VERSION 1.1 · OCTOBER 2026

CERTIFICATE TRAINED TO ADVANCED EMT LEVEL

AEMT CERTIFICATE: CURRICULUM

44 modules. For each: what the student must be able to do, why it matters in Kenya and the evidence behind it.

1,800 hours · competency-based · AHA BLS, AHA ACLS and AHA PALS embedded · two-tier skills · aligned with the Sahara Scope of Practice v1.0

Sahara EMS College
Draft for discussion · Version 1.1 · 20 October 2026

SAHARA EMS COLLEGE
NAKURU · KISUMU · KENYA

CONTENTS

CONTENTS

1,800 h
12 months, 40% of it on real patients

44 modules
each with outcomes, Kenyan context and evidence

3 AHA courses
AHA BLS, AHA ACLS and AHA PALS embedded and certified

2 tiers
every skill with full kit and with minimal resources

Sahara EMS College proposes this curriculum for a one-year certificate that trains to Advanced EMT level, as set out in its Scope of Practice for EMS Personnel in Kenya, version 1.0 (Option B). Graduates register with KMPDC as Emergency Medical Technicians (EMTs) and receive the Advanced EMT (AEMT) endorsement after six months of supervised practice and credentialing by a medical director. Every module states what it teaches, how long it takes, why it matters in Kenya and which evidence supports it.

Version 1.1, 20 October 2026. This version adds workplace-based assessment with DOPS and Mini-CEX, an electronic logbook, an OSCE gate before the first hospital placement, a simulation log before the ambulance, weekly skills drills, an assessor standard for preceptors and examiners, psychological first aid and peer support for crews, and a map of graduate outcomes to modules. Two theory hours move from Module 9 to Module 6; the total stays at 1,800 hours.

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FRAMEWORK

DESIGN PRINCIPLES

Eight principles shape every module. They answer one question: what does a Kenyan patient need from an EMT, on a real road, with the equipment that is really there?

01 **Every intervention earns its place.** We teach what changes the outcome for this patient, in this system. Practices that do not help, or that harm, are taught differently and the module says why. Example: rigid full-body immobilisation is replaced by selective spinal motion restriction (Module 32).

02 **Kenya's burden of disease sets the weight.** Road traffic injury, obstetric and newborn emergencies, children with malaria, sepsis or dehydration, snakebite, burns, drowning, poisoning and gender-based violence get the hours they deserve. Trauma has eight modules and a full extrication and multi-system trauma module.

03 **Realism about the status quo.** Long transfers on poor roads, crews of one or two, missing oxygen or monitors and hospitals without CT are everyday conditions. Every skill is taught twice: with full equipment and with minimal resources.

04 **The right destination is treatment.** Students learn what each facility level can do and how to pre-alert. Choosing the right hospital often matters more than any device.

05 **Scope first, content second.** The curriculum follows the Sahara Scope of Practice v1.0: the EMT scope from registration, and the AEMT endorsement after supervised practice and credentialing. Nothing is taught for use that the scope does not allow.

06 **Medicines must survive the vehicle, and doses must be safe.** Heat-stable medicines come first; oxytocin is used only where cold storage is verified. Every child's dose comes from a weight band or dose card, with one concentration per medicine and a double check.

07 **Competence, not attendance.** Learning outcomes are observable. Skills are signed off by OSCE (pass mark 80% of checklist items) and a logbook of real patient contacts. The format is compatible with competency-based education and training (CBET).

08 **Clinical reasoning before algorithms.** Students learn the xABCDE approach and work from symptoms and syndromes. Decision rules are taught explicitly, so graduates know when to follow a protocol and when to depart from it.

FRAMEWORK

GRADUATE PROFILE AND SCOPE OF PRACTICE

On the first day of work, a graduate can:

- assess and treat an acutely ill or injured patient of any age with the xABCDE approach
- keep an airway open, ventilate and run a resuscitation to current AHA standards
- stop life-threatening bleeding, protect the spine selectively and move injured patients safely
- manage a normal or complicated birth, bleeding after birth and newborn resuscitation
- give the medicines in the EMT scope safely, and those of the AEMT endorsement once credentialed, and document them
- choose the right facility, pre-alert it and hand over clearly
- protect themselves, the crew and the scene
- document care to legal and Social Health Authority (SHA) standards

The scope has two levels, as in the Sahara Scope of Practice v1.0. The **EMT scope** applies from registration. The **AEMT endorsement** adds IV and IO access, a supraglottic airway in any patient and IV medicines, after six months of supervised practice and credentialing by the medical director. Skills marked C need credentialing even within the EMT scope. Doses are set in the Sahara medication protocol, not in this curriculum.

DOMAIN	EMT SCOPE	AEMT ENDORSEMENT	PARAMEDIC LEVEL (NOT TAUGHT FOR USE)
Assessment and monitoring	xABCDE, vital signs, pulse oximetry, blood glucose, temperature, BE-FAST, GCS, triage; CO_2 detection to confirm a supraglottic airway in cardiac arrest (C)	12-lead ECG recording and transmission where a reader and a reperfusion pathway exist; CO_2 detection with any airway device	12-lead ECG interpretation
Airway and breathing	Positioning, suction, oro- and nasopharyngeal airways, bag-valve-mask ventilation, titrated oxygen, salbutamol by inhaler and spacer or nebuliser; supraglottic airway in cardiac arrest (C)	Supraglottic airway (i-gel) in any patient	Endotracheal intubation, CPAP, needle decompression
Circulation and resuscitation	High-quality CPR, AED, direct pressure, wound packing, haemostatic dressing where stocked, tourniquet, pelvic binder	IV and IO access, IV fluids by protocol, adrenaline IV or IO in cardiac arrest	Manual defibrillation, cardioversion, pacing, antiarrhythmics
Trauma	Splinting including traction splint, selective spinal motion restriction (scoop, vacuum mattress, KED), burns care, snakebite immobilisation, extrication with the fire service; one gentle in-line traction of a pulseless deformed limb by protocol	Tranexamic acid IV within 3 hours	Fracture and dislocation reduction, procedural sedation
Obstetric and newborn	Normal and complicated birth, uterine massage, misoprostol, heat-stable carbetocin, newborn resuscitation (Helping Babies Breathe)	Tranexamic acid IV; magnesium sulphate IM loading dose with calcium gluconate as antidote; oxytocin IM only with verified cold storage	Advanced newborn resuscitation, oxytocin IV
Medicines	Oxygen, aspirin, oral glucose, paracetamol, ibuprofen, methoxyflurane, salbutamol, ipratropium, adrenaline IM, naloxone intranasal, ondansetron oral, oral rehydration salts, misoprostol, heat-stable carbetocin; rectal diazepam or buccal or intranasal midazolam (C)	Sodium chloride 0.9% and Ringer's lactate, glucose 10%, adrenaline IV or IO, naloxone IV or IM, midazolam IM, tranexamic acid, magnesium sulphate, calcium gluconate, paracetamol IV, ondansetron IV or IM, glyceryl trinitrate sublingual, oxytocin (cold storage only)	Opioids, ketamine, amiodarone, atropine and the further paramedic formulary

Methoxyflurane is not yet registered in Kenya and needs registration or an import authorisation before use. Diazepam and midazolam are controlled medicines; their use by EMTs needs a legal route under the Narcotic Drugs and Psychotropic Substances Act.

FRAMEWORK

PROGRAMME STRUCTURE

The Certificate runs over 12 months with 1,800 hours: 27 weeks at college and 18 weeks on placement, at 40 hours per week, plus examinations and leave. College and placement alternate in three rounds. Placements make up 40% of the programme, as the Scope of Practice proposes for the AEMT level.

BLOCK	HOURS	SHARE	WHERE
Theory	534 h	30%	Classroom, case work
Skills lab and simulation	546 h	30%	Skills lab, incl. AHA BLS, AHA ACLS and AHA PALS and a 48 h integrated capstone simulation
Clinical placement	240 h	13%	Emergency department 80 h, labour ward and maternity 60 h, theatre and anaesthesia (airway) 40 h, paediatrics 40 h, psychiatric unit 20 h
Ambulance placement	480 h	27%	Ambulance service, with a qualified preceptor
Total	**1,800 h**	**100%**	

Entry: KCSE mean grade C-, with at least D in Biology, as for comparable national programmes, and a valid first aid certificate. Holders of existing EMT certificates enter through recognition of prior learning and bridging modules. Diploma holders, such as those of the KMTC Diploma in Emergency Medical Technology, are mapped to the AEMT endorsement, as the Scope of Practice proposes.

Gate to the hospital: students start the first clinical placement only after passing the OSCE stations for xABCDE assessment, hand hygiene and PPE, and AHA BLS certification.

Gate to the ambulance: students start the ambulance placement only after passing the OSCE, AHA BLS certification and, if they will drive, the separate Emergency Vehicle Operator Course (EVOC). They must also have logged at least 20 full simulated cases with structured debrief, at least 5 of them as team leader.

Logbook minimums: the logbook is electronic, works offline and uses the fields of the patient care record, so that anonymised data can feed national tracking. It records at least 50 documented patient contacts on the ambulance. Each contact is recorded by age group, condition and skills performed, and signed off by the preceptor. In the labour ward, students observe at least 10 births and assist at least 10, under supervision.

Workplace-based assessment: at least 8 DOPS (Direct Observation of Procedural Skills) and 6 Mini-CEX (mini clinical evaluation exercise), at least 3 of each on the ambulance, each with written feedback from a trained preceptor. DOPS cover airway and ventilation, bleeding control, spinal motion restriction or splinting, medicine administration, IV cannulation under supervision and support of a normal birth.

