged the curriculum will always be a work-in-progress and that regular reviews of the curriculum will be undertaken by the College EC in the future.

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LEARNING EXPERIENCE

The goal of training in emergency medicine is to develop trainees into specialists who are competent to accept and exercise the highest responsibility in the field of Emergency Medicine (EM). The objectives of training in emergency department are to expose the trainees to a wide variety of emergencies and to equip them with adequate knowledge, skills and attitudes to handle these critical events. Trainees will be given increasing responsibilities and exposure to all areas relevant to the practice of EM gradually under supervision by trainers. Trainees should play an active role in their own education and learning should be trainee-led. The EC has introduced the e-portfolio, which is designed to encourage a learner-centred approach with the support of educational supervisors. The e-portfolio contains tools to identify educational needs, enables the setting of learning goals, and facilitates reflective learning and personal development.

There are two phases of training, namely, basic training and higher training. Basic training must include at least one year of accredited EM training. Trainees may sit for the intermediate examination after 24 months of accredited EM training. A basic trainee will become a higher trainee only if he/she has completed the basic training and passed the Intermediate Examination for Emergency Medicine or its equivalent. Trainees must go through three years of recognized training in accredited Emergency Department(s) of which two years must be in the higher training stage.

Rotations outside Emergency Department are required to give trainees a broader perspective of the practice of emergency medicine. It also gives trainees a better appreciation of interdisciplinary approach to patient care with cooperation by different specialties. The rotations will include 6 months in surgical stream and another 6 months in non-surgical stream. This one year mandatory rotations can be arranged during basic or higher training stage, but must be satisfactorily completed before sitting for the Exit Examination.

Different Emergency Departments have their own merits and uniqueness in terms of their capacity and sizes, patient load, case complexity, spectrum of diseases, workflow, and collaboration with other departments within the hospitals. A 6-month mandatory rotation to another accredited EM training center during the higher training stage is required to broaden the exposure of the trainees during clinical maturation.

Trainees have to complete mandatory training courses during basic training stage (BLS, ACLS) and higher training stage (Orthopaedic & Surgical Skill Workshop, Airway Workshop, APLS / PALS, USG Basic course, Disaster Triage & Management Workshop, Basic Toxicology course, Simulation Training course in Emergency Medicine, Literature Appraisal / Evidence Base Medicine Workshop). Different formats of educational activities (e.g. didactic lectures, tutorial, bedside coaching, conference / seminar, x-ray meeting, workshops / drills, audit & research, etc.) are adopted to cover a wide variety of topics in EM. In addition to learning activities organized by the College and ED, trainees are encouraged to pursue their own education at their own paces, for example, using education resources on the web. The College and its trainers could provide some direction in relation to the contents and outcomes.

Primary Examination of Emergency Medicine (PEEM) is an examination to assure adequate basic medical science knowledge as required for emergency medicine training and it mainly emphasizes on applied clinical science for emergency medicine.

Learning Experience

Intermediate Examination in Emergency Medicine (IEEM) mainly focuses on the candidate's clinical competence in the practice of EM including the initial evaluation and management of common clinical conditions in Hong Kong. Trainees have to pass the IEEM to proceed on to higher training.

After at least six years of accredited training, including the mandatory rotations to another accredited EM training centers and other specialties, successful participation in mandatory training courses accredited by the Education Committee of the College, and satisfactory completion of all the training requirements, trainees may sit the Exit Examination for Emergency Medicine (EEEM). The EEEM targets to assess the clinical maturity of trainees up to the standard of an EM specialist who can work independently to provide quality and safe emergency care.

Each trainee will be assigned a training supervisor appointed by the College. The training supervisor is responsible to the College for the proper supervision of trainees under their charge. Each training centre must have a supervisor who own the overall responsibilities to oversee the training of trainees in a training center. Both supervisors and trainers will ensure the provision of adequate teaching activities and career guidance to trainees. Supervisors and trainers also advocate for the welfare of trainees and report on the training progress of trainees under their charge. Training supervisors will submit an assessment report of their trainees to the College every 6 months.

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LEARNING OUTCOMES OF CURRICULUM

The goal of EM training is to produce specialists who can provide effective care of high standard for patients presenting to the Emergency Department. The Hong Kong College of Emergency Medicine has identified 6 key areas of competencies in the education outcome framework:

1. Medical knowledge & clinical skills
2. Patient care
3. Professionalism, law & ethics
4. Education & research
5. Communication, collaboration and interpersonal skills
6. Organizational, planning & management skills

These 'Key competencies' are overarching competencies that enable individuals to provide effective care in different clinical contexts and that contribute to overall success for trainees to become an all rounded specialist. Obviously, not all training activities will include all six domains at the same time. Specific learning experiences for different areas may be required. While the College and its trainers should provide appropriate opportunities for such training e.g. seminars, trainees should also be proactive in its acquisition by self-directed learning. Learning outcomes in these six domains will be defined.

Learning is a continuous process during the 6 years of training. The structure of training at the moment requires a minimum of 3 years of EM and 1 year of mandatory rotation outside EM in accredited training centres. Trainees may enter the training at different points e.g. after completing basic surgical training. Rotations outside EM could also be arranged either during basic or higher training. Since the training path of individual trainees may vary, a year-by-year fixed milestone approach may not be suitable. Thus, it is proposed that only 2 milestones are set i.e. at the end of basic and higher training. Finer year-by-year training milestone could be set by the training supervisor with individual trainees with the aim of meeting the specified learning outcomes for basic and higher training in due course.

DOMAIN 1: MEDICAL KNOWLEDGE & CLINICAL SKILLS

Medical knowledge and clinical skills are the foundation of clinical practice of emergency medicine. Core topics and skills will be listed in the section on content of learning.

After completing basic training, trainees are expected to have acquired medical knowledge and skill to enable them to deal with uncomplicated common presentations in EM in an independent manner. For more complicated or unusual presentations, the trainees should know where to find assistance in a timely manner. Trainees should learn how to use EBM tools to find and appraise medical literature.

After completing higher training, higher trainees should have acquired adequate medical knowledge and skills to handle most of the presentations to the ED. They should have the maturity and resourcefulness to find assistance in a timely manner for rarer or unusual presentations.

The College has specified mandatory courses to build such core competency. Joint clinical meetings organized by the College also provide a venue for the exchange and update of clinical knowledge. Learning on the floor with supervision by trainers would also be an important way of achieving this training objective. Since the knowledge base and skill set required for the practice of EM is so wide, it is impossible to provide instructions for all the aspects. Thus, in addition to learning activities organized by the College and ED, trainees are encouraged to pursue their own education at their own paces, for example, using education resources on the web.

The current College examinations are used to assess medical knowledge and skill of trainees appropriate to their level of training. Trainers will also have chances to provide feedback to their trainees during their day-to-day supervision.

DOMAIN 2: PATIENT CARE

Providing appropriate and effective care for patients presenting to the ED is the core business of all EM specialists.
Trainees will learn to apply proper clinical knowledge and skills with the requisite attitude and behaviour in the whole chain of activities of individual patient encounter:

- Preparation for receiving a critical patient
- Triage and Initial Assessment
- Resuscitation and Stabilisation
- Focused Assessment
- Treatment
- Reassessment and Observation
- Documentation & Handover
- Patient Disposition

On completion of the basic training, the trainees are expected to know how to prepare for the reception of a critical patient in the resuscitation room. They will be able to perform a quick initial assessment to determine if a patient is in a critical condition. They will be able to resuscitate and safely manage a critically ill or injured patient, and seek advice for those patient who are unresponsive to first-line therapy. They should independently assess and treat a single patient who presents with complex multi-system problems and, they will seek advice and assistance with unfamiliar problems. Trainees should be able to document all relevant findings in the record and communicate a plan of action during handover. They should be able to dispose patients with common presentations safely and discuss with seniors for more complicated cases.

On completion of the Higher Training, the higher trainees will use their medical knowledge and skills to deliver safe and effective care to any patient in the emergency medical setting. They should know when consultations with other specialists is needed. They should provide advice and assistance to junior doctors.

Learning in relation to knowledge and skill has been discussed in Domain 1 above. Good patient care will require more than just technical knowledge and skill. Other attributes like caring attitude, good communication skill and time management are also important. Thus, learning on the floor will be important and mentoring by trainers is essential.

The present College intermediate and exit examination are useful to assess patient care to a certain extent. Regular assessment and feedback by the trainers at the workplace e.g. chart review, shadowing etc will serve an important role also.

DOMAIN 3: PROFESSIONALISM, LAW & ETHICS

Our society has a high expectation of medical professionals. In addition to being an expert in our special field of medicine, doctors are expected to abide by the laws and practice within accepted ethical principles. Thus, professionalism, law and ethics are often intertwined.

The Code of Professional Conduct of the HK Medical Council (2016) states that doctors should "committed to maintaining high standards of proper conduct and good practice to fulfill doctors' moral duty of care." We also need to keep up with changing expectations as "The Code marks the profession's commitment to integrity, excellence, responsibility, and responsiveness to the changing needs of both patients and the public in Hong Kong".

At a personal development level, there is more recognition in recent years that doctors should also take care of themselves to prevent burnout. A good work/life balance is conducive of professional longevity and also better care to patients.

All trainees are expected to show compassion, respect and humility in patient care. They will discharge their duties responsibly and be accountable.

On completion of Basic Training, the trainee will be familiar with the code of professional conducts in Hong Kong and the International Code of Medical Ethics especially in the context of EM practice. The trainees should demonstrate an understanding of common medico-legal issues in the practice of EM. In more complex cases, the trainee will seek advice from a senior.

On completion of Higher Training, the trainee will be familiar with most of the medico-legal and ethical issues common in EM practice. The trainees should keep current with local developments in pertinent ethical issues (e.g. end of life care). In more complicated clinical scenarios, trainees should know where to find expert assistance and to perform in the best interests of their patients and colleagues.

There are different ways trainees could learn the legal framework of EM practice e.g. by seminars or case studies. Trainers could also provide guidance to trainees on a day-to-day basis on the handling of such issues e.g. writing medical report, giving evidence in courts. Likewise, ethical principles could be learned by seminars, case discussions and self-reflection. Professional behaviour could be modelled with good mentors. Trainers should be aware of their role as role models.

Feedback by peers and trainers could be used as a way to assess professional attitude and behaviour. Medico-legal principles could potentially be assessed also in the College examinations.

DOMAIN 4: EDUCATION & RESEARCH

Specialist in emergency medicine will maintain and enhance their professional competences through a lifelong commitment to continuing medical education and professional development. Thus, all trainees should cultivate this habit of self-directed learning. In this information age, all trainees should be proficient in finding relevant resources and appraise them in a scientific manner. Teaching is the other side of the coin of learning. Trainees are expected to become teachers as well in their maturation process. Creating new knowledge by performing researches and translating research findings into clinical practice is also a valuable asset for an EM specialist.

On completion of Basic Training, the trainee will be will be able to direct their immediate and future learning. They will be proficient in retrieving references to guide both self-education and patient care. They will master the skill of using EBM approach to appraise literature and adopt them in evidence-based practice. They will create and address meaningful research questions. They will master the basic skills of presentation and teaching clinical skills in relation to EM practice.

On completion of Higher Training, the trainees will be familiar with the process of creation, translation, application and dissemination of medical knowledge. They will be proficient in teaching juniors and providing appropriate feedback to them. They should be able to undertake a research project as the principal investigator.

In this age of free open access medical education, there is no lack of resources on the internet for trainees. It is important that trainers would encourage trainees to be proactive in setting their own education goals and cultivate a habit of lifelong learning. This can be reflected in the e-portfolio. Trainers will guide trainees in relation to gaps in their knowledge. The College is organizing a course in EBM focusing on skill on literature appraisal. Trainees will reap benefit from the course.

Learning to teach is a skill that can be learned by various methods e.g. workshops. Many established courses e.g. ACLS also have instructor courses where teaching skills are taught. It is important that trainer should provide opportunities to trainees to engage in teaching activities in their departmental education activities. Trainers should provide feedback to trainees after teaching sessions to help hone their teaching skills.

The College has organized a series of seminars in research to help trainees in their research projects. Trainers should also provide guidance in the actual implementation of the research projects. The research project will be vetted after completion by the Education Committee as a form of assessment.

DOMAIN 5: COMMUNICATION, COLLABORATION & INTERPERSONAL SKILLS

EM specialists have to interact with patients, relatives, and other providers who they may not have known before. The ability to relate to people and gain their trust quickly is an important attribute of doctors working in ED. Good listening and communication skills are essential. Effective communication is particularly challenging in Emergency Medicine where multiple exchanges occur with different people in a busy environment.

Emergency Medicine is a team sport and EM specialists need to be a good team player both as a member and a leader. Collaboration with other health care providers is of pivotal importance both within and beyond the Emergency Department. Interpersonal skills thus are crucial to effective teamwork and collaboration in Emergency Department.

On completion of Basic Training, the trainee will be effective in building rapport with patients and relatives quickly in most cases. They should be sensitive to the cultural differences of patients. They will have an expanded skill repertoire to adapt their communication in most circumstances. The trainee will be able to deliver bad news in most situations and seek assistance in more complicated situations. The trainee will be able to communicate effectively with colleagues from other disciplines. The trainee will be able to function as an effective team leader in most clinical scenarios. They should demonstrate confidence and flexibility in adapting to any team member role as directed to treat any emergency patient.

On completion of Higher Training, higher trainees will be effective in communicating with all types of patients presenting to the ED. They can establish optimal rapport and gain cooperation of patients and relatives effectively in more complex circumstances. They will be able to advise and assist juniors in some difficult or complicated encounters and help resolve conflicts with patients or co-workers. They will demonstrate the ability to communicate with the public e.g. media. They can both lead and participate in an inter-professional team dealing with critical cases, particularly at times of high stress.

Communication and teamwork training could take different forms and simulation exercises e.g. crew resources management have been employed in many hospitals to improved such skills. Clinical courses like ACLS also stressed the importance of teamwork and communication. Trainers can be effective role models

and mentors in the daily encounter of patients who may present with various challenging issues in communication. Mediation and negotiation training workshop could also be effective.

Assessment of communication, collaboration and teamwork at the workplace by trainers and peers would be a more effective approach. Feedback in teamwork e.g. during resuscitation can be given by trainers as part of the debriefing for individual trainees.

DOMAIN 6: ORGANIZATIONAL, PLANNING & MANAGEMENT SKILLS

As EM specialists are working in a hospital setting and most will be within the public system, an adequate knowledge about the organization is essential to effective functioning. This maybe in relation to services e.g. burn centre designation or isolation facilities during outbreak. Hospital policies in relation to patient safety e.g. incident report is obviously relevant to EM practice. There are many hospital policies, rules and regulations that one should abide.

Trainees should also learn more about the running of the ED. Knowing how the ED operates is the first step in the process of trying to improve the service further. Other managing functions that trainees should know include management of crises (e.g. disasters), handling of adverse incidents and patient complaints. As future leaders in the field of EM, trainees are expected to learn to be managers as well as clinical leaders.

On completion of Basic Training, trainees will be familiar with policies, rules and regulations of the hospital system especially those that have an impact on patient care in the ED. They would know where to find assistance or information in less common situations. They should be able to manage the shop floor with remote senior support when the occasion calls for it. The trainee will be able to supervise the clinical work of other junior doctors working on their shift. The trainee will be able to participate in management initiatives e.g. audits with supervision.

On completion of Higher Training, higher trainees will be familiar with the policies, rules and regulations of the hospital as well as the wider organization of the healthcare system in Hong Kong. They should have a thorough understanding of the operation of the ED and be able to lead, supervise, and manage care within the ED to ensure optimal patient safety and outcomes. They should have good understanding of contingency plans of the hospital and ED and can take up leadership role in mass casualty incidents. They should demonstrate understanding of management principles and can actively participate in management initiatives e.g. quality improvement projects both as members and leaders.

Knowledge about the organization is usually provided during the induction programme. Policies, rules and regulations are often learned on the job with guidance from trainers. More exposures are available through local seminars and conferences e.g. the Annual HA convention. ED management and leadership can be learned by seminars, workshop etc. The best way to learn is through participating in an actual management project under supervision.

Assessment and feedback by trainers at the workplace is probably more practical. For management project reports, assessment by a trainer from another ED is also feasible. Issues in relation to the management of the ED could also be assessed at the exit examination.

Appendix 1

SYMPTOM

PRESENTATIONS LIST

This list represents the vast majority of presentations that trainees are likely to encounter in daily clinical practice. The purpose for the creation of this list is to explicitly state that the core business for EM specialists is the assessment of patients with undifferentiated clinical presentations. It is expected that trainees and educators will use this list to guide training, and that trainees will link these presentations to diagnoses through the integration of clinical experience and theoretical knowledge.

The list is categorized to reflect real clinical practice. EM specialists will screen for life/limb/sight threatening conditions (ABCDE approach) in all patients before further assessment, and thus presentations that are more indicative of a life/limb/sight threatening diagnosis are listed first. It is recognized that some presentations may also be not immediately threatening, so to reflect that some are listed in more than one category in the list.

These presentations may affect only one anatomical or physiological system, or multiple systems. This list does not attempt to define presentations in different systems separately. However, if the presentation affects multiple systems (for example, multi-trauma) the presentation should be considered of increased complexity (see modifiers list).

Presentation classification	Presentations
ABC --Cardiorespiratory	Airway compromise/ stridor Apnoea Cardio respiratory arrest Chest pain Dyspnoea Haemorrhage Hypotension Major limb injury Major torso (neck/chest/abdomen/pelvis) injury Palpitations
D --Neurological and behavioural	Acute altered sensation Acute dizziness and vertigo Acute confusion/disorientation Acute headache Acute non-specific pain Acute weakness Agitation/ aggression Altered conscious state Acute psychosis Major head/spinal injury Syncope Seizure
E--Environmental and Exposure	Bite/sting by venomous creature Hyperthermia Hypothermia Major burn Toxic ingestion or exposure

Alphabetical list of other presentations	Abdominal pain/distension Abnormal test results Alleged assault Altered motor function Altered mood Altered sensation Anxiety Behaviour Disturbance Bite/sting Bleeding Breathing difficulty Burn Collapse Complications of treatment/procedure Confusion/disorientation/altered behaviour Constipation Contusion Cough Deformity Dehydration Delusion Diarrhoea Discharge/exudate Dizziness Drug/Medication related presentation Falls/unsteadiness Feeding problems Fever Foreign body Headache Hypertension Infection/ infestation Jaundice Lethargy Limb Injury Limp Lump Mobility/Movement Problems Pain Pregnancy Poisoning Rash Skin lesion Social crisis Speech disturbance Sprain/Strain Suicide Swelling/oedema Urinary dysfunction Visual loss/disturbance Vomiting Weakness Weight loss Wound / Injury

MODIFIER

Trainees are expected to take up more complex and complicated patients gradually during their training. Trainers will give trainees more responsibility appropriate to their level of competency.

Most often modifying factors will transform a patient's presentation from simple to complex. This list is designed to suggest factors that may increase levels of complexity for that case. There may be more than one factor involved in a single presentation, which creates more challenge to the EM specialists to identify all the problems involved, and to summarize them into key issues that must be managed, whilst concurrently and dynamically formulating a differential diagnosis and management plan.

This list does not intend to be exhaustive list, but has enough examples to guide the trainees in how to conceptualise why a presentation is complex. The trainee is advised to consider and synthesize all these modifying factors when assessing a patient, in order to produce a safe and appropriate management and disposition plan. For the less experienced trainees, it also helps to indicate when assistance from a senior should be sought.

Category	Modifiers	Challenges
Age	Neonate	More subtle presentations– e.g. meningitis
	Child	May not cooperate with clinical assessment Need to remember a child is not a small adult
	Elder	Limited physiological reserve – e.g. cardiac failure due to viral respiratory infection More co-morbidities Polypharmacy—increased chances of drug interactions – e.g. high INR due to warfarin and antibiotic
Body weight	Overweight	Potential difficult airway Altered drug dose
Psycho-social factors	Occupation	Ability to return to work – e.g. fractured finger in musician
	Culture/Religion	Expectations and beliefs of health systems – e.g. Jehovah's Witness and blood transfusion
	Financial status	Ability to afford self-financing items – e.g. drugs, imaging
	Legal status	Requires collaboration with other patient stakeholders – e.g. mentally incompetent patients
	Home supports	Available resources to support discharge – e.g. family to do groceries for a patient with broken ankle
	Home environment	Affects patients with altered mobility – e.g. no lift
	Homeless	Safety for discharge – e.g. mod severity pneumonia
	Distance from home to hospital	Ease of returning in the event of deterioration – e.g. acute asthma
	Tourist / Migrant worker	Different disease pattern e.g. malaria, tuberculosis
	Alcohol/ Illicit drug use	Clinical assessment more complex – e.g. unreliable history and suicide risk
Communication	Language barrier	Pitfalls in clinical assessment --Interpretation may not be accurate

	Mentally incompetent persons	Caretakers may not be available or familiar with the patient's health conditions
	Receptive/ expressive difficulties	Increased requirement for collateral assessment – e.g. stroke patient
Behaviour	Agitated or aggressive	Evaluation may be difficult in uncooperative patient
	Psychiatric patient-emotional distress	Consideration of medical vs psychiatric cause of presentation – e.g. temporal lobe epilepsy
	Multiple complaints	Need to identify the most important problem and prioritize treatment
Circumstance of presentation	Frequent attenders	Cognitive bias in clinical decision
	Re-attendance	Increased risk of diagnosis bias – e.g. anchoring on previous diagnosis which may be incorrect
	Referral by other doctors or institutions	Not all information are available in some cases e.g. patient returning from mainland China
Pre-existing health issues	Pregnancy	Altered differential diagnosis and management Drug safety in pregnancy Need to consider status of fetus
	Immunosuppressed	Occult pathology – e.g. Transplant patients and sepsis
	Existing medical condition	Choice of medication/dosage may be altered – e.g. Chronic renal disease
	Congenital condition	Altered management – e.g. G6PD
	Allergies	Choice of investigation/treatment – e.g. iodine allergy
	Infectious status	Protection of self and others – e.g. Active tuberculosis
Investigations	Uncooperative patient	Imaging may not be possible or image quality affected
	Unavailable	Limited access to CT imaging – e.g. night shift, public holiday
Clinical Treatment	Failure to respond to first line interventions	Seizure not responding to first line drug
	Treatment not available in house	Need to plan for transfer to other facilities e.g. burn
Performance of Procedures	Unusual anatomy	Selection of alternative procedures – e.g. 'awake' intubation in predicted difficult airway
	Unusual physiology	Bleeding risk in patient on warfarin
	Uncooperative	Child, MIP
	No consent	Recognition of life/limb/sight threatening procedures – e.g. urgent fracture reduction
Disposition	Limited personal resources available	Elderly patient living along may not cope at home after discharge
	Communicable disease	Measures to prevent spreading of disease

Admission	Patient surges	Availability of resources
	Exit Block	Ongoing assessment of boarded patient in case of deterioration
	Hospital resources	Affects decisions regarding care/transfer – e.g. transfer out vs ED observation ward
	Multiple team liaisons	Need to co-ordinate the different providers to meet the emergent needs – e.g. coma patient requiring different consults

Appendix 2

INVESTIGATION

Investigations commonly used in the ED include laboratory studies (blood, urine etc), ECG, imaging (plain x-ray, CT, ultrasound) and trainees are expected to master the interpretation of such data. In addition to be able to choose the correct investigation, trainees should be able to incorporate the results in decisions in relation to patient care. Initially, basic trainees may need to be supervised or consult their senior in performing or interpreting the chosen studies. As training progresses, trainees will become independent and at the end of training be proficient in the interpretation of most investigation modalities commonly used in EM.

Competence Level	Description
Under supervision	The trainee will demonstrate a reasonable degree of accuracy in describing and analyzing the investigation and will seek confirmation by a senior. The trainee will frequently supplement their knowledge of the investigation with the use of references.
Independent	The trainee will demonstrate a **reasonable** degree of accuracy in describing and analyzing the investigation in all common cases, and consult a senior in more complex cases. The trainee will supplement their knowledge of the investigation with the use of references and/or assistance from their colleagues.
Proficient	The trainee will demonstrate a **high** degree of accuracy in describing and analyzing the investigation in all cases. The trainee will sometimes need to supplement their knowledge of the investigation with the use of references and/or assistance from their colleagues.

INVESTIGATIONS	Competence level a trainee should attain by the end of BASIC training	Competence level a trainee should attain by the end of HIGHER training
12 lead ECG patterns or patterns on ECG rhythm strip		
ECG: screening of adult patient for possible ACS	**Proficient**	**Proficient**
ECG: identification of obvious cause of syncope/palpitations e.g. heart blocks, PSVT, VT	**Proficient**	**Proficient**
ECG: identification of other cause of syncope/palpitations e.g. congenital conduction abnormalities, different types of WCT	**Independent**	**Proficient**
ECG: identification of life-threatening electrolyte or toxicology abnormalities	**Proficient**	**Proficient**

e.g. hyperkalemia, tricyclic antidepressant		
ECG: screening of paediatric patients with possible abnormal ECG	**Independent**	**Proficient**
ECG: identification of other medical problems *e.g. temperature, calcium, digoxin*	**Proficient**	**Proficient**
Bedside functional investigations		
Peak Flow Meter measurement	**Proficient**	**Proficient**
pH testing of eye tears	**Proficient**	**Proficient**
Plain radiology images		
CXR (all views)	**Proficient**	**Proficient**
Cervical Spine	**Proficient**	**Proficient**
Thoracolumbar Spine	**Proficient**	**Proficient**
Pelvis	**Proficient**	**Proficient**
Extremities	**Proficient**	**Proficient**
AXR (all views)	**Proficient**	**Proficient**
Facial (all other views)	**Independent**	**Proficient**
Soft tissue neck	**Proficient**	**Proficient**
Paediatric CXR/AXR/Cervical Spine/ Pelvis	**Independent**	**Proficient**
Paediatric extremities	**Independent**	**Proficient**
CT images		
CT head (plain): life-threatening cause of abnormal neurology *e.g. Haemorrhage, mass effect, skull fracture*	**Proficient**	**Proficient**
CT head (+/- contrast): other important acute findings *e.g. Mass lesion, hydrocephalus, pneumocephalus*	**Independent**	**Proficient**
CT face and orbits *e.g. Fracture*	**Independent**	**Proficient**
CT thorax (+/- contrast) – important acute findings *e.g. Fracture, pneumothorax, haemothorax, infiltrative process, effusion or dissection*	**Independent**	**Proficient**
CT Spine *e.g. Identification of fracture*	**Independent**	**Independent**
CT kidneys, ureters, bladder *e.g. identification of calculus, signs of obstruction, AAA*	**Proficient**	**Proficient**

CT abdomen/pelvis *e.g. Identification of organ perforation/laceration, mass lesion, inflammatory process, major vessel dissection or rupture*	**Independent**	**Independent**
CT other bones (neck of femur, foot, ankle) *e.g. Identification of fracture or mass lesion, or disrupted anatomy*	**Independent**	**Independent**
CT Aortogram, CTPA *e.g. Identification of massive pulmonary embolus or obvious aortic dissection*	**Independent**	**Proficient**
Ultrasound		
Renal Ultrasound *For stone, hydronephrosis*	**Proficient**	**Proficient**
Pelvic ultrasound *First Trimester intrauterine pregnancy*	**Proficient**	**Proficient**
AAA ultrasound *Identification and localisation of abdominal aortic aneurysm*	**Proficient**	**Proficient**
EFAST ultrasound *Identification of intraperitoneal free fluid, haemothorax, pneumothorax or cardiac tamponade*	**Independent**	**Proficient**
Hepatobiliary ultrasound *For gall stone, cholecystitis*	**Independent**	**Proficient**
Basic Echo *Identification of cardiac activity during resuscitation, pericardial effusion, IVC*	**Independent**	**Proficient**
Echocardiogram *Heart chamber size, function, valve, regional wall motion*	**Under Direct Supervision**	**Independent**
Pelvic ultrasound *For gyne pathologies*	**Under Direct Supervision**	**Independent**
Doppler for DVT	**Under Direct Supervision**	**Independent**
Soft Tissue Ultrasound *Presence or absence of foreign body or abscess*	**Under Direct Supervision**	**Independent**
Lung ultrasound *Identification of pleural/ pulmonary pathology*	**Under Direct Supervision**	**Independent**
Ultrasound for ruptured tendons and joints	**Under Direct Supervision**	**Independent**

Laboratory Investigation		
Blood Gas Analysis (arterial and venous) and co-oximetry	**Proficient**	**Proficient**
Full Blood Count (Hb, MCV, WCC and diff, Plt)	**Proficient**	**Proficient**
Blood film, including malaria thick and thin films	**Proficient**	**Proficient**
D-Dimer	**Proficient**	**Proficient**
INR, APTT,	**Proficient**	**Proficient**
Fibrinogen, Fibrinogen degradation products	**Proficient**	**Proficient**
Blood Glucose (bedside and formal)	**Proficient**	**Proficient**
Electrolytes, Urea, Creatinine	**Proficient**	**Proficient**
Creatinine Kinase	**Proficient**	**Proficient**
Calcium, Magnesium, Phosphate	**Proficient**	**Proficient**
Erythrocyte sedimentation rate, C-reactive protein	**Proficient**	**Proficient**
Cardiac enzymes	**Proficient**	**Proficient**
Quantitative bHCG	**Independent**	**Proficient**
Serum osmolality	**Independent**	**Proficient**
Serum Lactate	**Proficient**	**Proficient**
Liver Function Tests, Amylase, Lipase	**Proficient**	**Proficient**
Paracetamol levels	**Proficient**	**Proficient**
Other drug levels	**Proficient**	**Proficient**
Toxicology screening (Urine, Blood)	**Independent**	**Proficient**
Urine Dipstick and bHCG	**Proficient**	**Proficient**
Urine osmolality, urinary sodium	**Independent**	**Proficient**
Microbiology culture results	**Proficient**	**Proficient**
Microbiology specific antigen results (PCR), Malaria detection tests	**Proficient**	**Proficient**
Viral serology tests (EBV, CMV, Hepatitis, HIV, varicella)	**Independent**	**Proficient**
Body fluid analysis (CSF, joint, pleural, peritoneal)	**Independent**	**Proficient**

PROCEDURE LIST

Trainees are expected to have acquired the theoretical knowledge before embarking on a procedure. They should demonstrate understanding of the indications, contraindications and complications of a procedure. They will progress gradually from observer, performer to demonstrator of such procedures as they mature. The following list consists only of common procedures performed in the ED and is not exhaustive.