Weekly drills: every college week opens with a 30-minute drill, such as CPR with a feedback device, bag-valve-mask ventilation or bleeding control. Drills are logged and count within the skills hours of Modules 17, 19 and 30.

Support after distressing cases: each student has a named contact on placement. After a death or another distressing case, the contact checks in within 72 hours, offers psychological first aid and refers to counselling where needed (Module 6).

After graduation: six months of supervised practice as an EMT, with a logbook of AEMT skills, lead to credentialing by the medical director and the AEMT endorsement.

MODULE MAP

Forty-four modules in eight parts. Hours are classroom theory and skills lab or simulation; placements come on top. Compared with version 0.1, the 200 added hours go mainly to trauma (two trauma modules split into four, and a new extrication module), IV and IO access, AHA ACLS and AHA PALS, the sick child, obstetric skills and anatomy and physiology. Version 1.1 moves two theory hours from Module 9 to Module 6.

NO.	MODULE	THEORY H	SKILLS H
PART 1 · FOUNDATIONS OF EMS			
1	EMS in Kenya	8	0
2	Law, ethics and documentation in Kenya	16	8

NO.	MODULE	THEORY H	SKILLS H
3	Communication and handover	8	12
4	Human factors and teamwork	8	8
5	Scene safety and hazards	8	6
6	Occupational health and safety	8	6
7	Infection prevention and control	8	8
8	Ambulance operations	14	18
PART 2 · THE HUMAN BODY			
9	Cells, tissues, fluids and basic physics	20	0
10	The respiratory system	18	2
11	The cardiovascular system, blood and shock	22	2
12	The nervous system	18	2
13	The digestive and urinary systems	14	0
14	The musculoskeletal system, the skin and the endocrine system	18	2
PART 3 · PATIENT ASSESSMENT			
15	Patient assessment: the xABCDE approach	20	36
16	Monitoring and diagnostic tools	12	22
PART 4 · AIRWAY, BREATHING AND RESUSCITATION			
17	Airway management	14	34
18	Breathing and oxygen therapy	10	12
19	Resuscitation, with AHA BLS and AHA ACLS	14	46
PART 5 · MEDICAL EMERGENCIES			
20	Respiratory emergencies	12	8
21	Cardiovascular emergencies	14	12
22	Neurological emergencies	12	10
23	Diabetic, metabolic and haematological emergencies	10	6
24	Allergic reactions and anaphylaxis	6	8
25	Infections and sepsis	14	8
26	Poisoning, bites and envenomation	14	8
27	Environmental emergencies	8	6
28	Behavioural and psychiatric emergencies	10	8
PART 6 · TRAUMA			
29	Trauma principles and kinematics	12	10
30	Bleeding and shock	10	14
31	Head, face and eye injuries	10	8
32	Spinal injuries	8	12
33	Chest injuries	8	10
34	Abdominal and pelvic injuries	8	8

NO.	MODULE	THEORY H	SKILLS H
35	Musculoskeletal injuries and splinting	8	14
36	Burns	8	8
37	Rescue, extrication and multi-system trauma	6	14
PART 7 · SPECIAL PATIENT GROUPS			
38	Obstetric and newborn emergencies	22	22
39	Paediatric emergencies, with AHA PALS	20	28
40	Older people, patients with disabilities and patients on dialysis	8	4
PART 8 · MEDICATIONS, MAJOR INCIDENTS AND TRANSFERS			
41	Pharmacology and safe medication	22	14
42	Vascular access and fluid therapy	6	18
43	Major incidents and triage	12	12
44	Inter-facility transfer and referral	8	4
–	Integrated capstone simulation	–	48
Total		**534**	**546**

LEARNING DESIGN: TEN LEARNING FIELDS

The 44 modules define what is taught and how many hours each topic gets. Teaching is organised in learning fields: real situations EMTs face in Kenya. Each learning field brings together the science, skills, simulation and assessment from the modules it needs, so students meet theory and practice on the same case in the same week. College and placement alternate, and each placement comes with logbook tasks for the learning fields just taught.

Why: a 2016 assessment of Kenyan EMS training found that students struggled to apply classroom knowledge and that training was not built around symptoms (Nicholson et al., 2017). Learning fields also fit Kenya's policy of competency-based education and training (TVET CDACC).

NO.	LEARNING FIELD	MODULES
1	Arriving safely and taking charge	1–8
2	The patient who cannot breathe	10, 16–18, 20
3	Collapse and cardiac arrest	11, 19, 21
4	The injured patient	14, 29–37
5	Confusion, fits and stroke	12, 22, 23
6	Infection, allergy, poisoning and heat	13, 24–27
7	Pregnancy, birth and the newborn	38
8	The sick child	39
9	People at risk: behavioural emergencies, abuse, older and disabled people	28, 40
10	Many patients, long journeys	43, 44
–	Running through all ten: patient assessment, science basics, medications, vascular access	15, 9, 41, 42

Example week, learning field 7 (bleeding after birth): Monday, the case and the science (blood volume, the uterus, shock). Tuesday, skills lab (calibrated drape, uterine massage, misoprostol and heat-stable carbetocin; IV access and tranexamic acid for the AEMT level). Wednesday, simulation with full kit and with minimal resources, including pre-alert and handover after a two-

hour transfer. Thursday, case review with a midwife. Friday, OSCE station and debrief, then the logbook tasks for the next labour ward placement.

Sequence:

01 Round 1: learning fields 1–3, AHA BLS and the first OSCE stations; then the emergency department and theatre (airway).

02 Round 2: learning fields 4–8 and AHA PALS; then maternity, paediatrics and the first supervised ambulance shifts.

03 Round 3: learning fields 9–10, AHA ACLS and the capstone simulation; then the psychiatric unit and the main ambulance placement.

FRAMEWORK

ASSESSMENT

Assessment checks what a student can do, not only what they know. Five elements build on each other.

ELEMENT	WHAT IT CHECKS	STANDARD
Module tests	Knowledge and clinical reasoning per module	Written, short cases
OSCE	Every practical skill, station by station	Pass mark 80% of checklist items; critical safety items must be passed
Workplace-based assessment	Skills and judgement with real patients	At least 8 DOPS and 6 Mini-CEX, with written feedback; formative, collected in the portfolio
Electronic logbook and preceptor sign-off	Real patient contacts on placement	Minimum 50 ambulance contacts, signed by a trained preceptor
Final examination	Integrated performance	120-minute written paper with about 35% clinical judgement items; two practical scenarios as team leader, one of them a resuscitation; external examiner

AHA BLS and AHA ACLS (Module 19) and AHA PALS (Module 39) are embedded and certified separately by Sahara as an AHA Training Site. The final examination follows models with fixed, auditable standards, such as the German Rettungssanitäter examination and the clinical judgement share of the US National Registry examination.

Formative and summative. Module tests, simulation debriefs, DOPS and Mini-CEX are formative: they give feedback and fill the student's portfolio. Progression rests on the OSCE, the logbook minimums and the final examination.

Preceptors and examiners. Every preceptor and OSCE examiner completes a one-day Sahara assessor workshop on checklists, DOPS, Mini-CEX and feedback before assessing. Each year, examiners double-mark a sample of OSCE stations to keep marks consistent.

GRADUATE OUTCOMES AND WHERE THEY ARE BUILT

GRADUATE OUTCOME	BUILT IN MODULES	ASSESSED BY
Assess and treat an acutely ill or injured patient of any age with the xABCDE approach	15, 16, 20–40	OSCE, Mini-CEX, final scenarios
Keep an airway open, ventilate and run a resuscitation to current AHA standards	17–19, 39	AHA BLS, AHA ACLS and AHA PALS certification, OSCE, DOPS

GRADUATE OUTCOME	BUILT IN MODULES	ASSESSED BY
Stop life-threatening bleeding, protect the spine selectively and move injured patients safely	8, 29–37	OSCE, DOPS
Manage a normal or complicated birth, bleeding after birth and newborn resuscitation	38	OSCE, DOPS, labour ward logbook
Give the medicines in scope safely and document them	41, 42 and the condition modules	Module tests, OSCE, DOPS
Choose the right facility, pre-alert it and hand over clearly	1, 3, 44	OSCE (ATMIST handover), Mini-CEX
Protect themselves, the crew and the scene	5–7, 43	OSCE, logbook
Document care to legal and SHA standards	2, 3, 8	Logbook audit, module tests