Competence Level	Description
Under supervision.	The trainee will be able to perform the procedure with a trainer present to observe or assist.
Independent	The trainee will be able to perform the procedure without direct supervision. The trainee may need to seek advice or assistance in less than ideal situations.
Proficient	The trainee will be able to perform the procedure with ease and be able to adapt their technique when performing in non-ideal situations. The trainee will be able to demonstrate and teach the procedure to a junior colleague.

PROCEDURE	Competence level a trainee should attain by the end of BASIC training	Competence level a trainee should attain by the end of HIGHER training
Infection Control		
Aseptic and sterile technique	**Proficient**	**Proficient**
Use of appropriate personal protective equipment	**Proficient**	**Proficient**
Airway		
Simple airway manoeuvres (chin lift, jaw thrust, head tilt, positioning) in an adult or a child	**Proficient**	**Proficient**
Insertion of oropharyngeal or nasopharyngeal airway	**Proficient**	**Proficient**
Insertion of a supraglottic airway device	**Proficient**	**Proficient**
Direct laryngoscopy, Insertion of oral ETT, use of bougie	**Proficient**	**Proficient**
RSI technique	**Independent**	**Proficient**
Video laryngoscopy	**Independent**	**Proficient**
Securing and caring for ETT including during transport	**Proficient**	**Proficient**

Insertion of cricothyroid needle and jet insufflation of oxygen, in an adult or a child	**Under Direct Supervision**	**Independent**
Perform a cricothyroidotomy	**Under Direct Supervision**	**Independent**
Emergency replacement of blocked or dislodged tracheostomy tube	**Under Direct Supervision**	**Independent**
Breathing		
Spirometry and Peak Flow measurement	**Independent**	**Proficient**
Use of oxygen delivery devices	**Proficient**	**Proficient**
Use of self-inflating bag for ventilation	**Proficient**	**Proficient**
Use of adult non-invasive ventilation device	**Proficient**	**Proficient**
Setting up a transport ventilator	**Proficient**	**Proficient**
Decompression needle/finger thoracostomy	**Proficient**	**Proficient**
Pleurocentesis	**Proficient**	**Proficient**
Tube thoracostomy	**Proficient**	**Proficient**
Circulation & Fluid Management		
Adult, Paediatric and Infant External Chest Compressions	**Proficient**	**Proficient**
Defibrillation	**Proficient**	**Proficient**
DC Cardioversion	**Independent**	**Proficient**
External pacing	**Independent**	**Proficient**
Central catheter and rapid infusion	**Independent**	**Proficient**
Intraosseous access	**Proficient**	**Proficient**
Arterial line insertion	**Proficient**	**Proficient**
Preparation & operation of transport monitoring equipment	**Proficient**	**Proficient**
Emergency pericardiocentesis	**Under Direct Supervision**	**Independent**
Insertion of an adult urinary catheter (female and male)	**Proficient**	**Proficient**
Insertion of an infant urinary catheter (female and male)	**Proficient**	**Proficient**
Suprapubic aspiration of urine in an infant	**Independent**	**Proficient**
Abdominal paracentesis	**Proficient**	**Proficient**
Insertion of oesophageal &	**Independent**	**Proficient**

gastric balloon devices		
Disability		
Sizing and application of a rigid cervical collar	**Proficient**	**Proficient**
In-line cervical spine immobilisation	**Proficient**	**Proficient**
Full spinal immobilisation, log roll, and transfer	**Proficient**	**Proficient**
Fracture Reduction -- Wrist	**Proficient**	**Proficient**
Joint reduction - Digits	**Proficient**	**Proficient**
Joint reduction – Shoulder, elbow, patella, ankle	**Proficient**	**Proficient**
Joint reduction – Hip, knee	**Under supervision**	**Independent**
Fracture/Joint immobilisation - Removable Splint application	**Proficient**	**Proficient**
Fracture/Joint immobilisation – Backslab application	**Proficient**	**Proficient**
Application of sling/ collar and cuff	**Proficient**	**Proficient**
Application of a pelvic binding device	**Proficient**	**Proficient**
Application of traction splinting devices	**Proficient**	**Proficient**
Arthrocentesis (knee)	**Proficient**	**Proficient**
Arthrocentesis (other joints)	**Independent**	**Independent**
Sedation & Anaesthesia		
Administration of procedural sedation	**Independent**	**Proficient**
Administration of chemical restraint	**Independent**	**Proficient**
Use of topical anaesthesia	**Proficient**	**Proficient**
Direct infiltration of local anaesthetic	**Proficient**	**Proficient**
Digital Nerve Block	**Proficient**	**Proficient**
Haematoma block	**Independent**	**Proficient**
Wound Care		
Basic skin suturing techniques	**Proficient**	**Proficient**
Alternate skin closure (eg. tissue adhesive, staples)	**Proficient**	**Proficient**
Wound exploration, cleaning, irrigation, and debridement	**Proficient**	**Proficient**
Superficial open wound dressing	**Proficient**	**Proficient**
Burn first aid	**Proficient**	**Proficient**
Primary burn dressing	**Proficient**	**Proficient**

Minor Surgical		
Removal of superficial & subcutaneous foreign bodies	**Proficient**	**Proficient**
Incision and drainage of simple, superficial abscesses	**Proficient**	**Proficient**
Drainage of a paronychia	**Proficient**	**Proficient**
Drainage of a subungual haematoma	**Proficient**	**Proficient**
Incision and drainage of a thrombosed external haemorrhoid	**Independent**	**Independent**
O&G		
Vaginal speculum insertion	**Proficient**	**Proficient**
Removal of products of conception from cervical os	**Independent**	**Proficient**
Use of foetal doppler	**Proficient**	**Proficient**
Spontaneous vaginal delivery	**Independent**	**Proficient**
Microbiology		
Collection of blood culture	**Proficient**	**Proficient**
Paediatric non-invasive urine collection	**Independent**	**Proficient**
Collection of swabs	**Proficient**	**Proficient**
Nasopharyngeal aspirate collection	**Independent**	**Independent**
ENT		
Removal of nasal foreign bodies	**Proficient**	**Proficient**
Removal of aural foreign bodies	**Proficient**	**Proficient**
Removal of throat foreign bodies	**Proficient**	**Proficient**
Nasal speculum insertion	**Proficient**	**Proficient**
Anterior nasal packing	**Proficient**	**Proficient**
Posterior nasal packing	**Independent**	**Proficient**
Eyes		
Removal of conjunctival foreign bodies	**Proficient**	**Proficient**
Removal of corneal foreign bodies	**Independent**	**Proficient**
Direct ophthalmoscopy	**Independent**	**Proficient**
Tonometry	**Proficient**	**Proficient**
Eye irrigation	**Proficient**	**Proficient**
Application of an eye pad or shield	**Proficient**	**Proficient**
Dental		

Joint reduction: Temporomandibular joint	**Independent**	**Proficient**
Reposition of avulsed / extruded / intruded / laterally injured tooth	**Independent**	**Independent**
Temporary stabilisation of injured tooth	**Independent**	**Independent**
Haemostasis following dental extraction	**Independent**	**Independent**
Ultrasound-guided		
Peripheral Vascular Access	**Independent**	**Proficient**
Central Vascular Access	**Independent**	**Proficient**
Ultrasound guided nerve blocks	**Under Direct Supervision**	**Independent**
Tapping of distended bladder	**Independent**	**Proficient**
Foreign body identification and removal in soft Tissue	**Independent**	**Proficient**
Toxicology		
Pressure immobilisation Bandage	**Proficient**	**Proficient**
Gastrointestinal decontamination	**Independent**	**Proficient**
Whole Bowel Irrigation	**Independent**	**Independent**
Environmental		
Basic cooling techniques (external and IV fluids)	**Proficient**	**Proficient**
Basic warming techniques (external and IV fluids)	**Proficient**	**Proficient**

CONTENT OF LEARNING

TABLE OF CONTENTS

Note: Items in this section marked with asterix (*) are not regarded as core topics in Emergency Medicine

1. PRINCIPLES OF EMERGENCY MEDICINE

1.1 Definitions and Background

a. Emergency medicine
b. Emergency department
c. Emergency physician

1.2 Development of Emergency Medical Services

a. History of development of emergency medicine in Hong Kong
b. History of emergency medicine in other countries

1.3 Triage

a. Principles of triage
b. Triage system & guidelines in local emergency department

1.4 Patient care

a. Commitment to deliver patient-centered care
b. Ability to build own knowledge base and think analytically and critically in clinical practice
c. Ability to provide timely and appropriate management of patients including initial assessment, diagnosis, treatment, managing complications and rehabilitation
d. Ability to perform procedures/operations in accordance with local guidelines, and ability to use modern technology effectively

2. RESUSCITATION

2.1 Airway

a. Basic airway maintenance techniques
b. Emergency airway management
c. Identification of the difficult and failed airway
d. Oxygen delivery systems
e. Bag mask ventilation
f. Endotracheal intubation and rapid sequence intubation
g. Alternative/different airway techniques
    i. Laryngeal mask
    ii. Combitube
    iii. Supraglottic devices
    iv. Flexible fiberoptic intubation *
    v. Video laryngoscopy *
    vi. Blind intubation *
    vii. Awake intubation *
h. Surgical airway techniques
    i. Needle/Seldinger/surgical cricothyroidotomy *
    ii. Tracheostomy *
i. Pharmacology of airway management
    i. Pretreatment agents
    ii. Sedative and induction agents
    iii. Neuromuscular blocking agents
j. Monitoring
    i. Confirming endotracheal tube position
    ii. Capnography
    iii. Pulse oximetry

2.2 Life Support

a. Pathophysiology of cardiac arrest
b. Basic life support
    i. CPR
c. Advanced life support
    ii. Recognition of reversible causes of cardiac arrest
    iii. algorithms and pharmacology
    iv. Beside ultrasound aided resuscitation *
    v. E-CPR: indication, contra-indication and use *
d. Defibrillation
e. Post- arrest care in emergency department
f. Special arrest situations
    vi. Toxicology in emergency cardiovascular care *
    vii. Paediatric *
    viii. Pregnancy *

ix. Trauma
x. Drowning
xi. Hypothermia *
xii. Electrical current and lightning injury
xiii. Severe, life-threatening asthma
xiv. Anaphylaxis
xv. Out-of-hospital

2.3 Haemodynamic & Respiratory Monitoring

a. Clinical vital signs (BP, pulse, RR, temp, SpO2)
b. Non-invasive monitoring
c. Invasive monitoring *
d. Mechanical ventilation
    i. Ventilator used in local emergency department
    ii. Mechanical ventilation with normal respiratory physiology
    iii. Mechanical ventilation in abnormal respiratory physiology & traumatic brain injury *
    iv. Non-invasive ventilation – indication & contra-indication
    v. Non-invasive ventilation – practical use in different scenarios *
    vi. Monitoring – Adequate ventilation & oxygenation
    vii. Monitoring – capnography, ultrasound & etc *
e. Tracheal suctioning
f. Extubation *

2.4 Shock

a. Pathophysiology
    i. Cardiogenic
    ii. Hypovolemic
    iii. Distributive
    iv. Obstructive
    v. Dissociative
b. Intravenous fluid therapy
    i. Types of fluid
    ii. High volume intravenous infusion techniques
    iii. Blood component therapy (e.g. PCC, clotting factors, fresh frozen plasma etc) *
c. Peripheral venous access
    i. Accessing indwelling vascular devices
    ii. Vascular access techniques in infants & children
d. Central venous access
    i. Axillary / Subclavian
    ii. Internal jugular
    iii. Femoral
    iv. Cubital *
e. Central venous pressure measurement

f. Alternative venous access
   i. Intraosseus
   ii. Peripheral venous cutdown *

g. Inotropes and vasopressors
   i. Pharmacology
   ii. Use of vasoactive medications in different disease states *

h. Arterial puncture & cannulation *

i. Advanced hemodynamic (e.g. arterial lines, echo, etc.) monitoring modalities *

j. Ultrasound (incl. echocardiography) assessment *

k. Trauma induced coagulopathy and its management *

l. Basic understanding of advanced coagulation derangement and modality for monitoring (e.g. TEG) *

2.5 Sepsis

a. Definitions

b. Clinical features of sepsis

c. Initial management of severe sepsis and septic shock

d. Appropriate use of antibiotics

2.6 Coma

a. Physical examination of the comatose patient

b. Care of the comatose patient

b. Brain death & organ donation *

2.7 Age-specific Differences

a. Neonatal

b. Infant

c. Paediatric

d. Elderly

2.8 Breaking Bad News

2.9 Appropriate referral and handover to intensive care facilities

3. ANALGESIA, ANAESTHESIA & SEDATION IN EMERGENCY MEDICINE PRACTICE

3.1 Pain Management

a. Acute pain management
   i. Common analgesic drugs
   ii. Methods of delivery
   iii. Adjuncts
   iv. Trauma pain management
   v. Burn pain management

b. Breakthrough pain in Chronic pain condition

c. Pain assessment and pain scores

d. Pain medicine service

3.2 Local Anaesthesia Techniques

a. Local anaesthetic pharmacology and toxicity

b. Management of toxicity of local anaesthetics *

b. Regional nerve blocks
   i. Digital
   ii. Wrist
   iii. Femoral *
   iv. Facial *
   v. Foot *

c. Intravenous regional anaesthesia *

d. Local anaesthetic adjuncts and alternatives *

3.3 Procedural Analgesia and Sedation

a. Safe conduction of procedural sedation in
   i. normal adult patients
   ii. patients with co-morbidities, pregnancy or in children *

b. Management of complication from procedural sedation (e.g. laryngospasm, desaturation, etc) *

c. Pharmacology
   i. Commonly used sedatives & their antagonists
   ii. Commonly used analgesic drugs

4. MEDICAL & SURGICAL EMERGENCIES

4.1 Cardiovascular Emergencies

a. Clinical examination of the cardiovascular system
b. Interpretation of symptoms and clinical signs of the cardiovascular system
c. Acute coronary syndromes (ACS)
    i. Approach to the patient with chest pain
    ii. Prehospital management
    iii. Low-risk chest pain
    iv. Stable angina
    v. Unstable angina
    vi. Myocardial infarction
    vii. Right ventricular myocardial infarction
    viii. Thrombolysis in myocardial infarction
    ix. Left ventricular failure and cardiogenic shock in myocardial infarction
    x. Interventional cardiology in acute coronary syndromes
    xi. Pharmacological agents used in acute coronary syndromes
    xii. Interpreting the ECG in the setting of acute coronary syndromes
    xiii. ST elevation in the absence of myocardial infarction
    xiv. Chest pain pathways
d. Syncope
    i. Differential diagnosis
    ii. Identification of at-risk groups
    iii. Management and disposition
e. Congestive cardiac failure
f. Valvular disorders
    i. Aortic
    ii. Mitral
    iii. Tricuspid
    iv. Pulmonary
    v. Conditions that are associated with valvular disorders
g. Disorders of the myocardium
    i. Cardiomyopathy
    ii. Aneurysm
    iii. Atrial septal defect
    iv. Ventricular septal defect
    v. Dextrocardia
h. Disorders of the pericardium
    i. Acute pericarditis
    ii. Constrictive pericarditis
    iii. Pericardial effusion
    iv. Pericardial tamponade
    v. Pericardiocentesis
i. Cardiogenic shock

j. Hypertension
   i. Uncontrolled blood pressure
   ii. Hypertensive Emergencies
   iii. Pharmacological agents used to treat hypertension

k. Disturbances of cardiac rhythm
   i. Mechanism of arrhythmias
   ii. Bradycardias, incl. sinus bradycardia, heart block & other bradyarrhythmias
   iii. Tachycardias (incl. torsades de pointes, VF, and other arrhythmias of varying complex width and regularity)
   iv. Ectopy (wide & narrow complex)
   v. Accessory pathways (Wolff-Parkinson-White syndrome and others)
   vi. Electrophysiological testing *
   vii. Drugs associated with cardiac arrhythmias *
   viii. Anti-arrhythmic agents
   ix. Implantable cardiac devices (ICDs): implantable pacemakers and defibrillators, and their complications *

1. External emergent cardiac pacing

m. Aortic aneurysm and dissection

n. Disorders of the peripheral vasculature
   i. Deep venous thrombosis
   ii. Pulmonary embolism
   iii. Mesenteric ischaemia

o. Cardiac transplantation *

p. Endocarditis

q. Cardiac tumours *

r. Congenital heart disease (cyanotic vs non-cyanotic)

s. Rheumatic fever

4.2 Respiratory Emergencies

a. Clinical examination of the respiratory system

b. Interpretation of symptoms and clinical signs of the respiratory system

c. Respiratory failure

d. Upper airway obstruction

e. Tracheobronchial foreign body

f. Infectious diseases
   i. Croup
   ii. Bronchitis
   iii. Pneumonia
   iv. Empyema & Lung abscess
   v. Tuberculosis
   vi. Bronchiectasis

g. Aspiration pneumonitis

h. Pneumothorax and tension pneumothorax
   i. Needle thoracocentesis

ii. Chest drain insertion

i. Disorders of the mediastinum
   i. Mediastinitis
   ii. Mediastinal masses
   iii. Pneumomediastinum

j. Abnormality in Chest X-rays
   i. Cavitating lung lesions
   ii. Isolated “coin” lesions

k. Disorders of the chest wall

l. Acute lung injury/respiratory distress syndrome

m. Asthma & Chronic obstructive pulmonary disease

n. Pleural effusions

o. Haemoptysis

p. The respiratory effects of obesity

q. Sleep apnoea

r. Neoplastic disorders

s. Congenital/neonatal *
   i. Bronchopulmonary dysplasia *
   ii. Diaphragmatic hernia *
   iii. Tracheoesophageal fistula *
   iv. Vascular ring *

4.3 Abdominal emergencies

a. Clinical examination of the gastrointestinal system

b. Interpretation of the symptoms and clinical signs of the gastrointestinal system

c. Assessment and management of abdominal pain

d. Gastrointestinal bleeding
   i. Indications for urgent OGD
   ii. Techniques used with OGD to control haemorrhage *
   iii. Pharmacological agents used in management
   iv. Oesophageal varices: balloon tamponade vs medical treatment
   v. Peptic Ulcer Diseases
   vi. Angiodysplasia of the colon

e. Oesophageal disorders
   i. Oesophagitis
   ii. Gastroesophageal reflux
   iii. Motor abnormalities
   iv. Mallory-Weiss syndrome
   v. Stricture and stenosis
   vi. Neoplastic disorders
   vii. Esophageal foreign body
   viii. Esophageal perforation

f. Peptic ulcer disease and gastritis

g. Feeding tube management

h. Inflammatory bowel disease
i. Irritable bowel syndrome
j. Infectious disorders and gastroenteritis
k. Hepatic disorders
    i. Abnormal liver function tests, incl. jaundice
    ii. Hepatic failure
    iii. Infectious diseases of the liver
    iv. Hepatitis
    v. Vascular disorders
    vi. Liver transplant patient *
    vii. Alcoholic liver disease
    viii. Portal hypertension & Hepato-renal syndrome
i. Ascites & Abdominal paracentesis
m. Pancreatitis
n. Cholelithiasis
    i. Cholecystitis
    ii. Cholangitis
o. Non-traumatic splenic rupture
p. Intestinal obstruction
    i. Postoperative adhesion
    ii. Malrotation
    iii. Volvulus
    iv. Congenital pyloric stenosis
    v. Intussusception
    vi. Insertion of nasograstric tube
q. Diverticular disease
r. Meckel's diverticulum
s. Perforated viscus
t. Intra-abdominal/retroperitoneal sepsis, incl. acute appendicitis
u. Ischaemic colitis
v. Peritonitis
w. Retroperitoneal haematoma
x. Hernia
y. Bowel tumour
z. Anorectal diseases
    i. Haemorrhoids
    ii. Perianal haematoma
    iii. Anal fissure
    iv. Anorectal abscesses
    v. Pilonidal disease
    vi. Per rectal bleeding
    vii. Rectal prolapse
    viii. Idiopathic anal pain
    ix. Radiation proctitis

x. Proctoscopy
xi. Rectal foreign bodies

4.4 Neurological emergencies

a. Clinical examination of the neurological system
b. Interpretation of symptoms and clinical signs of the neurological system
c. Facial nerve paralysis
    i. UMN vs LMN
    ii. Bell's Palsy, Ramsay Hunt syndrome
d. Approach to dizziness & vertigo
e. Headache and facial pain
    i. Pharmacological agents
    ii. Indications for imaging (CT, MRI)
    iii. Migraine
    iv. Cluster headache
    v. Tension headache
    vi. Raised intracranial pressure
    vii. Temporal arteritis
    viii. Neuralgia
    ix. TMJ syndrome
f. Acute stroke
    i. Transient ischaemic attacks
    ii. Reversible Ischemic Neurological Deficit (RIND)
    iii. Thrombotic stroke
    iv. Embolic stroke
    v. Haemorrhagic stroke
    vi. Cerebellar stroke
    vii. Thombolysis in stroke
    viii. Stroke and hypertension
    ix. Syndromes of stroke
    x. Anterior cerebral artery
    xi. Middle cerebral artery
    xii. Posterior inferior cerebellar artery syndrome
    xiii. Lacunar syndrome
    xiv. Midbrain, pontine and brainstem syndromes
    xv. Stroke units
g. Altered mental state
    i. Coma
    ii. Acute brain syndrome
    iii. Cognitive disorders
h. Approach to ataxia and gait disturbances
i. Convulsion & status epilepticus
j. Dystonic reactions
k. Interpretation of CSF fluid biochemistry, cell count and microbiology

l. Infectious disorders of the nervous system
    i. Meningitis (Bacterial, viral, TB, fungal and others)
    ii. Encephalitis
    iii. Abscess (cerebral, spinal, epidural)
    iv. Botulism & tetanus
m. Guillain-Barré syndrome
n. Multiple sclerosis
o. Myasthenia gravis & Eaton-Lambert syndrome
p. Motor neuron disease
q. Peripheral neuropathy & Brachial plexus syndrome
r. Myopathy & periodic paralysis
s. Parkinsonism
t. Neurosurgical conditions
    i. Hydrocephalus
    ii. Complications of the central nervous system devices (incl. shunt)
    iii. Disorders of the spinal cord (neuropathy, infection and others)
    iv. Paraneoplastic disorders of nervous system
    v. Intracranial aneurysms & AV malformation
    vi. Subarachnoid haemorrhage
    vii. Cerebral tumours
u. Medical problems in the paraplegic / tetraplegic patient
v. Cerebral venous thrombosis

4.5 Endocrine Emergencies

a. Clinical examination of the endocrine system
b. Interpretation of symptoms and clinical signs of the endocrine system
c. Diabetes Mellitus
    i. Brittle glycemic control
    ii. Hypoglycemia
    iii. Hyperglycemia, incl. DKA and HONK
d. Alcoholic ketoacidosis
e. Adrenal disorders
    i. Acute adrenal insufficiency (adrenal crisis)
    ii. Congenital adrenal insufficiency
    iii. Cushing's disease
    iv. Conn's syndrome
    v. Phaeochromocytoma
f. Thyroid disorders
    i. Thyrotoxicosis & Thyroid storm
    ii. Hypothyroidism
g. Pituitary disorders: panhypopituitarism
h. Parathyroid disorders

4.6 Haematological emergencies

a. Clinical examination of the haematological system
b. Interpretation of symptoms and clinical signs of the haematological system
c. Interpretation of haematological investigations
d. Anaemia
e. Abnormal haemoglobins
f. Disorders of haemostasis and coagulation
    i. Congenital: Haemophilias, VWD, ITP
    ii. Acquired: TTP, DIC
g. Disorders of white cells
    i. Neutropenia
    ii. Leukaemia
h. Thrombocytopenia & Thrombocytosis
i. Myelodysplastic disorders
j. Paraproteinaemia
k. Drugs: antiplatelets & antIcoagulants
l. Blood (products) transfusion & its reaction

4.7 Emergencies for Oncology patients

a. Clinical examination in patients suspected of having a malignancy
b. Interpretation of symptoms and clinical signs associated with malignancy
c. Complications of chemotherapeutic agents (incl. tumour lysis syndrome)
d. Complications related to local tumour involvement
    i. Acute spinal cord compression
    ii. Upper airway obstruction
    iii. Malignant pericardial effusion
    iv. Superior vena cava syndrome
    v. Pancoast's syndrome
e. Hyperviscosity syndrome
f. Complications related to myelosuppression
    i. Febrile neutropenia
    ii. Opportunistic infections
    iii. Thrombocytopaenia and haemorrhage
g. Malignancies specific to organ systems
h. Paraneoplastic syndromes
i. End of life care

4.8 Renal emergencies

a. Clinical examination of the renal system
b. Interpretation of symptoms and clinical signs of the renal system
c. Assessment and management of pyuria
d. Assessment and management of haematuria
e. Interpretation of urine dipstick results
f. Interpretation of urine microscopy and culture
g. Urinary catheter insertion

h. Suprapubic catheter insertion *
i. Infectious disorders
    i. Urinary tract infection
    ii. Balanitis
    iii. Prostatitis
    iv. Pyelonephritis
    v. Infected obstructed kidney
j. Nephrotic syndrome
k. Glomerulonephritis
l. Acute kidney injury & Chronic renal failure
m. Renal replacement therapy *
    i. Peritoneal
    ii. Intermittent haemodialysis
    iii. Complications of renal dialysis
n. Urinary stone & complications
o. Urinary retention
p. Obstructive uropathy
q. Vesico-ureteric reflux
r. Prostatic hypertrophy
s. Tumours
t. Male genital emergencies
    i. Acute scrotum
    ii. Epididymitis & Orchitis
    iii. Testicular torsion
    iv. Torsion of the testicular appendage
    v. Priapism
    vi. Phimosis/paraphimosis

4.9 Musculoskeletal disorders

a. Clinical examination of the rheumatological system
b. Interpretation of symptoms and signs of the rheumatological system
c. Arthrocentesis
d. Rheumatoid arthritis
e. Osteoarthritis
f. Crystal arthropathies
g. Urgencies and emergencies in systemic rheumatic disease
    i. Lupus flare
    ii. Systemic necrotizing vasculitides
    iii. Catastrophic antiphospholipid syndrome
    iv. Erythema nodosum
h. Painful joints
    i. Thoracic and lumbar pain
    ii. Neck pain
    iii. Peripheral joint pain

i. Tunnel syndromes
   i. Carpal tunnel
   ii. Ulnar tunnel *
   iii. Tarsal tunnel *

j. First & second line medications and their complications

4.10 Dermatology

a. Clinical examination of the dermatology system
b. Interpretation of symptoms and clinical signs of the dermatological system
c. Examination and description of a lesion, ulcer or rash of the skin
d. Dermatitis and eczema
e. Scabies
f. Urticarial and allergic rashes
g. Viral exanthems
h. Macular rashes
i. Maculopapular lesions
   i. Erythema multiforme
   ii. Erythema nodosum
   iii. others
j. Papular and nodular rashes
k. Petechial and purpuric rashes
l. Vesicular and bullous rashes
   i. Pemphigus
   ii. Pemphigoid
   iii. Staphylococcal scalded skin syndrome
   iv. Stevens-Johnson syndrome
   v. Toxic epidermal necrolysis
   vi. Herpetic infections
   vii. Others
m. Ulceration
n. Cellulitis
o. Dermatological manifestations of underlying systemic disease
p. Dermatological manifestations of neoplastic disorders