EVIDENCE BEHIND THE PROGRAMME DESIGN

- **OSCE validity and pass marks.** A well-designed OSCE is reasonably reliable and valid. A fixed pass mark, however, can be arbitrary (Mash, 2007). Standard-setting methods give different cut-offs, and none is "best" (Kamal et al., 2020). We keep 80% of checklist items plus must-pass critical items, and will review the mark by borderline regression once results exist.
- **Workplace-based assessment and logbooks.** A review of 16 studies found that multisource feedback can improve performance. Other observed-assessment tools had positive learner reports but no proven performance gain (Miller & Archer, 2010). The logbook therefore records directly observed, signed-off cases with feedback, not just case counts. DOPS and Mini-CEX are used for structured feedback; pass decisions rest on the OSCE, the logbook and the final examination.
- **Simulation: what it does well.** AHA 2025 strongly recommends CPR feedback devices in training. It allows high-fidelity manikins where infrastructure exists, and low-fidelity manikins where not (AHA, 2025). This supports the two-tier design of every skill.
- **Simulation: its limits.** The CoAEMSP–NREMT guidance (revised 2026) says simulation "is not a replacement for all live patient experiences". Simulation that replaces a live encounter should be high fidelity, with prebriefing and prompt structured debriefing (CoAEMSP/NREMT, 2026).
- **Too much substitution harms results.** In 640 US paramedic programmes, 59% replaced at least one clinical skill area with simulation. Substituting more than five skill areas was linked to lower odds of a first-attempt pass rate of 75% or more (odds ratio 0.51–0.53) (Salhi et al., 2026). We therefore keep 720 hours of real-patient placement.
- **Field internship and preceptors.** In the same programmes, the median capstone field internship was 168 hours. It was 192 hours where pass rates reached 75%, and 144 hours below that (unadjusted) (Salhi et al., 2026). The 480-hour ambulance placement with trained preceptors exceeds this.
- **Competency-based education in Kenya.** TVET CDACC was established under the TVET Act No. 29 of 2013. It develops competency-based curricula, coordinates competence assessment and awards certificates, following Sessional Paper No. 2 of 2015 on competency-based education and training (CBET) (TVET CDACC).
- **Kenya National Qualifications Framework (KNQF).** The KNQF has ten levels. A Craft Certificate sits at Level 5 (one year, 120–239 credits), a National Diploma at Level 6 (KNQA FAQ). With 180 credits, the one-year AEMT Certificate maps to Level 5.
- **Skill decay and spaced practice.** CPR skills can decay within three months of a course. AHA 2025 recommends booster sessions after single-event courses and calls spaced learning reasonable (AHA, 2025). Short recurring skills drills therefore run across the whole programme.
- **Low-dose, high-frequency practice in East Africa.** Ugandan birth attendants were asked to practise on simulators weekly after one-day newborn and bleeding courses; few did. Facilities with a named practice coordinator documented more practice than those without; workload and staff turnover were barriers (Williams et al., 2019). Each placement base therefore has a named practice lead.
- **WHO Basic Emergency Care (BEC) in Kenya.** WHO and the ICRC designed BEC for first-contact providers in settings with limited resources (WHO, 2018). At the University of Nairobi, medical students' marks rose from 82% to 94.5% after a five-day course (Michaeli et al., 2023). Knowledge and confidence fell by 12–18 months, so refreshers are needed (Michaeli et al., 2025).

PART 01

FOUNDATIONS OF EMS

MODULE 01

EMS IN KENYA

THEORY **8 H** SKILLS **0 H**

Kenya is building a national system of emergency medical services (EMS) now. Every emergency medical technician (EMT) must know who regulates it, who pays, and where each patient should go.

LEARNING OUTCOMES

On completion the student can:

01 Explain the right to emergency treatment under Article 43(2) of the Constitution and section 7 of the Health Act 2017.

02 Describe the emergency chain, from the 922 call and the National Ambulance Dispatch Centre (NADC) to handover.

03 Explain how the Kenya Medical Practitioners and Dentists Council (KMPDC) registers ambulances and personnel, and why EMTs work under medical direction.

04 Match patient needs to Kenya Essential Package for Health (KEPH) levels 2–6 and choose the nearest capable facility.

05 Explain why a pre-alert is a clinical intervention, and how the Social Health Authority (SHA) funds emergency care.

SKILLS AND OSCE STATIONS

None. Destination choice is assessed in later clinical modules and the capstone simulation.

KENYA FOCUS

- By August 2024, 23 of 47 counties had started county policies under the Emergency Medical Care Policy 2020–2030. Thirteen were implementing them (Siegel et al., 2024).
- In September 2025, KMPDC directed all ambulances and emergency care personnel, including EMTs and paramedics, to register (Eastleigh Voice, 2025).
- 922 and the NADC launched on 5 August 2026, linking more than 600 public and private ambulances in all 47 counties, over 200 of them fully KMPDC-accredited. The SHA tariff annex lists the NADC as Line 112. Evacuation and the first 24 hours of emergency care are free (Citizen Digital, 2026).

WHY THIS WAY · EVIDENCE

- Emergency treatment legally includes pre-hospital care, stabilisation, and referral when the first facility cannot stabilise (Health Act, 2017).
- WHO sets standards for dispatch, medical control and handover, with protocols for basic or advanced providers (WHO, 2025).

> **WHAT WE TEACH DIFFERENTLY**
>
> **TRADITIONAL** "take the patient to the nearest hospital". **WE TEACH** the nearest *capable* facility, agreed with dispatch, with a pre-alert. **WHY** SHA rules require the nearest facility able to manage the condition (SHA, 2026).

MODULE 02

LAW, ETHICS AND DOCUMENTATION IN KENYA

THEORY **16 H** SKILLS **8 H**

EMTs touch patients, enter homes and see private information under time pressure. Correct consent, confidentiality and records protect patients and crews. The record also decides whether SHA pays.

LEARNING OUTCOMES

On completion the student can:

01 Obtain and document consent, including implied consent in emergencies and consent for children under 18.

02 Manage a refusal: assess capacity, explain risks, offer alternatives and document it with a witness.

03 Protect health data, including photos and messages, under the Data Protection Act 2019.

04 Recognise possible sexual violence or child abuse, treat life threats first, preserve evidence and refer for post-rape care (PRC).

05 Complete a patient care record (PCR) and run sheet that meet clinical, legal and SHA requirements.

06 Decline an instruction that is unsafe or outside scope.

SKILLS AND OSCE STATIONS

Objective structured clinical examination (OSCE): refusal of care (simulated patient); PCR from a filmed case, electronic and paper. Practice: consent for a child whose parent is absent; suspected child abuse with safeguarding referral; declining an unsafe instruction. Logbook: supervisor-reviewed PCRs.

KENYA FOCUS

- Survivors are entitled to treatment without a police report. HIV post-exposure prophylaxis (PEP) must start within 72 hours, emergency contraception within 120 hours (MoH, 2014).
- The Children Act 2022 counts failure by any person to report child abuse as child abuse (Children Act, 2022).
- SHA pays only with a Dispatch ID, run sheet, PCR and a handover signed by the receiving facility (SHA, 2026).

WHY THIS WAY · EVIDENCE

- Health status is sensitive personal data. Only health care providers, or people bound by professional secrecy, may process it (Data Protection Act, 2019).
- Life-threatening injuries come first. A doctor, clinical officer or nurse completes the PRC form; evidence goes in paper bags, not plastic (MoH, 2014).

> **WHAT WE TEACH DIFFERENTLY**
>
> **TRADITIONAL** notes written at the end of the shift. **WE TEACH** write as you go; finish before leaving the facility. **WHY** SHA audits claims and can recover funds (SHA, 2026).

MODULE 03

COMMUNICATION AND HANDOVER

THEORY **8 H** SKILLS **12 H**

Information lost at handover is care lost. The EMT is often the only clinician who saw the scene. The receiving team needs that information fast, in a usable form.

LEARNING OUTCOMES

On completion the student can:

01 Communicate clearly with patients, relatives and bystanders, including through an interpreter.

02 Give a concise pre-alert by radio or phone.

03 Perform a structured handover using ATMIST (age, time, mechanism or medical complaint, injuries or information, signs, treatment).

04 Use SBAR (situation, background, assessment, recommendation) to escalate a concern to a doctor.

05 Use closed-loop communication within the crew and with dispatch.

06 Document the handover and obtain the receiving signature.

07 Calm distressed, angry or frightened patients and relatives with words, and keep them informed.

SKILLS AND OSCE STATIONS

OSCE: ATMIST handover with planned interruptions. Pre-alert at two tiers: radio; mobile phone with poor signal, using a fixed script. Practice: handover in English and Kiswahili; SBAR call to a doctor; a distressed relative at the scene (simulated).

KENYA FOCUS

- Many receiving facilities have no CT scanner, neurosurgery or cath lab. A pre-alert lets them prepare, or redirect the ambulance early.
- 922 dispatchers choose the facility using real-time bed capacity (Citizen Digital, 2026).
- SHA requires a signed handover confirmation linked to the Dispatch ID (SHA, 2026).

WHY THIS WAY · EVIDENCE

- Important information may be missed at ambulance handover. Combined written and verbal handover may improve transfer (Bost et al., 2010).
- In a Scottish national study, ATMIST was the preferred mnemonic. Cited work suggests memory alone keeps about a third of handover data (Fitzpatrick et al., 2018).
- Closed-loop communication made paediatric trauma task completion faster and more efficient (El-Shafy et al., 2017).

> #### WHAT WE TEACH DIFFERENTLY
>
> **TRADITIONAL** informal handover while the patient is moved, with no record. **WE TEACH** the team stops for one ATMIST handover, then receives the written PCR. **WHY** structured handover may reduce missed information, and WHO guidance includes it (WHO, 2025).

MODULE 04

HUMAN FACTORS AND TEAMWORK

THEORY **8 H** SKILLS **8 H**

Skilled people still make errors when tired, rushed or in a poor team. Kenyan EMTs often work as the only clinician, with a driver. They must lead, follow and speak up safely.

LEARNING OUTCOMES

On completion the student can:

01 Explain how fatigue, stress, distraction and hierarchy lead to error.

02 Lead a crew: brief, assign roles, share the plan and call out changes.

03 Direct untrained helpers, such as the driver, relatives or police.

04 Speak up about a safety concern using a structured, escalating phrase.

05 Use checklists for high-risk, rarely performed tasks.

06 Lead a blame-free debrief and report an incident or near miss.

SKILLS AND OSCE STATIONS

Simulation with audio-video debriefing. OSCE: team leadership in a multi-task scenario, behavioural checklist. Two tiers: two EMTs; one EMT with untrained helpers.