4.11 Infectious disorders

a. Clinical examination in patients with infectious disease
b. Interpretation of symptoms and signs in patients with infectious disease
c. Blood cultures
d. Infection control
   i. Universal and standard precautions
   ii. Protection of staff from infectious disease
   iii. Isolation of patients with infectious disease
   iv. Infection control in the emergency department
   v. Body fluid exposure

vi. Tetanus, rabies vaccination
vii. Infectious disease surveillance
viii. Infectious disease outbreaks
ix. Notification of communicable diseases
x. Contact management of patients with serious infectious disease

e. Antibiotic use in the emergency department
f. Sepsis
   i. Febrile infant management: bacteraemia
   ii. Sepsis and septic shock
   iii. Toxic shock syndrome
g. Infections in the returned travelers
   i. Malaria
   ii. Dengue
   iii. Haemorrhagic fevers
   iv. Typhoid
   v. Others
h. Bacterial infections
   i. Food poisoning
   ii. Meningococcaemia
   iii. Disseminated gonococcal infection
   iv. Tuberculosis and other mycobacterial infections
   v. Gas gangrene
   vi. Necrotising fasciitis
   vii. Fournier's gangrene
   viii. Haemophilus influenzae
i. Sexually transmitted diseases
j. Viral illnesses
   i. HIV
   ii. Infectious mononucleosis
   iii. Influenza / parainfluenza
   iv. Herpes simplex
   v. Herpes zoster
k. Mycoplasma infections *
l. Fungal infections
m. Protozoal infections *
n. Tick-borne infections
o. Infection from a marine source *
p. Infection in the burns patient
q. Biologic weapons *

4.12 Immunology

a. Clinical examination of the patient with a suspected immunological disorder
b. Interpretation of symptoms and signs of the immunological systems
c. Hypersensitivity

i. Allergic reactions
ii. Anaphylactoid reactions
iii. Anaphylaxis
iv. Angioedema
v. Drug allergies

d. Collagen vascular disease
   i. Raynaud's syndrome
   ii. Reiter's disease *
   iii. Scleroderma *
   iv. Systemic lupus erythematosus
e. Vasculitis *
   i. Polyarteritis nodosa
   ii. Wegener's granulomatosis *
f. Kawasaki's disease
g. Sarcoidosis *
h. Complication of immunosuppressant agents
i. Fever in an immunocompromised patient

4.13 Metabolic emergencies

a. Volumes: total body water / extracellular fluid / intracellular fluid
b. Composition of plasma & blood
c. Electrolyte disturbances
   i. Potassium
   ii. Sodium
   iii. Calcium
   iv. Magnesium
   v. Phosphate
   vi. Chloride
   vii. SIADH

4.14 Acid-base Disorders

a. ABG Interpretation
   i. Alveolar gas equation
   ii. A-a gradient
b. Metabolic acidosis
c. Metabolic alkalosis
d. Respiratory acidosis
e. Respiratory alkalosis
f. Anion gap & osmolar gap
g. Indications and monitoring for the administration of sodium bicarbonate

4.15 Vascular emergencies

a. Peripheral ischaemia
b. Arterial occlusion

c. Venous occlusion
d. Intestinal ischaemia
e. Acute aortic syndrome
f. Mycotic aneurysms: intra-arterial drug injection
g. Varicosities - complications and management

4.16 Plastic surgery

a. Surgical techniques *
    i. Grafts
    ii. Flaps
    iii. Advanced wound closure

5. EMERGENCIES AT EXTREME OF AGES

5.1 Paediatric Emergency Medicine

a. Acute life support / resuscitation

i. Understanding the basic anatomical and physiological difference

ii. Resuscitation and Pediatric Advanced Life Support (PALS)

- Understand PALS pathways in cardiac arrest/tachycardia /bradycarda
- Shock and its differential diagnosis
- Indications, pharmacology, contraindications, dose calculation and route of administration of drugs used in resuscitation and in the stabilisation of children in cardiac arrest or failure
- Venous access including IO access
- Central lines, arterial access and invasive monitoring *
- Appropriate non-invasive monitoring including end -tidal CO2
- Prognostic factors for outcome for cardiac resuscitation *
- Management of Sudden Death in Infancy *

iii. Respiratory failure or arrest

- Pharmacological agents in induction and post-intubation
- Surgical airway *
- Pharmacological and mechanical interventions post stabilisation of the airway in emergency department
- Prognostic features of the outcome of respiratory arrest *
- Upper and lower airway obstruction
- Manage the difficult airway and failed intubation *
- Mechanical ventilation *

iv. Cardiac failure or arrest

- Causes of heart failure
- Types of shock: compensated and uncompensated shock
- Rhythm disturbances
- Use of fluids including blood products
- Defibrillation, cardioversion and external pacing
- Vasoactive drugs *

v. Trauma

- Applying basic ATLS principles in the care of major trauma in a child

b. Cardiology

i. ECG interpretation at all ages *

ii. Indication of echocardiography

iii. Heart failure

iv. Arrhythmia

v. Syncope

vi. Endocarditis, myocarditis & pericarditis *

vii. Heart murmur

viii. Palpitations

c. Child and Adolescent Mental Health

i. Normal behaviour patterns incl response to injury and illness
ii. Attachment and conduct disorders *
iii. Physical, emotional and social factors on development and health *
iv. Behavior aspects of eating disorders *
v. Depression and psychosis
vi. Self-harm

d. Dermatology
i. Assessment of skin conditions
ii. Dermatological manifestations and complications of other system disorders
iii. Dermatological manifestations of common infections in children
iv. Principles of therapy for skin complaints
v. Dermatological emergencies e.g. toxic epidermal necrolysis, staphylococcal scalded skin syndrome
vi. Eczema and seborrheic dermatitis
vii. Bites and infestations
viii. Skin infections
ix. Cutaneous drug reactions

e. Endocrinology and Metabolic Medicine
i. assessment of endocrine and metabolic disorders incl inborn error of metabolism *
ii. Metabolic and endocrine complications of other system disorders *
iii. Endocrine and metabolic investigations in neonates and children in emergency department
iv. Diabetic ketoacidosis
v. Hypoglycaemia
vi. Adrenal insufficiency *
vii. Acid-base and electrolyte abnormalities
viii. A child with diabetes mellitus
ix. Goitre and thyroid disorders *
x. Polyuria and Polydipsia
xi. Obesity

f. Gastroenterology (GI)
i. Assessment of GI disorders
ii. GI complications of other system disorders
iii. Acute abdominal pain
iv. Acute diarrhoea and/or vomiting
v. Abdominal distension *
vi. Upper and lower gastrointestinal bleeding
vii. Acute liver failure *
viii. Recurrent abdominal pain
ix. Constipation
x. Malabsorption and Malnutrition *

g. Gynaecology and Obstetrics
i. Assessment of gynaecological disorders

ii. Gynaecological investigations including microbiology and virology results, beta HCG and ultrasonography *
iii. Referral to the child protection team if appropriate
iv. Forensic aspects of child sexual abuse and male/female rape as pertinent to emergency care
v. Ectopic pregnancy
vi. Sexually transmitted infections *

h. Haematology and Oncology
i. Assessment of haematological and oncological disorders
ii. Haematological and oncological complications of other system disorders
iii. Normal age-dependent haematological blood values *
iv. Blood products
v. Anaemia
vi. Purpura and bruising
vii. Leukaemia
viii. Immuno-compromised child

i. Infection, Immunology and Allergy
i. Assessment of infectious disease and allergic conditions
ii. infectious complications of other system disorders
iii. laboratory investigations, including microbiology and virology cultures
iv. Common infections of the newborn
v. Pathophysiology and principles of treatment of allergic and autoimmune disorders
vi. Septic shock
vii. Febrile Child
viii. Common Child Exanthems
ix. Anaphylaxis
x. Kawasaki disease
xi. Food intolerance and other allergies *
xii. Immunisation

j. Neonatology
i. Assessment of neonates in emergency department
ii. Pathophysioloigcal process leading to neonatal cardio-pulmonary instability, including the role thermoregulation
iii. Neonatal respiratory distress
iv. Neonatal vomiting and underlying pathology
v. Assessment of fluid status and fluid management
vi. Cyanotic/non cyanotic congenital heart disease *
vii. Jaundice
viii. Sepsis
ix. Common neonatal skin problems

k. Nephro-urology
i. Assessment of nephro-urology problems
ii. Fluid and electrolyte imbalances and blood pressure in children with kidney problems

iii. Assessment and management of fluid status
iv. Investigations including urine microbiology and renal function tests
v. Urinary tract infection
vi. Hypertension *
vii. Acute scrotal pain

l. Neurology & Neurosurgery
i. Assessment of neurological disorders and neurosurgical conditions
ii. neurological complications of other system disorders
iii. investigations including EEG, CT scans, MRI and lumbar puncture *
iv. Coma
v. Meningitis/Encephalitis
vi. Seizures including status epilepticus
vii. Headache
viii. Blocked Shunt

m. Ophthalmology
i. Assessment of visual conditions
ii. Snellen charts and visual field examinations
iii. Conjunctivitis
iv. Chemical Eye injury

n. Orthopaedics & Musculoskeletal Medicine
i. Types of soft tissue and bony injuries for each age group
ii. Rheumatological, infectious, malignant and non-accidental cause of musculoskeletal presentations
iii. Salter-Harris classification of epiphyseal injuries
iv. Likely timeframe for recovery in children
v. Interpretation of x-rays for paediatric injuries
vi. Septic arthritis of major joints
vii. Common fracture-dislocations of the limbs
viii. Avulsion fractures around the hip
ix. Pulled elbow
x. Limb and knee and hip pain as well as concept of referred pain
xi. Irritable hip
xii. Assessment of knee pain
xiii. Haemarthrosis in knees
xiv. Ankle injury: epiphyseal and ligamental
xv. Ottawa ankle rule
xvi. non-traumatic back pain
xvii. SCIWORA
xviii. Joint swelling

o. Plastic Surgery
i. Nerve blocks and local anaesthetic agents
ii. Wound care
iii. Skin closure techniques

p. Poisoning and Accidents

i. Paediatric poisoning: accidental and non-accidental
ii. Burns
iii. Drowning

q. Respiratory Medicine with Ear, Nose and Throat
i. Assessment of respiratory disorders or ENT problems
ii. Respiratory complications of other system disorders
iii. Investigations including arterial blood gasses, chest x-rays and peak flow measurements
iv. Asthma
v. Acute stridor
vi. Pneumothorax
vii. Bronchiolitis
viii. Pneumonia
ix. Earache or discharge
x. Traumatic ear conditions
xi. Epistaxis
xii. Nasal trauma
xiii. Throat conditions
- Tonsillitis, quinsy, tonsillectomy and post-tonsillectomy bleeding
- Foreign body

xiv. Sleep apnoea
xv. Airway obstruction
xvi. Dental problems

r. Protection and prevention
i. Physical injury and abuse
ii. Sexual abuse
iii. Neglect
iv. Self-harm
v. Apnoeic episodes as an infant

5.2 Geriatric Emergency Medicine

a. Approach to the elderly patients in the Emergency Department
b. Clinical implications of the aging process
i. Changes in physiology in various body systems
ii. Changes in clinical presentation
iii. Modification in management
c. Adverse drug effects
i. Risk factors for adverse drug reactions
ii. Changes in pharmacodynamics and pharmacokinetics
iii. Drug dose adjustment *
iv. Use renal function parameter for determining the safe dose of a drug.
v. drug-drug interaction
vi. drug-disease interaction
d. Elderly patients with altered mental status

i. systematic approach to assessing an older patient presenting with altered mental status
ii. delirium and dementia

e. Mental health issues in elderly patients
   i. Severe depression, substance abuse, and psychosis
   ii. Risk factors for suicide
   iii. Behaviors and symptoms that indicate possible substance abuse *
   iv. Managing the agitated psychotic patient *
   v. Voluntary and compulsory admission to psychiatric ward

f. Ethical and legal issues in the treatment of elderly patients
   i. Decision making capacity and competency
   ii. Informed consent and the elements of appropriate disclosure of risks and benefits
   iii. Advance directives
   iv. Risk management in making treatment decisions for the elderly patient

g. Cardiovascular emergencies
   i. Atypical presentations of acute coronary syndromes
   ii. Gender-related differences
   iii. Atypical presentations and complications of ischemic cardiovascular emergencies including dysrhythmias, syncope, congestive heart failure, and aortic dissection/rupture *

h. Cerebrovascular emergencies
   i. Precipitating causes for traumatic brain and spinal injuries
   ii. Differential diagnosis for older adults presenting with common cerebrovascular signs and symptoms
   iii. New cognitive impairment for special consideration of acute stroke
   iv. CNS infections
   v. Vertigo

i. Acute abdomen

j. Trauma & falls

k. Infections

l. Acute and chronic pain management

6. TRAUMA & ORTHOPAEDIC EMERGENCIES

6.1 General principles

a. Epidemiology of trauma
b. Mechanisms of injury
c. Principles of management of trauma
   i. Advanced Trauma Life Support protocol for assessment
   ii. Massive transfusion protocol
   iii. Trauma resuscitation
   iv. Management of coagulopathy in the severely injured patient *
d. Trauma team concepts
e. Trauma scoring systems *
f. Imaging modalities in trauma
g. Leadership in trauma resuscitation *

6.2 Head Injury

a. Assessment and management of head trauma
b. Glasgow Coma Score
c. Pathophysiology of head injury
   i. Scalp lacerations
   ii. Skull fractures
   iii. Intracranial haemorrhage: extradural, subdural, intracerebral
   iv. Diffuse axonal injury
   v. Penetrating head injury
d. Minor head injury
e. Post concussive syndrome

6.3 Maxillofacial trauma

a. Assessment and management of maxillofacial trauma
b. Maxillofacial hemorrhage
c. Facial lacerations
d. Facial nerve and parotid duct injuries
e. Nasal fractures
f. Le Fort fractures
g. Zygomatic fractures
h. Orbital injury
i. Temporal bone fractures
j. Mandibular fractures
k. Temporomandibular joint dislocation
l. Mandibular dislocation
m. Dentoalveolar trauma, incl. avulsed tooth
n. Intraoral lacerations

6.4 Neck injuries

a. Assessment and management of neck trauma
b. Penetrating neck injury
c. Laryngotracheal injury
d. Vascular injury
e. Nerve injury
f. Strangulation injury

6.5 Spinal cord injuries

a. Assessment and management of spinal cord injury
b. Spinal immobilization techniques
c. Spinal cord syndromes
d. SCIWORA

6.6 Thoracic trauma

a. Assessment and management of chest trauma
b. Pneumothorax: closed, open & tension
c. Hemothorax: mild to massive
d. Pulmonary contusion
e. Myocardial contusion
f. Ribs fracture, including flail chest
g. Sternal fracture
h. Pericardial tamponade
i. Tracheobronchial rupture
j. Oesophageal perforation
k. Diaphragmatic rupture
l. Great vessel injury
m. Penetrating thoracic injury
n. Traumatic asphyxia
o. Air embolism
p. Resuscitative thoracotomy *

6.7 Abdominal trauma

a. Assessment and management of abdominal trauma
b. Diagnostic peritoneal lavage
c. Splenic injury
d. Hepatic injury
e. Renal injury
f. Pancreatic injury
g. Hollow viscus injury
h. Great vessel injury
i. Penetrating abdominal injury
j. Abdominal compartment syndrome *

6.8 Genitourinary trauma

a. Assessment and management of genitourinary trauma
b. Injuries along the urinary tract
c. Penile rupture
d. Scrotal injury
e. Testicular trauma
f. Penetrating genitourinary injury

6.9 Pelvic trauma

a. Assessment and management of pelvic trauma
b. Major pelvic fracture
c. Exsanguinating pelvic injury

6.10 Soft tissue & peripheral vascular injury

a. Assessment and management of soft tissue injury
b. Traumatic amputation
c. Arterial injury
d. Compartment syndromes
e. Crush syndrome

6.11 Orthopedic injuries and related disorders

a. General principles of fracture management
b. Casting techniques
    i. Short arm POP
    ii. Long arm POP
    iii. Short arm backslab
    iv. Scaphoid POP
    v. Volar splint
    vi. U Slab
    vii. Short leg POP
    viii. Long leg cylinder
c. Splintage techniques including splintage procedures
    i. Broad arm sling
    ii. Collar and cuff
    iii. Figure-of-8 bandaging
    iv. Knee immobiliser
    v. Traction splint
    vi. Thomas splint
    vii. Pelvic stabilisation techniques
d. Fracture & methods of close reduction
    i. Hand fractures
    ii. Wrist fractures
    iii. Radius and ulna fractures
    iv. Elbow fractures
    v. Humerus fractures

vi. Clavicle fractures
vii. Acromioclavicular injury
viii. Scapula fractures
ix. Vertebral fractures
x. Hip fractures
xi. Femur fractures
xii. Knee fractures
xiii. Patellar fractures
xiv. Tibia and fibula fractures
xv. Ankle fractures
xvi. Foot fractures

e. Dislocation & methods of closed reduction
   i. Hand dislocations
   ii. Wrist dislocations
   iii. Elbow dislocations
   iv. Shoulder dislocations
   v. Sternoclavicular joint dislocations *
   vi. Hip dislocations
   vii. Knee dislocations *
   viii. Patellar dislocations
   ix. Ankle dislocations

f. Soft tissues
   i. Shoulder: rotator cuff tears, bursitis, tendinitis
   ii. Elbow: bursitis, tendinitis
   iii. Knee: bursitis, ligamental injury, cruciate injury, meniscal injury & Bakers cyst
   iv. Foot & ankle

g. Hand injuries
   i. Metacarpal fractures/dislocations
   ii. Phalangeal fractures/dislocations
   iii. Lacerations
   iv. Nail and nail-bed injuries
   v. Extensor tendon injuries
   vi. Mallet finger
   vii. Boutonniere deformity
   viii. Flexor tendon injuries
   ix. Foreign bodies
   x. Amputations
   xi. Nerve injuries
   xii. High pressure injection injuries
   xiii. Crush injury

h. Overuse syndromes
i. Osteomyelitis
j. Septic arthritis

k. Complex regional pain syndrome type 1 (Sudeck's atrophy)

6.12 Burns

a. Evaluation of the patient with burns
b. Early management of severe burns *
c. Burn wound care
d. Management of minor burns
e. Inhalation injury
f. Chemical burns
g. Electrical burns
h. Tar burns
i. Sunburn
j. Oral burns
k. Escharotomy *

6.13 Ballistic & blast injuries

a. Evaluation and initial management of ballistic wounds & blast injury
b. Pathophysiology of ballistic wounding
c. Clinical and pathological effects of explosions

6.14 Trauma in special groups

a. Pediatric trauma
    i. Assessment and management of trauma in children
    ii. Non-accidental injury
b. Trauma during pregnancy
    i. Assessment and management of trauma in pregnancy
    ii. Obstetric complications of trauma
    iii. Uterine rupture
    iv. Perimortem caesarean section
c. Intimate partner violence
d. Geriatric trauma
e. Elder abuse
f. Sport injuries

6.15 Wound management

a. Classification of wounds
b. Wound management
c. Basic wound closure techniques
d. Wound dressings
e. Wound infections
f. Chronic ulcers
g. Special wounds
    i. Puncture wounds
    ii. Bites and stings

iii. De-gloving injury

iv. Amputations

7. EYE, ENT & DENTAL EMERGENCIES

7.1 Ophthalmological Emergencies

a. Use of the slit lamp *
b. Use of an ophthalmoscope
c. Measurement of intraocular pressure
d. Evaluation of the red eye
e. Evaluation of the painful eye
f. Evaluation of sudden visual loss
g. Conditions involving external eye
    i. Blepharitis
    ii. Dacryocystitis
    iii. Conjunctivitis
    iv. Corneal abrasions
    v. Corneal ulcers
    vi. Keratitis
    vii. Foreign bodies: corneal and conjunctival
    viii. Spontaneous subconjunctival haemorrhage
    ix. Amblyopia
    x. Ocular burns: chemical, flash & thermal
h. Anterior pole
    i. Hyphaema
    ii. Glaucoma
    iii. Uveitis
i. Posterior pole
    i. Retinal detachment
    ii. Vitreous haemorrhage
    iii. Retinal haemorrhage
    iv. Retinal vascular occlusions
    v. Optic neuritis
j. Orbit
    i. Cellulitis: orbital, pre-orbital
    ii. Endopthalmitis
    iii. Blunt & penetrating ocular trauma

7.2 Ear Emergencies

a. Auroscopic examination of the ears
b. Aural toilet / wick insertion
c. Otalgia
d. Otitis media
e. Otitis externa
f. Cholesteatoma
g. Perforated tympanic membrane
h. Chondritis/perichondritis

i. Mastoditis
j. Labyrinthitis
k. Meniere's disease
l. Foreign body

7.3 Nose Emergencies

a. Epistaxis
    i. Anterior packing
    ii. Cautery
    iii. Posterior packing
    iv. Balloon placement
b. Sinusitis
c. Nasal foreign body

7.4 Throat Emergencies

a. Ludwig's angina
b. Stomatitis
c. Pharyngitis
d. Tonsilitis
e. Peritonsillar abscess
f. Retropharyngeal abscess
g. Epiglottitis
h. Laryngitis
i. Tracheitis
j. Pharyngeal and upper airway foreign body
k. Post-tonsillectomy bleed

7.5 Dental emergencies

a. Normal dental development
b. Dental abscess
c. Dental infections with possible upper airway obstruction

8. EMERGENCIES IN WOMEN'S HEALTH

8.1 Pregnancy

a. High risk pregnancy

b. Antepartum complications

i. Hyper-emesis gravidarum

ii. Spontaneous abortion

iii. Gestational trophoblastic disease *

iv. Septic abortion *

v. Ectopic pregnancy

vi. Hypertensive disorder of pregnancy

vii. Pre-eclampsia, eclampsia & HELLP syndrome

viii. First trimester bleeding

ix. Antepartum Haemorrhage: Abruptio placentae, Placenta praevia, vasa praevia & others *

x. Fever & Infections, including urinary tract infection

xi. Isoimmunisation

xii. Thromboembolism

c. Emergency delivery *

d. Peripartum complications

i. Preterm labour

ii. Premature rupture of membrane (PROM)

iii. Foetal distress

iv. Cord prolapse

v. Nuchal cord

vi. Shoulder dystocia *

vii. Mal-presentation and mal-position

viii. Rupture or inversion of uterus

ix. Retained placenta

x. Perineal tear

xi. Amniotic fluid embolism *

xii. Others

e. Post-partum complications

i. Haemorrhage, postpartum: primary & secondary

ii. Puerperal fever

iii. Postpartum mood disorder

f. Drugs safety in pregnancy

8.2 Gynaecology

a. Vagina and vulva

i. Abnormal vaginal bleeding and discharge

ii. Vaginitis/vulvovaginitis

iii. Foreign body

iv. Bartholin's cyst/abscess

v. Others

b. Uterus
   i. Dysmenorrhoea
   ii. Dysfunctional uterine bleeding
   iii. Cervicitis, endocervicitis
   iv. Endometriosis
   v. Tumours
   vi. Leiomyoma
   vii. Gestational trophoblastic disease
   viii. Prolapse
   ix. Complications of intrauterine contraceptive devices
   x. Others
c. Ovaries *
   i. Cysts and cyst complications
   ii. Mittelschmerz
   iii. Tumours
   iv. Ovarian hyperstimulation syndrome
d. Infections
   i. Pelvic inflammatory disease
   ii. Toxic shock syndrome
   iii. Fitz-Hugh-Curtis syndrome
   iv. Tubo-ovarian abscess
   v. Herpes simplex
   vi. Human papilloma virus
e. Contraception
   i. Complications
   ii. Post-coital

9. MENTAL HEALTH EMERGENCIES

9.1 Evaluation of mental health patients

a. History
b. Physical examination
c. Mental state examination
d. Investigations

9.2 Organic brain syndrome *

9.3 Violent/agitated behaviour

a. Prevention
b. Safety issues
c. Restraint options and management: physical & chemical

9.4 Deliberate self-harm

9.5 Depression

9.6 Anxiety disorders *

a. Phobias
b. Panic disorder
c. Post-traumatic stress disorder
d. Obsessive–compulsive disorder
e. Hypochondriasis
f. Others

9.7 Psychosis

a. Acute and chronic
b. Bipolar effective disorder
c. Schizophrenia
d. Mania and hypomania
e. Others

9.8 The "challenging" ED patient

a. Personality disorder *
b. Malingering *
c. Frequent presenter *
d. Conversion disorder
e. Pain disorder
f. Somatization disorder
g. Munchausen's by proxy *
h. Anorexia & bulimia *
i. Management strategies *

j. Others *

9.9 The mental health patient in the ED

a. Triage
b. Appropriate psychiatric assessment area (holding rooms)
c. Community teams
d. Psychiatric liaison nurse as part of the ED team
e. In-patient psychiatry services
f. Psychiatric facilities/Gazette ward
g. ED staff issues – appropriate training, debriefing

9.10 Therapy

a. Drugs
    i. Benzodiazepines
    ii. Anti-psychotics
    iii. Anti-depressants
    iv. SSRIs
    v. Sedatives
    vi. Other agents
b. Other modalities
    i. Electroconvulsive therapy & its complication *
    ii. Other treatments

9.11 Compulsory Admission: Legal aspects of mental health care

10. CLINICAL TOXICOLOGY

10.1 General toxicology principles

a. Prehospital care
b. Epidemiology and prevention of poisoning
c. Approach to poisoning management
d. Toxidromes
e. Risk assessment/prediction of toxicity
f. Poison centers

10.2 Gastrointestinal decontamination

a. Emesis
b. Gastric lavage
c. Activated charcoal
d. Whole bowel irrigation *
e. Cathartics *
f. Endoscopy and surgery *

10.3 Methods of enhanced elimination

a. Activated charcoal, Multiple dose activated charcoal (MDAC)
b. Gastrointestinal agents *
    i. Cholestyramine
    ii. Kayexalate
    iii. Prussian blue
c. Urinary alkalinization
d. Forced diuresis *
e. Continuous Arterial-Venous Hemofiltration Dialysis (CAVHD) *
f. Peritoneal Dialysis *
g. Hemodialysis and hemofiltration *

10.4 Antidotes

a. Atropine
b. antivenom
c. Desferioxamine (Desferal)
d. Ethanol
e. Flumazenil
f. Fomepizole *
g. Glucagon
h. Methionine *
i. N-acetylcysteine (NAC)
j. Naloxone
k. Physostigmine *
l. Pralidoxime *
m. Pyridoxine (Vitamin B6) *

n. Sodium bicarbonate
o. Methylene blue *
p. Vitamin K *
q. Oxygen: normobaric and hyperbaric
r. Digibind

10.5 Chemical dependency and substance abuse

a. Alcohol, Drug & Substance
b. Dependence symptoms
c. Withdrawal
d. Tolerance

10.6 Anti-inflammatory agents and analgesic poisoning

a. Paracetamol
b. NSAIDs
c. Salicylates
d. Gout drugs *
e. Opioids

10.7 Antimicrobial poisoning *

a. Antibiotics
b. Antifungal
c. Antiparasitic
d. Antiseptics
e. Antiviral
f. Anti-tuberculous

10.8 Autonomic agent poisoning *

a. Anticholinergics
b. Antihistamines
c. Serotonergic drugs
d. Cholinergics
e. Ergot alkaloids
f. Methylxanthines
g. Sympathomometics

10.9 CNS drugs and muscle relaxant poisoning

a. Alcohols
b. Anticonvulsants *
c. Anti-Parkinsonian drugs *
d. Antidepressants
    i. Tricyclic antidepressants (TCA)
    ii. Selective serotonin re-uptake inhibitors (SSRI)
    iii. Monoamine oxidase inhibitors (MAOI)

iv. Others

e. Psychiatric drugs *
   i. Antipsychotics / neuroleptics
   ii. Lithium
   iii. Valproic acid
   iv. Carbamazepine

f. Illicit drugs poisoning
   i. Classification: CNS stimulants, depressants, dissociative, hallucinogens
   ii. Amphetamine
   iii. Cocaine
   iv. Ketamine
   v. Gamma-hydroxybutyrate (GHB)
   vi. Benzodiazepines
   vii. Cannabis
   viii. Organic solvents
   ix. Cough mixtures

g. Sedatives, hypnotics, anxiolytics

h. Smooth muscle relaxants *

10.10 Cardiovascular drugs *

a. Antiarrhythmics, including digoxin
b. Anticoagulants
c. Anti-hypertensives

10.11 Gastrointestinal agents *

a. Antacids
b. Antidiarrhoeals
c. Laxatives
d. Antispasmodic

10.12 Household products poisoning *

a. Dettol
b. Bleach
c. Multi-purpose cleaner
d. Mothball
e. Hydrocarbons

10.13 Food poisoning in Hong Kong

a. Ciguatera
b. Shellfish poisoning *
c. Tetrodotoxin
d. Scombroid *
e. Botulism
f. Clenbuterol *

g. Vegetable-borne pesticide *
h. Mushroom poisoning *

10.14 Chinese herbal medicine poisoning *

a. Cardiac glycoside
b. Aconite root
c. Anticholinergic poisoning
d. Podophyllotoxin poisoning