KENYA FOCUS

- KMPDC expects a driver with a National Transport and Safety Authority (NTSA) licence and EMT training, plus a licensed EMT (KMPDC, checklist). Some ambulances run with a driver only.
- Long transfers on poor roads, often at night, add fatigue.
- Only 41.2% of violent incidents against Kenyan health workers were reported (Shah et al., 2025).

WHY THIS WAY · EVIDENCE

- WHO's curriculum for all health professions covers human factors, teamwork and learning from errors (WHO, 2011).
- Closed-loop communication made trauma teams faster and more efficient (El-Shafy et al., 2017).
- Interruptions were the most frequent barrier to prehospital handover (Fitzpatrick et al., 2018).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL juniors stay silent; errors are hidden or punished. **WE TEACH** anyone may stop the team over safety; errors are debriefed without blame. **WHY** WHO treats learning from errors as core (WHO, 2011).

MODULE 05

SCENE SAFETY AND HAZARDS

THEORY **8 H** SKILLS **6 H**

An injured EMT helps no one and becomes a second patient. Kenyan crews work on fast roads, in angry crowds and near fuel and chemicals. They must read a scene first.

LEARNING OUTCOMES

On completion the student can:

01 Perform a scene size-up: hazards, patient numbers, mechanism and resources needed.

02 Protect a road scene with vehicle position, lights, triangles and high-visibility clothing.

03 Recognise rising crowd hostility and decide to de-escalate, withdraw or call police.

04 Recognise a hazardous materials incident from placards, smells and casualty patterns; approach upwind and uphill.

05 Keep the public away from a fuel tanker spill or fire, and call fire services.

06 Decide not to enter water, fire, confined spaces or live electricity without trained rescuers.

SKILLS AND OSCE STATIONS

OSCE: road-scene protection, day and night. De-escalation with a hostile simulated crowd. Hazardous materials tabletop. Two tiers: ambulance as shield; triangles and a lookout only.

KENYA FOCUS

- From 1 January to 24 March 2024, NTSA recorded 1,090 road deaths, including 403 pedestrians and 260 motorcyclists (The Star, 2024).
- In a 2022 survey of 1,458 health workers in 40 counties, 49.9% had experienced violence. Patients or relatives were the commonest aggressors (Shah et al., 2025).
- Crowds collecting spilled fuel have turned tanker crashes into mass-casualty burn incidents.

WHY THIS WAY · EVIDENCE

- At one Kenyan hospital, 73.2% of emergency nurses faced violence in a year. Half of incidents brought no action (Safety and Health at Work, 2021).
- 93.6% of Kenyan health workers knew safety guidelines but struggled to apply them. So we rehearse, not just lecture (Shah et al., 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL run to the patient and treat in the traffic lane. **WE TEACH** stop, look and protect first, then treat in a protected zone. **WHY** pedestrians are the largest group of road deaths (The Star, 2024).

MODULE 06

OCCUPATIONAL HEALTH AND SAFETY

THEORY **8 H** SKILLS **6 H**

EMS work exposes crews to needles, heavy lifting, road crashes and repeated trauma. A system that does not protect its staff loses them.

LEARNING OUTCOMES

On completion the student can:

01 Handle sharps safely and give first aid after a needlestick or blood splash.

02 Report an exposure at once, and explain why HIV PEP must start early and run 28 days.

03 Perform team lifts and transfers with safe posture, using devices or improvised methods.

04 Explain the crash risk of lights-and-siren driving, and use seatbelts in every seat.

05 Recognise stress, burnout and post-traumatic stress in themselves and colleagues, and use peer support and referral.

06 Give psychological first aid to a colleague, patient or bystander after a distressing event: look, listen and link to help.

07 Plan sleep, fatigue and recovery around shifts and long transfers.

SKILLS AND OSCE STATIONS

OSCE: needlestick response (wash, report, document, refer). Lifting: team lift and carry-chair transfer on stairs. Two tiers: carry chair and stretcher; sheet carry with briefed helpers. Role-play: psychological first aid for a colleague after a simulated child death, and a structured peer check-in.

KENYA FOCUS

- At Kijabe Hospital, only 26% of 136 health workers starting PEP after sharps injuries completed 28 days (Osoo et al., 2024, preprint).
- Crews often lift over rough ground and stairs, with few hands and no carry chair.

WHY THIS WAY · EVIDENCE

- Lights and siren raise crash risk by 50% on the way to a call and almost triple it while transporting a patient, yet save only 42 seconds to 3.8 minutes (Joint statement, 2022).
- Among ambulance personnel, pooled prevalence is 11% for post-traumatic stress disorder, 15% for depression and 27% for psychological distress (Petrie et al., 2018).
- WHO recommends psychological first aid, not psychological debriefing, for people exposed to a traumatic event (WHO, 2011; Tol et al., JAMA 2013).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL lights and siren on every call. **WE TEACH** only when time saved is likely to matter clinically; never when returning to base. **WHY** joint statement of 14 organisations (Joint statement, 2022).

TRADITIONAL "toughen up" after bad calls. **WE TEACH** psychological first aid, peer support and early referral, with no compulsory single-session debriefing. **WHY** more than one in four ambulance staff show psychological distress (Petrie et al., 2018), and WHO recommends psychological first aid rather than psychological debriefing (Tol et al., JAMA 2013).

MODULE 07

INFECTION PREVENTION AND CONTROL

THEORY **8 H** SKILLS **8 H**

EMTs meet infections before diagnosis: tuberculosis (TB), HIV, hepatitis B, cholera and, rarely, viral haemorrhagic fever (VHF). Basic hygiene protects the patient, the crew and the next patient.

LEARNING OUTCOMES

On completion the student can:

01 Perform hand hygiene with alcohol rub or soap and water at the right moments.

02 Choose personal protective equipment (PPE) by risk, and put it on and take it off safely.

03 Apply TB precautions in transport: mask the patient, wear a respirator, ventilate.

04 Recognise a possible VHF or cholera case, then isolate, protect and notify.

05 Clean and disinfect the ambulance after each patient, and manage spills, waste and sharps.

06 Confirm own hepatitis B vaccination before placement.

SKILLS AND OSCE STATIONS

OSCE: PPE on and off (standard and VHF level), checked with fluorescent marker. Ambulance decontamination after a blood spill. Two tiers: alcohol rub and ready-made disinfectant; soap, water container and chlorine solution. Mixing 0.05% and 0.5% chlorine solutions from household bleach.

KENYA FOCUS

- Kenya confirmed its first imported case of Bundibugyo virus disease (Ebola) in October 2026 (Kenya News Agency, 2026).
- Uganda declared a Sudan virus disease outbreak on 30 January 2025. The first case was a health worker; three of the next eight cases were his carers (WHO, 2025).
- 64 million people live with chronic hepatitis B in the WHO African Region (WHO, 2026).
- Ambulances are often cleaned with little water, so the minimal tier is taught in full.

WHY THIS WAY · EVIDENCE

- WHO hand hygiene guidelines apply wherever care is delivered, including home visits (WHO, 2009).
- Hepatitis B vaccine gives nearly 100% protection; WHO advises it for all health care workers (WHO, 2026).
- WHO TB guidelines combine administrative and environmental controls with respiratory protection (WHO, 2022).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL one pair of gloves across tasks or patients. **WE TEACH** hand hygiene before and after gloves; new gloves per patient. **WHY** WHO hand hygiene guidance (WHO, 2009).

MODULE 08

AMBULANCE OPERATIONS

THEORY **14 H** SKILLS **18 H**

The ambulance is the EMT's workplace and a medical device on wheels. An empty oxygen cylinder found at the scene is a failure from the morning check.

LEARNING OUTCOMES

On completion the student can:

01 Perform a shift check against the KMPDC inspection checklist, and act on defects.

02 Communicate with dispatch by radio and phone, using standard status messages.

03 Move and load patients with stretcher, carry chair, scoop, vacuum mattress or improvised methods.

04 Secure patient, crew and equipment for long transports on rough roads.

05 Explain emergency driving principles and law; demonstrate low-speed manoeuvring and guided reversing.

06 Complete the run sheet with dispatch times, mileage and crew details.

07 Restock medicines and oxygen, read the medicine temperature log, and return medicines to station storage at the end of each shift (Module 41).

SKILLS AND OSCE STATIONS

OSCE: shift check with planted faults; stretcher loading; guided reversing on a closed course. Two tiers: full ambulance; basic vehicle with minimum kit. Restock and temperature log at shift end. A separate credited Emergency Vehicle Operator Course (EVOC, about two weeks, as the Scope of Practice proposes) is required before driving on placement. This module covers EVOC theory and low-speed handling only.

KENYA FOCUS

- KMPDC scores basic and advanced ambulances on a checklist requiring radio, GPS and an NTSA-licensed driver with EMT training. Pass mark: 70% (KMPDC, checklist).
- SHA pays KES 4,500 for the first 25 km, then KES 75 per km, only via the dispatch centre (SHA, 2026).

WHY THIS WAY · EVIDENCE

- Ambulance crashes cluster at intersections and traffic signals (Joint statement, 2022).
- WHO ambulance standards cover dispatch, medical control and infection prevention (WHO, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL drivers learn emergency driving on the job. **WE TEACH** no student drives on placement before passing EVOC. **WHY** lights and siren raise crash risk by 50% (Joint statement, 2022).

PART 02

THE HUMAN BODY

MODULE 09

CELLS, TISSUES, FLUIDS AND BASIC PHYSICS

THEORY **20 H** SKILLS **0 H**

Most students arrive from secondary school with no health training. This module builds the science they need to understand why patients deteriorate and why treatments work.