10.15 Industrial toxicology *

a. Metals
    i. Arsenic (As)
    ii. Mercury (Hg)
    iii. Thallium (TI)
    iv. Lead (Pb)
    v. Metal fumes
    vi. Others
b. Caustics
    i. Acids, incl. hydrofluoric acid (HF)
    ii. Alkalis
c. Nitrites

10.16 Inhalational poisoning

a. Simple asphyxiants
    i. Carbon dioxide
    ii. Methane
b. Pulmonary irritants *
    i. Phosgene
    ii. Chlorine
    iii. Sulfur dioxide
    iv. Ammonia
    v. Hydrogen chloride
    vi. Chloramine
c. Aspiration *
    i. Talc
    ii. Hydrocarbons
d. Mitochondrial toxins
    i. Cyanide
    ii. Hydrogen sulfide
    iii. Carbon monoxide

10.17 Pesticides, rodenticides and herbicides poisoning *

a. Pesticides
    i. Organophosphates

ii. Carbamates
iii. Pyrethrins / Pyrethroids
iv. Others

b. Rodenticides
   i. Warfarin and superwarfarin
   ii. Tetramine
   iii. Strychnine

c. Herbicides
   i. Paraquat
   ii. Glyphosate

10.18 Vitamins, minerals, and endocrine agents *

a. Hypoglycaemic agents
b. Electrolytes and minerals
c. Iron
d. Steroid
e. Thyroid drugs
f. Vitamins
g. Hormones

10.19 Specific conditions

a. Drug induced seizure
b. Drug induced coma
c. Drug induced tachycardia
d. Drug induced bradycardia
e. Drug induced hypoglycemia
f. Drug induced metabolic acidosis
g. Drug induced hyperthermia
h. Pediatric poisoning *

10.20 HazMat *

11. ENVIRONMENTAL EMERGENCIES

11.1 Heat-related illnesses

a. Heat stroke
b. Heat stress/exhaustion
c. Heat syncope, edema, cramp
d. Drug related hyperthermia

11.2 Cold-related illnesses

a. Hypothermia
b. Frostbite *

11.3 Bites and stings

a. Animal bites and rabies
b. Snakes bites and antivenoms
c. Spiders *
d. Hymenoptera – bees, wasps, ants
e. Centipede, millipede, scorpion
f. Jellyfish
g. Stinging fish *
h. Blue-ringed octopus *
i. Others *

11.4 Diving medicine

a. Near drowning and drowning
b. Decompression illness *
c. Barotrauma *
d. Hyperbaric oxygen *

11.5 Electricity

a. Electric injuries
b. Lightning strike *

11.6 High Altitude illnesses *

a. Acute mountain sickness
b. High altitude cerebral oedema
c. High altitude pulmonary oedema

12. Prehospital Care & Disaster Medicine

12.1 The concept of emergency medical system (EMS) *

a. The role of EMS for emergency patient care
b. Components of EMS and the interfaces between EMS and other players within the health care systems
c. Patient access in prehospital care
d. Roles & Responsibilities
    i. Ambulance
    ii. Fire
    iii. Police
e. Patient assessment in prehospital care
f. Equipment considerations in prehospital care
    i. Medical equipment utilized in prehospital care
    ii. Limitations that the prehospital environment places on the use and function of medical equipment

12.2 Models of prehospital care *

a. Different models of pre-hospital care, both within Hong Kong and in other areas of the world
b. Relative advantages and disadvantages of each

12.3 Communication *

a. Need for effective communication between components of the EMS system in the delivery of prehospital care
b. Various means of communication available in the delivery of prehospital care

12.4 Transport *

a. Different modalities of patient transport
    i. Road ambulance
    ii. Aeromedical transport: rotary wing and fixed wing transport
b. Relative advantages and disadvantages of the use of each of the different modalities of patient transport

12.5 Clinical treatment and procedures in prehospital care *

a. Relevant considerations and adaptations that may be necessary to safely undertake a procedure in the prehospital environment
b. Relative advantages and disadvantages of undertaking a clinical procedure in the prehospital environment as compared to delaying the procedure until arrival at hospital
c. Pain control
d. Supporting vital functions: Airway, breathing and circulation
e. Cardiopulmonary resuscitation
f. Defibrillation
g. Haemorrhage control
h. Spinal immobilisation

i. Splintage techniques
j. Treatment protocols in local EMS system (ACS, seizure, hypoglycemia etc)

12.6 Special circumstances *

a. The entrapped patient
b. Crush syndrome
c. Field amputation
d. Rescues: roles and responsibilities of EM doctors at the scene of a rescue operation

12.7 Transport and Retrieval Medicine

a. Treatment prioritization & planning in Retrieval & Transfer
b. Preparation for retrieval and transfer
    i. Strategies for optimizing a patient's physiology before transfer
    ii. Pre-transfer measures to minimize risks to patients during transfer
    iii. Appropriate patient packaging and items required for transfer
c. Management of emergencies during patient transfer
    i. Clinical deterioration of patient
    ii. Loss of airway control
    iii. Failure of ventilator support
    iv. Loss of vascular access
    v. Failure of monitoring equipment
    vi. Loss of electrical power
    vii. Failure of oxygen supply
    viii. Failure or malfunction of infusion devices
d. Management of critically ill or injured patients for transfer
e. Management of obstetric patients for transfer *
f. Management of paediatric patients for transfer *
g. Management of head injured patients for transfer
h. Management of infectious disease patients for transfer
I Management of patients with acute behavioural disturbance for transfer

12.8 Disasters *

a. Definitions of a disaster, mass causality incident (MCI) and the importance of matching the response to available resources
b. Classification of disasters
c. Epidemiology of disasters
d. Roles and responsibilities of Hospital Authority, hospital & ED

12.9 Disaster planning *

a. General principles - Planning Preparedness Response Recovery (PPRR)
    i. Disaster management & mitigation
    ii. Principles of prevention and risk reduction
    iii. Principles of preparedness relative to risk of occurrence and impact
b. Hospital / Department Disaster Plan

i. Hospitals as responders to an emergency: principles and procedures that are required for preparing the ED for a large influx of casualties
ii. Recovery: principles and procedures that are required in the aftermath of an incident
iii. Inter-department collaboration

c. Incident command structure
i. Strategic: The overall command of the incident and interface between different responding agencies and the community
ii. Planning: The continual evaluation of the incident situation
iii. Financial: Tracking costs and administering the procurement of any necessary resources
iv. Operational: The practical management of incident
v. Logistics: The provision of services and support for all needs of the incident

d. Liaison with media
i. Media management during incidents
ii. Use of media during an incident

12.10 Roles and responsibilities at the disaster site *

a. Medical (MCO and Medical Team)
b. Ambulance
c. Police
d. Fire

12.11 Disaster equipment and supplies *

a. Incident site
i. Medical bags
ii. Medical disposables & pharmaceuticals
iii. Medical monitoring equipment

b. Emergency department
i. Disposables and pharmaceutical supplies
ii. Medical records and stationary

12.12 Occupational health and safety issues *

a. Incident site: personal protective equipment (PPE)
b. Emergency department
i. Principles of hazardous materials incidents
ii. Recognising toxic gas exposures
iii. Chemical personal protective equipment (hospital)
iv. Personal protective equipment for biological hazards

12.13 Disaster site operations *

a. Organization of medical operations at an incident site
b. Clinical management in a disaster
i. Disaster triage: principles of disaster triage e.g. Simple Triage and Rapid Treatment (START)

ii. Record keeping
iii. Paediatric casualties

12.14 Mental health & behavioural issues among Disaster victims & responders *

a. Role of counseling
b. Critical incident stress debriefing
c. Post-traumatic stress disorder

12.15 Medical response to terrorist incidents *

a. Chemical weapons
    i. Choking agents
    ii. Cyanide
    iii. Phosgene
    iv. Blistering agents
    v. Mustard gas
    vi. Nerve agents
b. Biological weapons
    i. Small pox
    ii. Anthrax
    iii. Botulism
    iv. Viral hemorrhagic fevers
c. Radiation emergencies
    i. Radiation exposure & health impact
    ii. Radiation injury
    iii. Radiation safety: principles and monitoring
    iv. Safe response to a casualty contaminated with a radio-isotope

13. IMMEDIATE CARE IN SPORT MEDICINE*

13.1 On-field Assessment & Resuscitation

a. On-field assessment
   i. Basic life support
   ii. Advanced cardiac Life Support
   iii. Shock
   iv. Anaphylaxis
   v. Basic and advanced airway management
   vi. Spinal immobilisation
b. Principles of safe patient transfer
c. The role of the event/team physician

13.2 Sudden death in sport

a. aetiology
   i. Age-related factors
   ii. Sport-specific factors
b. Cardiac causes of sudden death
   i. HOCM
   ii. Coronary artery anomalies and ischaemic heart diseases
   iii. Conduction abnormalities
   iv. Structural derangements: valvular disease and Marfan's syndrome
c. Traumatic causes of sudden death
   i. Head injury
   ii. Extracranial / maxillofacial pathology
   iii. Intracranial pathology, raised intracranial pressure
   iv. Diffuse and focal pathology
   v. Abdominal injury
   vi. Chest injury
d. Environmental factors

13.3 Accidents & Emergencies during Sport

a. Acute assessment and treatment of soft tissue injuries
b. Principles of basic fracture management
c. Minor and major head injuries
   i. Assessment and treatment
   ii. Decision to allow "Return-to-play"
c. Acute facial, dental, eye & ENT trauma
d. Wound management in field
e. Medical and environmental emergencies

13.4 Medical equipment and gases

13.5 Drugs in Sport

a. Effects of various pharmaceutical agents on exercise performance
b. Banned substances / methods
c. Therapeutic use of drugs for illness and injury

14. Medical Law, Ethics & Professionalism

14.1 Medical Malpractice

a. Duty of care
   i. Individual health care professionals
   ii. Institutional
b. Medical error & adverse incidents
c. Legal tests of negligence
d. Risk management
   i. Clinical negligence
   ii. Root cause analysis
   iii. Systemic versus individual failure
   iv. Preventability

14.2 Capacity & consent

a. Capacity
   i. Children & adolescents
   ii. Intellectually disabled
   iii. Mental illness
   iv. Intoxication
   v. Delirium
b. Consent
   i. Valid consent
   ii. Impaired consent
   iii. Verbal consent
   iv. Written consent
   v. Refusal to consent
   vi. Guardianship Broad
   viii. Emergency care
c. Legal tests of negligence

14.3 Death & Coroners

a. Reporting to coroner: requirements of coronial notification
b. Definition of cardiopulmonary death & brain death
c. End of life care, advanced care planning & advanced directives
d. Death certificate
e. Expert Opinion
   i. Competencies required to provide expert witness
   ii. Reason for the provision of service
   iii. Obligation required once a service is rendered to the court

14.4 Involuntary admission under Mental Health Ordinance

a. Definition of mentally ill
b. Effects of drugs and alcohols
c. Criteria for detention
d. Physical restraint and sedation
e. Emergency treatment
f. Police powers
g. Death in detention

14.5 Confidentiality

a. General principles of patient confidentiality
b. Legitimate breach of confidentiality

14.6 Medical records and reports

a. Components of medical report and medical record
b. Ethical and legal responsibility associated with such documents

14.7 Forensic Issues and Court Attendance

a. Drink driving and drug driving
b. Body packers
c. Sexual assault
d. Intimate partner violence
e. Court attendance

14.8 Professionalism

a. Ethical theories and principles
b. Research ethics
c. Code of Conduct in Medical Council

15. EMERGENCY DEPARTMENT MANAGEMENT*

15.1 Management principles

a. Responsibility
   i. potential barriers to the assumption of responsibility for patient care
   ii. the importance of the assumption of overall responsibility for safe and effective patient care

b. Leadership
   i. different roles that may be played by a leader
   ii. different skills required by leaders at different levels within an organisation

c. The concept of delegation and the features required for successful delegation

d. Different types of organisational structures commonly found within hospitals and their relative strengths and weaknesses

e. Planning
   i. the steps required to generate a plan
   ii. effective priority setting

f. The modes of communication commonly used in the ED between the ED and other interfaces in the hospital

g. the ability to appropriately supervise other staff members, including how to give clear instructions.

15.2 Physical

a. Design
   i. Site selection, access points, parking and visibility, and relationships to other departments
   ii. Internal layout, patient flow, security features and privacy
   iii. Area/size, number and type of treatment areas appropriate for casemix, staffing and ED length of stay
   iv. Fire and government regulations and how they may influence design
   v. Short stay unit / observation unit
   vi. Signage appropriate for casemix
   vii. Staff facilities, including rest areas and educational facilities

b. Equipment
   i. Steps involved in equipment selection and acquisition
   ii. steps required to manage equipment failure

c. Computers and information management systems
   i. The principles of operation of the systems commonly used to manage patients in the ED including patient tracking, investigation ordering and results, medical record generation, decision support, and referral systems
   ii. The benefits and risks of electronic vs paper based storage of health information

d. Principles of occupational health and safety and their relation to ED design

e. Communications systems.