LEARNING OUTCOMES

On completion the student can:

01 Explain how cells use oxygen and glucose, and why failure of either causes acidosis and fast breathing.

02 Explain the body's fluid compartments and how diarrhoea, bleeding and burns cause dehydration or shock.

03 Calculate how long an oxygen cylinder lasts from its pressure, size and flow rate.

04 Explain how altitude reduces available oxygen and changes normal oxygen saturation (SpO2).

05 Explain how sickle cell trait and disease are inherited, and their link to malaria.

06 Explain basic pharmacology: how a medicine is absorbed, distributed and eliminated, and why the route changes how fast it works (Module 41).

SKILLS AND OSCE STATIONS

None. Assessed by written test with applied case questions.

KENYA FOCUS

- KMTC's EMT Certificate requires a C- mean grade in the Kenya Certificate of Secondary Education (KCSE), with D in Biology (KMTC intake advert, 2025). The science foundation must start from there.
- In the lake endemic zone, 19% of children aged 6 months to 14 years tested positive for malaria, against 6% nationally (Malaria Indicator Survey, 2020).
- A 60-village survey in western Kenya found sickle cell trait in 17.1% of young children; 1.6% had the disease (Suchdev et al., 2012).

WHY THIS WAY · EVIDENCE

- A 2016 assessment of Kenyan EMS training found weak anatomy and physiology teaching. Students struggled to apply classroom knowledge (Nicholson et al., 2017).
- Healthy newborns in Nairobi, at about 1,800 m, had SpO2 of 89–97% on their first day (Morgan et al., 2017). "Normal" depends on altitude.
- Kenyan protocols use different fluid plans for diarrhoea with shock and for poor circulation without diarrhoea (MoH Paediatric Protocols, 2022). Following them safely requires understanding fluid compartments.

WHAT WE TEACH DIFFERENTLY

TRADITIONAL memorising anatomy lists. **WE TEACH** each topic anchored to a Kenyan patient or device, such as a child with cholera or an emptying oxygen cylinder. **WHY** theory was not transferring to practice (Nicholson et al., 2017).

MODULE 10

THE RESPIRATORY SYSTEM

THEORY 18 H | SKILLS 2 H

Pneumonia, smoke and asthma make breathing problems common emergencies in Kenya. Oxygen is often scarce, so crews must recognise low oxygen by looking, counting and listening.

LEARNING OUTCOMES

On completion the student can:

01 Explain the airway, the lungs, the mechanics of breathing and gas exchange.

02 Count respiratory rate for a full minute and recognise increased work of breathing in adults and children.

03 Explain how low oxygen (hypoxaemia) and high carbon dioxide (hypercapnia) develop, and the signs they cause.

04 Explain why oxygen is a drug titrated to a target, and how altitude and skin pigmentation affect SpO2 readings.

05 Explain bronchospasm and how salbutamol and ipratropium relieve it, by inhaler and spacer or by nebuliser.

06 Explain how chest injury (pneumothorax, haemothorax, flail segment) disturbs breathing (Module 33).

SKILLS AND OSCE STATIONS

2 h peer practice: 60-second respiratory rate, signs of distress, auscultation landmarks. Assessed in the Module 15 and 16 OSCEs.

KENYA FOCUS

- Kenyan paediatric protocols count respiratory rate for one minute. They give oxygen when SpO2 is below 90% (MoH Paediatric Protocols, 2022).
- Pneumonia causes 14% of under-five deaths worldwide. Smoke from cooking with wood and other biomass is a key risk (WHO pneumonia fact sheet, 2022).
- Many ambulances carry no oxygen or oximeter, so clinical recognition must work on its own.

WHY THIS WAY · EVIDENCE

- At 1,800 m in Nairobi, healthy newborns had SpO2 of 89–97% (Morgan et al., 2017). Sea-level textbook values need careful use.
- Pulse oximetry missed hypoxaemia three times more often in Black than in white patients (Sjoding et al., 2020).
- WHO teaches pulse oximetry to detect hypoxaemia and guide oxygen therapy in children (WHO, 2016).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL respiratory rate estimated over a few seconds. **WE TEACH** counted for 60 seconds, as Kenyan protocols require (MoH Paediatric Protocols, 2022).

TRADITIONAL high-flow oxygen for everyone. **WE TEACH** titrate to an SpO2 target where an oximeter exists (WHO prehospital protocols, 2025). **WHY** this saves scarce cylinders for hypoxic patients.

MODULE 11

THE CARDIOVASCULAR SYSTEM, BLOOD AND SHOCK

THEORY 22 H | SKILLS 2 H

Shock means too little blood flow to the organs. It follows bleeding, dehydration, sepsis and heart disease. Students learn how the body compensates, so they recognise shock early.

LEARNING OUTCOMES

On completion the student can:

01 Explain the heart, blood vessels and conduction system, and how cardiac output is produced.

02 Explain blood components, clotting and haemoglobin, and the effects of anaemia, malaria and sickle cell disease.

03 Recognise early shock (fast pulse, cold skin, capillary refill over 3 seconds, confusion) before blood pressure falls.

04 Explain when crystalloid fluid helps and when fluid boluses cause harm.

05 Explain how untreated hypertension leads to stroke, heart failure and kidney failure.

06 Explain how very fast, very slow or chaotic heart rhythms reduce cardiac output, and which rhythms an AED shocks.

SKILLS AND OSCE STATIONS

2 h peer practice: pulse sites, capillary refill, perfusion signs across skin tones, heart sound landmarks. Assessed in the Module 15 OSCE.

KENYA FOCUS

- In the 2015 national STEPwise survey, 24.5% of adults aged 18–69 had hypertension. Only 15.6% of them knew it (Mohamed et al., 2018).
- About one young child in six in western Kenya carries sickle cell trait (Suchdev et al., 2012).

WHY THIS WAY · EVIDENCE

- The FEAST trial randomised 3,141 febrile children with poor perfusion in Kenya, Uganda and Tanzania. Fluid boluses raised 48-hour mortality from 7.3% to about 10.5% (Maitland et al., 2011).
- Kenyan protocols say "DO NOT BOLUS" for impaired circulation without diarrhoea; even severe cases get fluid over 2 hours. Severe pallor with poor circulation needs transfusion (MoH Paediatric Protocols, 2022).
- A palpable radial pulse suggests a systolic pressure of at least 80 mmHg. This is unreliable in children and older people (WHO prehospital protocols, 2025).

> #### WHAT WE TEACH DIFFERENTLY
>
> **TRADITIONAL** every shocked child gets a fluid bolus. **WE TEACH** fluid is a drug, given as a bolus only where the national protocol says so. **WHY** FEAST (Maitland et al., 2011).

MODULE 12

THE NERVOUS SYSTEM

THEORY **18 H** SKILLS **2 H**

Reduced consciousness can come from head injury, stroke, low blood sugar, malaria, seizures or poisoning. Students learn how the brain works, so they find treatable causes fast and choose the right hospital.

LEARNING OUTCOMES

On completion the student can:

01 Explain the brain, spinal cord and nerves, and their dependence on oxygen, glucose and blood pressure.

02 Assess consciousness with AVPU (Alert, Voice, Pain, Unresponsive) and the Glasgow Coma Scale (GCS), and document pupils and limb power.

03 Explain raised intracranial pressure, stroke, seizures and cerebral malaria in simple terms.

04 Decide to check glucose in every patient with altered consciousness, and to treat when no glucometer is available.

05 Explain how spinal cord injury causes paralysis, breathing failure and neurogenic shock.

06 Explain the anatomy of the skull, face and eye, and why facial injury threatens the airway (Module 31).

SKILLS AND OSCE STATIONS

2 h peer practice: AVPU, GCS, pupils, limb power and sensation, face–arm–speech check. Assessed in the Module 15 OSCE.

KENYA FOCUS

- Kenyan paediatric triage treats AVPU "P" or "U" as coma, an emergency sign (MoH Paediatric Protocols, 2022).

- Malaria prevalence reaches 19% in children aged 6 months to 14 years in the lake endemic zone (Malaria Indicator Survey, 2020). Cerebral malaria must be considered in fever with coma or fits.
- Many receiving facilities have no computed tomography (CT) scanner or neurosurgeon, so destination choice matters.

WHY THIS WAY · EVIDENCE

- WHO protocols say "Always exclude hypoglycaemia" in altered mental status. Glucose is given if low or if it cannot be checked (WHO prehospital protocols, 2025).
- Kenyan protocols check glucose when AVPU is below "A". If this is impossible, they treat for hypoglycaemia (MoH Paediatric Protocols, 2022).
- Kenyan training was not built around symptoms and syndromes (Nicholson et al., 2017). Here, neuro-anatomy is taught through coma, fits, weakness and head injury.

WHAT WE TEACH DIFFERENTLY

TRADITIONAL a full GCS score first. **WE TEACH** AVPU and glucose in the primary survey; full GCS later, for trends (MoH Paediatric Protocols, 2022).

MODULE 13

THE DIGESTIVE AND URINARY SYSTEMS

THEORY **14 H** SKILLS **0 H**

Diarrhoea and vomiting still kill Kenyan children and adults through dehydration. Abdominal pain, bleeding from the gut and kidney failure are also common reasons to call an ambulance.

LEARNING OUTCOMES

On completion the student can:

01 Explain the abdominal and pelvic organs, their surface regions, and why abdominal pain is hard to localise.

02 Explain how diarrhoea and vomiting cause water and salt loss, and recognise mild, moderate and severe dehydration.

03 Explain how oral rehydration works and when intravenous fluid is needed.

04 Explain how the kidneys regulate fluid, and use urine output as a sign of perfusion.

05 Recognise gut bleeding and a surgical abdomen, and decide on a facility with surgery.

06 Explain why pain relief should not be withheld in abdominal pain.

07 Explain the changes of pregnancy that matter in emergencies: a larger blood volume, the uterus pressing on the great vessels when the woman lies flat, and the anatomy of the pelvis (Modules 34 and 38).

SKILLS AND OSCE STATIONS

None. Abdominal examination is practised in Module 15.

KENYA FOCUS

- A 2025 cholera outbreak in four counties recorded 256 suspected cases and 13 deaths. The case fatality rate of 5.2% exceeded the 1% threshold (WHO AFRO, 2025).
- Kenyan triage counts "diarrhoea with sunken eyes" as an emergency sign in children (MoH Paediatric Protocols, 2022).

WHY THIS WAY · EVIDENCE

- Kenyan protocols give diarrhoea with shock a rapid fluid bolus. Without diarrhoea, fluid runs over 2 hours or not at all (MoH Paediatric Protocols, 2022). The difference rests on fluid physiology.
- A Cochrane review of eight studies found that opioid analgesia in acute abdominal pain did not increase diagnostic errors (Manterola et al., Cochrane 2022).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL no pain relief until a doctor has examined the abdomen. **WE TEACH** early analgesia within scope (paracetamol, and methoxyflurane where the medication protocol allows it outside trauma). **WHY** pain relief does not mask findings (Manterola et al., Cochrane 2022).

MODULE 14

THE MUSCULOSKELETAL SYSTEM, THE SKIN AND THE ENDOCRINE SYSTEM

THEORY **18 H** SKILLS **2 H**

Road crashes break bones, fires burn skin and diabetes causes sudden collapse. Students learn how bones, skin and hormones work, so they splint, cool, warm and treat low blood sugar correctly.

LEARNING OUTCOMES

On completion the student can:

01 Identify landmarks for splints, pelvic binders and tourniquets, and explain how pelvic and femur fractures bleed.

02 Explain the functions of skin, including heat control, and how burns and exposure cause fluid loss and hypothermia.

03 Recognise pallor, cyanosis, jaundice and poor perfusion across different skin tones.

04 Explain how insulin and glucose are regulated, and recognise hypoglycaemia and hyperglycaemia.

05 Explain how snake venom destroys local tissue and can cause permanent disability.

06 Explain how pain arises, and how to measure it in adults, children and people who cannot speak.

SKILLS AND OSCE STATIONS

2 h peer practice: pelvic, femoral and limb landmarks; skin colour, temperature and capillary refill on peers of different skin tones. Assessed in Modules 15, 34 and 35.

KENYA FOCUS

- Burns kill about 180,000 people a year, mostly in low- and middle-income countries. Open-fire cooking and kerosene are listed risk factors (WHO burns fact sheet, 2023).
- Snakebite kills 81,410–137,880 people a year and causes about three times as many amputations and permanent disabilities (WHO snakebite fact sheet, 2026).
- Sickle cell disease, a cause of painful bone crises, affects about 14,000 newborns a year, most in western Kenya, around Lake Victoria and on the Coast (Capital FM, 2026).

WHY THIS WAY · EVIDENCE

- WHO burn first aid is cool running water, with no ice, paste, oil or raw cotton. Prolonged cooling can cause hypothermia (WHO burns fact sheet, 2023).
- Kenyan protocols give intravenous 10% dextrose for hypoglycaemia, or for reduced consciousness when glucose cannot be checked (MoH Paediatric Protocols, 2022).
- Advanced Trauma Life Support (ATLS), 11th edition, links early haemorrhage control to pelvic binders and tourniquets (Mayo Clinic ATLS update, 2026). Correct placement depends on anatomy.

WHAT WE TEACH DIFFERENTLY

TRADITIONAL burns treated with ice or home remedies such as oil or paste. **WE TEACH** cool running water, then cover and keep the patient warm (WHO burns fact sheet, 2023).

PART 03

PATIENT ASSESSMENT

MODULE 15

PATIENT ASSESSMENT: THE XABCDE APPROACH

THEORY **20 H** SKILLS **36 H**

This is the core skill of every EMT: a fixed sequence that finds and treats the most dangerous problem first. It works without equipment, on long transports and for a crew of one.

LEARNING OUTCOMES

On completion the student can:

01 Perform scene size-up and an xABCDE primary survey: catastrophic haemorrhage, Airway, Breathing, Circulation, Disability, Exposure.

02 Treat each life threat when found, then reassess after every intervention.

03 Perform a SAMPLE history (Signs, Allergies, Medicines, Past history, Last meal, Events) and a syndrome-focused secondary survey.

04 Triage children with the Emergency Triage Assessment and Treatment (ETAT+) signs in Kenyan protocols.

05 Decide, using explicit rules, whether the patient is time-critical, which facility level fits, and when to pre-alert.

06 Reassess at set intervals during long transport and document trends.

SKILLS AND OSCE STATIONS

OSCE: (1) adult medical patient, single provider; (2) motorcycle crash with catastrophic limb bleeding; (3) child ETAT+ triage; (4) deterioration and pre-alert on a long transfer; (5) assessment without a monitor; (6) pain score in an adult and a child. Short xABCDE drills recur weekly across the programme. Pass mark 80% of checklist items.

KENYA FOCUS

- Kenyan paediatric triage uses ETAT+ emergency signs (MoH Paediatric Protocols, 2022).
- WHO's 2025 ambulance guidance aligns its protocols with the Basic Emergency Care (BEC) course (WHO, 2025).

WHY THIS WAY · EVIDENCE

- ATLS 11th edition adopted xABCDE because uncontrolled haemorrhage is the leading cause of preventable trauma death (Mayo Clinic ATLS update, 2026).
- WHO protocols start with "Control life threatening bleeding" and repeat the survey whenever the condition changes (WHO prehospital protocols, 2025).
- BEC, from WHO and the International Committee of the Red Cross, teaches ABCDE and SAMPLE for low-resource settings (WHO BEC, 2018).
- Kenyan training lacked syndrome-based teaching and critical thinking (Nicholson et al., 2017).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL ABC, with bleeding checked under C. **WE TEACH** catastrophic bleeding first, as ATLS and WHO now teach.

TRADITIONAL complete the checklist, then treat. **WE TEACH** treat as you find, then reassess.

MODULE 16

MONITORING AND DIAGNOSTIC TOOLS

THEORY **12 H** SKILLS **22 H**

A monitor helps only if the reading is right and the EMT knows when to doubt it. Students learn each device, its errors, and what to use without it.

LEARNING OUTCOMES

On completion the student can:

01 Measure blood pressure manually and automatically, with correct cuff size and position.

02 Interpret SpO2 at altitude and recognise overestimation in darker skin, poor perfusion and motion.

03 Measure glucose and temperature, and decide on treatment or warming; treat suspected hypoglycaemia when no glucometer works.

04 Record a 12-lead electrocardiogram (ECG) and transmit it for interpretation, where a reader and a reperfusion pathway exist (AEMT endorsement).

05 Use CO_2 detection (colorimetric or waveform capnography) to confirm a supraglottic airway in cardiac arrest (credentialed), and with any airway device after the AEMT endorsement; explain what it shows.

06 Perform vital signs without devices and document trends.

SKILLS AND OSCE STATIONS

OSCE: (1) manual and automated blood pressure; (2) SpO2 with clinical correlation; (3) glucose and decision; (4) 12-lead ECG recording and transmission (AEMT); (5) CO_2 detection with a supraglottic airway; (6) vital signs with no device. Practice: electrode placement that protects privacy; device checks. Pass mark 80%.

KENYA FOCUS

- Only about one in six hypertensive adults knows it, so every ambulance contact is a chance to detect it (Mohamed et al., 2018).
- Few facilities offer emergency coronary intervention. A transmitted ECG helps a remote physician choose the destination.

WHY THIS WAY · EVIDENCE

- Pulse oximetry missed hypoxaemia three times more often in Black than in white patients (Sjoding et al., 2020). The US regulator advises against relying on the device alone (FDA, 2025).
- The American Heart Association (AHA) 2025 recommends waveform capnography to confirm tube placement; use with laryngeal masks is unstudied (AHA, 2025).
- Of 448 trauma patients, 14% arrived hypothermic; cold cabins, cold fluids and lack of cover were risk factors (Lapostolle et al., 2012).
- Prehospital 12-lead ECG is an AHA Class I recommendation (NAEMSP EMS core content, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL SpO2 as the final word. **WE TEACH** read it with respiratory rate, work of breathing and mental status (Sjoding et al., 2020).

TRADITIONAL no temperature in trauma. **WE TEACH** measure, cover, warm cabin and fluids (Lapostolle et al., 2012).

PART 04

AIRWAY, BREATHING AND RESUSCITATION

MODULE 17

AIRWAY MANAGEMENT

THEORY **14 H** SKILLS **34 H**

A blocked airway kills within minutes, long before any hospital. Simple skills done well save most of these patients.

LEARNING OUTCOMES

On completion the student can:

01 Recognise a threatened airway: noisy, absent or soiled breathing, trauma, burns, swelling.

02 Perform chin lift, jaw thrust, recovery position, suction and foreign-body airway obstruction (FBAO) relief for all ages.

03 Insert oropharyngeal and nasopharyngeal airways (OPA/NPA) and ventilate by two-person bag-valve-mask (BVM), one breath every 6 seconds, counted aloud.