15.3 Staff

a. Job description
   i. Roles of key members of ED staff
   ii. Key competencies required by staff to effectively perform their tasks
b. Staff assessment and appraisal
   i. Adequate evaluation of staff performance and effective feedback to staff members regarding their performance
   ii. Receiving feedback and modifying their behaviour to improve their own performance
c. The sources and consequences of conflict and the techniques commonly used to resolve conflict
d. Principles for protection of staff from various forms of harassment and discrimination
e. Common sources of personal and work-related stress
f. Theories underlying personal motivation and reward systems
g. Teams
   i. Advantages and disadvantages of teams and committees
   ii. Different roles that team members may perform
   iii. Different phases of team development
   iv. Roles and responsibilities of other professionals in the provision of emergency health care
   v. Effective work with others to assess, plan, provide and integrate care for patients
   vi. Effective work with others to assess, plan, provide and review research problems, educational work, program review or administrative responsibilities
h. Rostering
   i. Factors that should be considered in the construction of a staff roster for an ED
   ii. Factors that influence the staffing requirements of an ED

15.4 Financial

a. General principles
   i. Functions of budgets within an organisation
   ii. principles of budget management
   iii. principles of cost effectiveness analysis and the potential limitations of such analyses
   iv. models used in Hong Kong and other developed EM systems to provide funding to EDs and is able to identify potential sources of funding for ED operations
b. Recurrent & Capital
   i. Difference between capital and recurrent funding, relative contributions of each to total budgetary position, for building and equipment
   ii. Difference between fixed and marginal costs
   iii. approximate relevant contribution of the following to the total cost of ED operations (Specialty Costing):
      - Salaries and wages
      - Consumables
      - Drugs
      - Investigations

- Repair, maintenance and replacement
- Training and development

c. possible sources of funds for research projects

15.5 Hospital environments

a. Differences in staffing, physical facilities, support services and organisational cultures between the following types of hospitals
   i. Tertiary referral
   ii. Community hospital
   iii. Rural & remote
   iv. Tactical & disaster relief

15.6 Quality improvement

a. Principles of quality improvement
   i. Pathways
   ii. Development
   iii. Implementation
   iv. Evaluation
b. Policies and procedures
c. Clinical audit
d. Clinical indicators
e. Process measurement
f. Outcome measurement
g. Risk management
h. Complaints management
i. Accreditation and verification processes
j. Patient satisfaction
k. Task design

15.7 Clinical Risk management

a. clinical situation in the ED associated with a high incidence of adverse outcomes
b. Telephone advice and triage
   i. medico-legal aspects of telephone advice
   ii. documentation of a non-face-to-face encounter (including follow up)
c. vertical and horizontal consultation
d. Transfer of responsibility
   i. Timely and seamless handover of quality patient care
   ii. issues of interface care between one service/ individual practitioner and another
e. Disposition

i. Discharge / transfer
ii. Follow up
iii. Referral

f. Discharge against medical advice (DAMA)
   i. Outcomes associated with DAMA
   ii. Techniques/ systems that can lessen the number of DAMA patients
   iii. Medico-legal implications of patients who DAMA

d. Left without being seen (LWBS)
   i. Outcomes associated with LWBS
   ii. Techniques/ systems that can lessen the number of LWBS patients
   iii. Medico-legal implications of patients who LWBS

d. Patients who leave before treatment is completed
   i. Responsibilities associated with patients who leave before treatment is completed
   ii. principles of medico-legal obligations, mental status assessment, mental competency and guardianship

15.8 Communications with external groups

a. Relationship between patient perception and satisfaction
b. Managing patients with special needs in an appropriate manner
c. Conduct a media interview regarding a medical topic
d. Importance of good relationships, and how these may be achieved, with the following groups
   i. Interdepartmental relations
   ii. Public relations
   iii. Media relations
   iv. Government relations
   v. Legal relations: police, coroner & courts

15.9 ED specific management issues

a. Patient flow, ED overcrowding and access block
   i. process mapping and patient flow
   ii. ED crowding: possible causes and effects
   iii. Access block: contributory factors
b. Observation medicine and short-stay units
   i. Different models of care and observation medicine
   ii. Potential benefits and limitations of a short-stay unit associated with the ED
   iii. Appropriate casemix for its admission

16. Academic Emergency Medicine

16.1 Principles of research

a. General principles
   i. Accurate data collection on the validity of a scientific work
   ii. Presentation of data may influence the perception of study results
   iii. Research integrity and conflict of interest
   iv. Randomization: Association and causation
b. Hypothesis formulation and testing
   i. Generation of an appropriate hypothesis to answer a research question
   ii. Types of error in hypothesis testing
c. Research ethics
   i. Process of consent for research
   ii. Ethics of medical research

16.2 Research methods

a. Principles of medical research
   i. Sample size
   ii. Choice of research method
   iii. Enrolment
   iv. Randomisation
   v. Concealment of treatment allocation
   vi. Bias
   vii. Validity
   viii. "Gold standard" test
b. Roles, benefits and limitations of different research methods
   i. Trials
   ii. Meta-analysis
   iii. Case series and reports
   iv. Literature reviews
   v. Observational studies
   vi. Letters

16.3 Statistical methods

a. Statistical principles
   i. Sensitivity
   ii. Specificity
   iii. Positive predictive value
   iv. Negative predictive value
   v. Accuracy
   vi. Relative risk

vii. Odds ratio

viii. Confidence intervals

ix. Statistical significance

b. Usage of statistical methods

i. Dichotomous, nominal, ranked (ordinal) and continuous variables

ii. Techniques used to graphically display or plot data from dichotomous, nominal, ranked (ordinal) and continuous variables

iii. Parametric and non-parametric data

iv. Literature reviews

v. Paired and non-paired data

vi. Descriptive and comparative statistics

vii. Distributions of continuous variables and the terms used to describe these distributions

viii. Comparative statistical tests:
- Student's t test
- Mann Whitney U test
- Chi squared test
- Sign test
- ANOVA
- Correlation coefficients
- Tests of agreement
- Multiple regression

c. Measurement accuracy

i. Confidence intervals in data reporting

ii. Standard error of the mean

d. Clinical and statistical significance

e. Bayes' theorem

i. Principles and practical application of Bayes' theorem, including:
- Prior probability
- Post-test probability
- Likelihood ratios (+ve and -ve)

ii. Limitations of Bayes' theorem in clinical practice

16.4 Statistical methods

a. Principles, practical application and limitations of evidence-based medicine

b. Potential barriers to the adoption of research findings into clinical practice

c. Accurate and critical appraisal on literature related to emergency medicine practice

d. Effective critical appraisal of retrieved evidence to address a clinical question

16.5 Medical Education *

a. Basic principles of medical education in EM settings

i. One-on-one tutorials

ii. Small group tutorials

iii. Large group tutorials

iv. Didactic versus interactive sessions
v. Setting learning objectives
vi. Study techniques
vii. Creation of an environment conducive to learning
viii. Evaluation of a teaching program
ix. Development of courses
x. Educational resources including electronic aids in teaching and learning

b. Undergraduate medical education
   i. A safe environment for the student
   ii. A safe environment for the patient interacting with the student
   iii. Consent of a patient interacting with a student
   iv. Topics in emergency medicine relevant to differing stages in the medical student curriculum
   v. Problem-based learning

c. Junior medical staff
   i. Principles of on-the-floor teaching of junior medical staff
   ii. Principles of a topical program for junior medical staff
   iii. Principles of on-the-floor supervision of junior medical staff

d. Specialist training
   i. Appropriate structure of a training program in emergency medicine
   ii. Primary examination teaching program and curriculum
   iii. Intermediate examination teaching program and curriculum
   iv. Exit examination teaching program and curriculum
   v. Continuing medical education program
   vi. Guidelines and requirements for the accreditation of EDs for HKCEM training
   vii. HKCEM research requirements for training
   viii. The roles of the Training Supervisor of Emergency Medicine Training
   ix. The roles of the Education & Examination Committee
   x. Assessment of HKCEM trainees
   xi. Providing feedback to trainees
   xii. Approach to a problem being experienced by an emergency medicine trainee
   xiii. The approach to a poorly performing trainee
   xiv. The international differences with regard to training in emergency medicine

e. Principles of medical education related to competency as an emergency physician
   i. Limitations of expertise via self-assessment
   ii. Principles of adult learning
   iii. Maintenance of competence as an emergency physician

f. Non-specialist, nursing and paramedical training

ASSESSMENT, CONTINUOUS PROFESSIONAL DEVELOPMENT AND QUALITY ASSURANCE

TABLE OF CONTENTS

1. ASSESSMENT OF TRAINEES

Our College has adopted a multi-facet strategy in assessment of trainees. It involves 3 summative examinations, mandatory training courses and continuous assessment of trainees by various means. In addition to the current summative assessment methods, more formative assessment modalities for different competency domains will be integrated to our curriculum in the future.

After successful enrollment, a trainee must fulfill the training requirements under the college. The assessment modalities are described below:

1.1 Summative assessment/examinations

Our College is having 3 summative examinations.

1.1.1 PEEM: Primary Examination in Emergency Medicine
Scope: To assure proficiency in basic medical knowledge for the practice of emergency medicine.
Milestone: nil
Format: Single best answer questions (MCQ)
Eligibility: Holders of a basic medical degree

Please refer to the College website for the most updated details.

1.1.2 IEEM: Intermediate Examination in Emergency Medicine
Scope: To assure proficiency in clinical knowledge and skills to practice independently in the emergency department for most clinical situations.
Milestone: From basic trainee to higher trainee.
Format: Part 1 short answer question paper and part 2 OSCE paper.

Eligibility: Candidates must fulfill ALL of the following requirements:

1. Should be registered Medical Practitioners in active clinical practice:
   a. In Hong Kong - this refers to doctors registered with the Hong Kong Medical Council and holding valid annual practicing certificates
   b. Outside Hong Kong - applicants have to provide relevant documentary proof of medical registration and license to practice in their home countries.

2. Must pass the PEEM or its equivalent examination as stipulated by the Hong Kong College of Emergency Medicine

3. Must have completed, counting to the date of examination:
   a. At least 24 months of accredited post-internship training, and
   b. At least 12 months of accredited training in Emergency Department within the 24 months of post-internship training.

Please refer to the College website for the most updated details.

1.1.3 EEEM: Exit Examination in Emergency Medicine
Scope: To assure proficiency in all core competencies required of a HKCEM fellow.
Milestone: From higher trainee to fellow.
Format: Written examination (short answer questions) and oral examination

Eligibility: Candidates must fulfill ALL of the following requirements:
1. Must have passed the College Intermediate Examination or equivalent.
2. Completed at least six years of accredited training of which a minimum of three years must be in

Emergency Medicine (of which two years must be in higher training)
3. Must have fulfilled the mandatory rotations as required by the College.
4. Fulfilled the College research and training requirement

Please refer to the College website for the most updated details.

1.2 Continuous assessment of trainees

1.2.1 Half-yearly supervisor appraisal

Trainees will be assessed by department training supervisor 6-monthly. The assessment will cover the performance of a trainee in different domains of learning. A training supervisor has the discretion to recommend termination of the trainee status if the trainee performs poorly or refuses to comply with the half-yearly assessment. Full accreditation of the 6-month training will be granted only if **all** of the following requirements are fulfilled:

1. All scores in Trainee Assessment Form ≥ 3 (i.e. at least satisfactory in all of the categories in the assessment form),
2. Fulfillment of College Training Point requirement,
3. Completion of written assignment (unless exempted for elective rotation outside A&E for ≥ 3 months), and
4. Satisfactory completion of Logbook

Please refer to the College website for the most updated details.

1.2.2 Special assessment on core competence

1. Research: An original research project must be completed and fulfill the requirements of the College. Please refer to the College website for the most updated details.
2. Critical appraisal skills in reading literature: please refer to the mandatory courses section below.

1.2.3 Mandatory training courses

The following training courses/workshops are mandatory

1. Before entering Higher Training
   a. BLS
   b. ACLS

2. Before allowing to sit in EEEM
   a. Orthopaedic & surgical Skill Workshop
   b. Airway Workshop
   c. APLS / PALS
   d. USG Basic course
   e. Disaster Triage & Management Workshop
   f. Basic Toxicology course
   g. Simulation Training course in Emergency Medicine
   h. Literature Appraisal / Evidence Base Medicine Workshop

1.2.4 Portfolio

Our College will introduce a training portfolio for the trainees in a web-based platform. It is a continuous formative assessment tool for trainees.

1.2.5 Workplace based assessment (WBA)

Our College encourages trainers to undergo continuous workplace based assessment for their trainees to improve their performances in the different domains. Currently, a set of mini-CEX assessment materials has been developed by the College for trial run and it is subject to further refinement under the direction of the Education Committee. It is not compulsory at the moment and the education committee is going to implement compulsory WBA for trainees in the future.

2. POST-FELLOWSHIP CONTINUOUS PROFESSIONAL DEVELOPMENT

Medical profession is a lifelong learning career and it is essential for doctors to maintain their professional standard by continuing learning activities. Currently, fellows of HKCEM must comply with the Hong Kong Academy of Medicine (HKAM) requirement on continuing medical education (CME). As emergency medicine is a developing specialty in Hong Kong, there are many new areas e.g. hyperbaric medicine where fellows can build our professional niche among other specialties.

2.1 CME activities

The Hong Kong Academy of Medicine (HKAM) requires all fellows to maintain continuing medical education (CME) activities through a system of CME points. Our College maintains an administrative role on CME activities for the fellow and trainees through her CME/CPD subcommittee under the Education Committee.

2.2 Post-fellowship Subspecialty and special academic development

Fellows and higher trainees can start their professional development in subspecialty areas to suit their personal interests. Clinical toxicology is now a recognized sub-specialty with a well-defined training pathway under the Clinical Toxicology Board

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The College has subcommittees and interest groups under the scientific affairs committee for different subjects. They include:

a. Clinical simulation
b. Disaster medicine
c. Evidence based medicine
d. Hyperbaric medicine
e. Infectious disease
f. Intensive care
g. Observation Medicine
h. Pre-hospital medicine
i. Research
j. Resuscitation
k. Sports medicine
l. Toxicology
m. Transport medicine
n. Ultrasound

2.3 College trainers

A fellow can apply to become a College trainer. A trainer is entitled to teach college tutorials as well as supervise trainee with a College mandate. There is a requirement for a training centre to have a desirable trainer to trainee ratio.

To qualify as a College trainer, a fellow need to submit an application to the education committee and attend a train-the-trainer programme.

3. SUPERVISION AND QUALITY ASSURANCE SYSTEM

3.1 Education Committee of HKCEM

The education committee oversees the training programme and all examinations under HKCEM. It is also the quality assurance structure of these programmes. The committee and its subcommittees hold regular meetings to review the training curriculum and make recommendations according to the most updated world trend in medical education.

3.2 Training supervisors

There is a designated training supervisor (often a consultant grade) in each training center, who is responsible for overseeing training matters within the department.

3.3 Trainers and training-the-trainers

A fellow of HKCEM is entitled to apply for the trainer status. A training center must maintain a reasonable trainer to trainee ratio as stipulated by the College. Our College require all trainers to attend train-the-trainer workshop before applying for trainers from 2017 onwards.

3.4 Examiners

3.4.1: Examiners

A College fellow with more than 7 years post-fellowship experience is regarded as an experienced fellow and by nomination, can apply to become a College examiner. A newly recruited examiner should attend the examiner training workshop and observe a diet of IEEM and EEEM before becoming a formal examiner of the college. To maintain the status of examiner, one needs to satisfy the minimum requirement on writing examination question and examining in College examinations in the specified period.

3.4.2: Chief examiners

A chief examiner is responsible for the recruitment and training of the examiners, collating examination questions, standard setting and quality assurance. Our College may invite overseas external examiners to observe and give advice to the local examinations.

3.5 Accreditation activities

3.5.1 Accreditation of training centres

The education committee holds the responsibility of accreditation of a training centre both inside as well as outside the HKSAR. A training centre, which is an Emergency Department of a hospital, has to fulfill the requirements of the College. Each training centre will usually be accredited every 5 years by a panel of accreditors appointed by the education committee.

HONG KONG COLLEGE OF EMERGENCY MEDICINE

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EDUCATION COMMITTEE

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