04 Insert a supraglottic airway (SGA: i-gel) in cardiac arrest (EMT, credentialed) and in any patient without airway reflexes after the AEMT endorsement; confirm ventilation by CO_2 detection after every move.

05 Decide when the airway needs a hospital that can intubate, choose it and pre-alert.

SKILLS AND OSCE STATIONS

Airway manoeuvres and suction; two-person BVM on a feedback manikin; SGA with CO_2 detection; FBAO for all ages; trauma or burns airway; airway of a patient trapped in a vehicle (Module 37). Each at full-equipment and minimal-resource tier (manual suction, driver holding the mask).

KENYA FOCUS

- Many ambulances run with one clinician and a driver, and some with a driver alone. Drivers learn to hold the mask; an SGA frees the clinician's hands.
- Road crashes, including boda boda injuries, fill airways with blood and vomit. Suction must work without power.
- Fuel tanker and household fire burns can swell the airway hours later, mid-transfer.

WHY THIS WAY · EVIDENCE

- In 9,296 arrests, i-gel and intubation gave equal functional outcome (6.4% vs 6.8%); initial ventilation succeeded more often with i-gel (87.4% vs 79.0%) (AIRWAYS-2, JAMA 2018).
- A laryngeal tube strategy improved 72-hour survival over intubation (18.3% vs 15.4%). First intubation attempts failed in 44.1% (PART, JAMA 2018).
- AHA accepts an SGA where intubation success is low (AHA 2025 Part 9).
- Rescuers ventilated arrest patients at 30 breaths/min, twice the target; in animals, this lowered blood pressure and survival (Aufderheide et al., Circulation 2004).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL repeated intubation attempts on scene. **WE TEACH** SGA first; intubation stays at Paramedic level. **WHY** AIRWAYS-2 and PART.

TRADITIONAL blind finger sweeps. **WE TEACH** remove only visible objects. **WHY** AHA classes blind sweeps as harmful (AHA 2025 Part 7).

MODULE 18

BREATHING AND OXYGEN THERAPY

THEORY **10 H** SKILLS **12 H**

Oxygen is a medicine and, in Kenya, a scarce one. Crews learn to give the right dose to the right patient.

LEARNING OUTCOMES

On completion the student can:

01 Assess breathing and oxygen saturation by pulse oximetry (SpO2), and assist ventilation with a BVM when needed.

02 Explain where pulse oximetry misleads: poor perfusion, carbon monoxide, dark skin pigmentation, altitude.

03 Titrate oxygen to target ranges, including WHO thresholds for children, and stop it when not needed.

04 Calculate cylinder duration and plan oxygen for the whole journey, with a reserve.

05 Recognise when paramedic-level care is needed (needle decompression, continuous positive airway pressure) and pre-alert.

SKILLS AND OSCE STATIONS

Oxygen titration in a changing scenario; cylinder check and duration calculation; assisted BVM ventilation; cylinder change during a long transfer. Minimal-resource tier: deciding from clinical signs without an oximeter.

KENYA FOCUS

- In sub-Saharan Africa, only 9% of people needing oxygen for acute illness receive it (Graham et al., Lancet Glob Health 2025).
- In seven Kenyan hospitals, only half of 27,906 admitted children had an SpO2 reading (Enoch et al., PLOS Med 2019).
- Oxygen litres = water capacity × pressure (bar). A 10 L cylinder at 150 bar lasts 100 minutes at 15 L/min and 12.5 hours at 2 L/min; keep a reserve.
- The WHO child threshold (SpO2 ≤90%) applies up to 2,500 m, covering most highlands (WHO, via EML).

WHY THIS WAY · EVIDENCE

- Target 94–98% for most acutely ill patients, 88–92% if at risk of hypercapnic respiratory failure (BTS, Thorax 2017).
- In ST-elevation heart attack without hypoxaemia, oxygen increased recurrent infarction (5.5% vs 0.9%) (AVOID, Circulation 2015).
- With suspected heart attack and SpO2 ≥90% (6,629 patients), oxygen did not reduce one-year mortality (5.0% vs 5.1%) (DETO2X-AMI, NEJM 2017).
- Oximeters missed hidden hypoxaemia about three times as often in Black as in white patients (Sjoding et al., NEJM 2020).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL high-flow oxygen for everyone. **WE TEACH** titrate to target; high flow only for cardiac arrest, carbon monoxide poisoning and critical illness. **WHY** BTS, 2017.

TRADITIONAL oxygen for all chest pain. **WE TEACH** oxygen only when SpO2 is below 90% (Module 21). **WHY** no benefit and possible harm (AVOID, DETO2X-AMI); it also saves cylinders.

MODULE 19

RESUSCITATION, WITH AHA BLS AND AHA ACLS

THEORY 14 H | SKILLS 46 H

Cardiac arrest survival is decided in the first minutes. Crews learn to resuscitate well, to know when not to start or when to stop, and to support the family.

LEARNING OUTCOMES

On completion the student can:

01 Perform high-quality cardiopulmonary resuscitation (CPR) for all ages, adapted for drowning, trauma and a one-clinician crew.

02 Defibrillate by automated external defibrillator (AED), or with a manual defibrillator in AED mode. Lead an in-scope team arrest: supraglottic airway and CO_2 detection (credentialed), and IV or IO access with adrenaline after the AEMT endorsement.

03 Recognise obvious death (decapitation, decomposition, rigor mortis, dependent lividity, injuries incompatible with life) and decide not to start CPR.

04 Apply the termination of resuscitation (TOR) rule under medical direction, or manage return of spontaneous circulation (ROSC), choose the facility and pre-alert.

05 Break bad news in plain words, respecting cultural and religious practices.

06 Report sudden or violent deaths to the police, preserve the scene and document.

07 Work in an AHA ACLS team in hospital or on transfer, in the roles the scope allows.

SKILLS AND OSCE STATIONS

AHA BLS and AHA ACLS courses embedded, certified separately by Sahara as an AHA Training Site. AHA ACLS teaches the whole team, including rhythm recognition and antiarrhythmics; graduates use only what their scope allows. OSCE: adult CPR with AED; team arrest as leader within scope; child and drowning CPR; care after ROSC with pre-alert; obvious death or TOR with bad news. Feedback manikins throughout (ILCOR CoSTR, 2025).

KENYA FOCUS

- In six Kenyan hospitals, 5.4% of 353 arrests were shockable; 4.2% survived to discharge (Ngunga et al., Circulation 2017).
- Of 19 African arrest studies, none reported all core Utstein (standard) items (Thibodeau et al., BMJ Open 2022). Sahara will record them.
- Anyone suspecting a sudden or violent death must tell a coroner or police officer at once and preserve the scene (Coroners Service Act 2017, s. 24 and 39). In 2024 the coroner service was not yet operational (ICJ Kenya, 2024).

WHY THIS WAY · EVIDENCE

- Compress 5–6 cm at 100–120/min with minimal pauses (AHA 2025, Part 7). Children and drowning victims need breaths (AHA 2025, Part 6; AHA/AAP, 2024).
- Adrenaline raised 30-day survival only from 2.4% to 3.2%, with no significant neurological gain (PARAMEDIC2, NEJM 2018).
- Where advanced care is absent or delayed, AHA recommends the BLS TOR rule; 0.13% of patients meeting it survived (AHA 2025, Part 9).
- CPR is not required with clear evidence of irreversible death. Family presence is recommended; respect cultural and religious beliefs (AHA 2025, Part 3).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL CPR in a moving ambulance. **WE TEACH** resuscitate on scene. **WHY** good CPR needs minimal pauses (AHA 2025, Part 7).

TRADITIONAL "continue until hospital". **WE TEACH** stop, after contact with medical direction, when the TOR rule is met (no EMS-witnessed arrest, no shock, no ROSC, about 15 minutes). **WHY** AHA 2025, Part 9.

TRADITIONAL CPR on, or transport of, an obviously dead body. **WE TEACH** no CPR; leave body and scene to the police. **WHY** AHA 2025, Part 3; Coroners Service Act, s. 39.

PART 05

MEDICAL EMERGENCIES

MODULE 20

RESPIRATORY EMERGENCIES

THEORY **12 H** SKILLS **8 H**

Breathing difficulty is among the commonest ambulance calls. Pneumonia is Kenya's leading registered cause of death, and tuberculosis (TB) threatens crews as well as patients.

LEARNING OUTCOMES

On completion the student can:

01 Recognise mild, severe and life-threatening breathlessness using xABCDE, oxygen saturation (SpO2) and speech.

02 Distinguish asthma, chronic obstructive pulmonary disease (COPD), pneumonia, heart failure and upper airway obstruction.

03 Give salbutamol by inhaler and spacer or by nebuliser, add ipratropium when severe, titrate oxygen to each condition's target, and document the response.

04 Decide urgency and the right Kenya Essential Package for Health (KEPH) level, and pre-alert.

05 Apply TB precautions: patient mask, crew respirator, open cab windows.

SKILLS AND OSCE STATIONS

Severe asthma: assess, inhaler and spacer or nebuliser, titrate oxygen, reassess. COPD attack, with and without oxygen (positioning, own inhaler and spacer). Suspected TB: respirator fit check.

KENYA FOCUS

- Pneumonia caused 9,682 registered deaths in 2024, the most of any cause (KNBS via The Star, 2026).
- A 2016 survey found 558 TB cases per 100,000; close to 40% go undetected (Capital FM, 2017).
- Oximeters can overestimate SpO2 in dark skin, and targets need adjusting at altitude (GINA, 2026).

WHY THIS WAY · EVIDENCE

- Prehospital COPD: oxygen titrated to 88–92% cut deaths by 58% versus high-flow oxygen (Austin et al., BMJ 2010).
- GINA: oxygen to 92–95%, repeated bronchodilator, ipratropium when severe. Drowsiness or a silent chest needs intensive care (GINA, 2026).
- WHO: sit up, bronchodilator for wheeze, check glucose, adrenaline in anaphylaxis (WHO prehospital protocols, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL high-flow oxygen for every breathless patient. **WE TEACH** titrate to target. **WHY** excess oxygen harms COPD patients, and cylinders run out on long journeys.

TRADITIONAL a nebuliser for every wheeze. **WE TEACH** nebulise only with crew respirators and ventilation, or use the patient's own inhaler and spacer. **WHY** GINA advises avoiding nebulisers in respiratory infection.

MODULE 21

CARDIOVASCULAR EMERGENCIES

THEORY **14 H** SKILLS **12 H**

Heart attack, heart failure and high blood pressure are major killers in Kenya. Few facilities can open a blocked artery, so the EMT's ECG, aspirin and destination choice matter.

LEARNING OUTCOMES

On completion the student can:

01 Recognise acute coronary syndrome (ACS), acute heart failure, hypertensive emergency, and a dangerous rhythm from a very fast, very slow or irregular pulse with shock or fainting.

02 After the AEMT endorsement, record a 12-lead electrocardiogram (ECG) within 10 minutes and transmit it, so that a physician can recognise ST-elevation myocardial infarction (STEMI) and agree the destination.

03 Give aspirin, and glyceryl trinitrate sublingual after the AEMT endorsement; give oxygen only when SpO2 is below 90%.

04 Decide the destination with medical direction: percutaneous coronary intervention (PCI) if reachable, otherwise the nearest capable facility; pre-alert.

05 Recognise likely rheumatic heart disease in breathless young adults and pregnant women.

06 Record blood pressure at every contact; advise follow-up if raised.

SKILLS AND OSCE STATIONS

Chest pain: aspirin, 12-lead recording and transmission (AEMT), handover; repeated without a 12-lead. Acute pulmonary oedema: position, oxygen, transport decision. Dangerous rhythm: recognise from pulse and symptoms, AED if pulseless (Module 19). Hypertensive emergency: repeated readings, symptoms, destination.

KENYA FOCUS

- One adult in four (24.5%) has hypertension; only 15.6% of them know it (Mohamed et al., 2018).
- Registered deaths in 2024: cardiovascular disease 7,478, hypertension 5,035 (KNBS via The Star, 2026).
- In an African heart failure survey including Kenya, 45.4% of cases were hypertensive and 14.3% rheumatic (Damasceno et al., 2012).

WHY THIS WAY · EVIDENCE

- ACC/AHA 2025: ambulance transport, 12-lead within 10 minutes, STEMI direct to PCI, oxygen only below 90% (ACS guideline summary, 2025).
- In suspected heart attack with normal SpO2, oxygen did not reduce one-year deaths (5.0% vs 5.1%) (Hofmann et al., NEJM 2017).
- In STEMI without low oxygen, oxygen increased infarct size and early re-infarction (Stub et al., Circulation 2015).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL oxygen for all chest pain. **WE TEACH** only for low saturation. **WHY** it avoids harm and saves scarce oxygen.

TRADITIONAL the nearest hospital. **WE TEACH** choose by the transmitted ECG and real facility capability.

MODULE 22

NEUROLOGICAL EMERGENCIES

THEORY **12 H** SKILLS **10 H**

Stroke and seizures are common and time-critical. Most facilities cannot scan the brain, so EMTs must recognise stroke, exclude low sugar, record the time and choose a realistic destination.

LEARNING OUTCOMES

On completion the student can:

01 Recognise stroke with BE-FAST (Balance, Eyes, Face, Arm, Speech, Time) and record the time last seen well.

02 Measure glucose in every seizure, stroke or reduced consciousness.

03 Perform seizure care: airway, glucose, positioning, and rectal diazepam or buccal or intranasal midazolam (credentialed); intramuscular (IM) midazolam after the AEMT endorsement.

04 Recognise status epilepticus and its causes: eclampsia, meningitis, cerebral malaria, head injury, poisoning.

05 Assess syncope and headache for red flags; after the AEMT endorsement, record and transmit a 12-lead ECG after a faint where a reader is available.

06 Choose a facility with computed tomography (CT) when reachable; pre-alert.

SKILLS AND OSCE STATIONS

Suspected stroke: BE-FAST, glucose, onset time, pre-alert. Prolonged seizure: buccal or intranasal midazolam or rectal diazepam, IM midazolam (AEMT), airway, recovery position; repeated without suction or oxygen. Controlled-medicine check and register (Module 41). Reduced consciousness: structured search for causes.

KENYA FOCUS

- Hypertension, the main treatable stroke risk, is undiagnosed in most Kenyans who have it (Mohamed et al., 2018).
- In Johannesburg, 81.3% of stroke patients arrived after 4.5 hours; none were thrombolysed (Khalema et al., 2018). In Addis Ababa, only a third arrived within 4.5 hours (Sintayehu et al., 2025).
- Seizures may signal cerebral malaria or meningitis (Module 25), or eclampsia in pregnancy (Module 38).

WHY THIS WAY · EVIDENCE

- FAST missed about 14% of strokes; BE-FAST cut this to 4.4% (Aroor et al., Stroke 2017).
- IM midazolam stopped seizures more often than IV lorazepam (73.4% vs 63.4%) (Silbergleit et al., NEJM 2012).
- WHO: always exclude low glucose; use FAST and note onset time (WHO prehospital protocols, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL waiting for IV access during a convulsion. **WE TEACH** a benzodiazepine at once, by a route that needs no vein: buccal or intranasal midazolam or rectal diazepam, or IM midazolam after the AEMT endorsement. **WHY** IM midazolam worked better than IV lorazepam (Silbergleit et al., 2012).

TRADITIONAL "nothing can be done for stroke here". **WE TEACH** airway, glucose, nil by mouth, onset time and destination still matter.

MODULE 23

DIABETIC, METABOLIC AND HAEMATOLOGICAL EMERGENCIES

THEORY 10 H | SKILLS 6 H

Low blood sugar kills quickly, yet glucose reverses it within minutes. Sickle cell crises need fast pain relief, and severe anaemia needs a hospital that can transfuse.

LEARNING OUTCOMES

On completion the student can:

01 Measure capillary glucose and interpret "HI" and "LO" readings.

02 Treat hypoglycaemia: oral glucose if able to swallow; glucose 10% IV or IO in small steps after the AEMT endorsement. A patient who recovers stays at home only by protocol and after contact with medical direction.

03 Recognise diabetic ketoacidosis (DKA), hyperosmolar hyperglycaemic state (HHS) and high-potassium risk; after the AEMT endorsement, give fluids per protocol and record and transmit a 12-lead ECG where a reader is available.

04 Recognise sickle cell emergencies (painful crisis, acute chest syndrome, stroke in a child, fever as possible sepsis) and severe anaemia from any cause.

05 Manage a painful crisis: analgesia within 30 minutes (paracetamol, and methoxyflurane where the medication protocol allows it outside trauma), oxygen only if SpO2 is low, warmth, oral fluids, or IV fluids per protocol after the AEMT endorsement.

06 Choose a facility that can transfuse blood, and pre-alert it.

SKILLS AND OSCE STATIONS

Unconscious hypoglycaemia: glucose 10% IV or IO (AEMT), reassessment; repeated without IV access (airway, recovery position, rapid transport). DKA: recognition, fluids, handover. Child in sickle cell crisis: pain score, paracetamol, methoxyflurane from age 6 if the protocol allows it, SpO2-guided oxygen, warmth, pre-alert; repeated without an oximeter.

KENYA FOCUS

- In 2015, 2.4% of adults aged 18–69 had diabetes. More than half were undiagnosed, and only 7% of those diagnosed had their blood glucose controlled (Mohamed et al., 2018).
- About 14,000 children are born with sickle cell disease each year (Ministry of Health). The burden is highest around Lake Victoria, in Western Kenya and on the Coast (Capital FM, 2026).
- In western Kenya, 17.1% of young children carried sickle cell trait and 1.6% had sickle cell disease (Suchdev et al., 2012).

WHY THIS WAY · EVIDENCE

- Prehospital glucose 10% worked as fast as 50%, with less than half the glucose and less overshoot (Moore & Woollard, EMJ 2005).
- WHO: exclude hypoglycaemia in all altered consciousness; look for anaemia and adjust fluids (WHO prehospital protocols, 2025).
- NICE: analgesia within 30 minutes of arrival; oxygen if SpO2 is 95% or below; watch for acute chest syndrome, stroke and infection (NICE CG143, 2012).
- On the Kenyan coast, children with sickle cell anaemia had nearly nine times the odds of invasive bacterial infection (McAuley et al., Blood 2010). Fever may mean sepsis (Module 25).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL a rapid push of 50% glucose, still in WHO protocols. **WE TEACH** glucose 10% in steps. **WHY** as fast, with less overshoot (Moore & Woollard, 2005).

TRADITIONAL pain relief left to the hospital; high-flow oxygen for all. **WE TEACH** analgesia within 30 minutes; oxygen only if SpO2 is low. **WHY** NICE CG143, 2012.

MODULE 24

ALLERGIC REACTIONS AND ANAPHYLAXIS

THEORY 6 H | SKILLS 8 H

Anaphylaxis can kill within minutes. One cheap drug, adrenaline injected into the thigh, saves lives if EMTs give it early and confidently.

LEARNING OUTCOMES

On completion the student can:

01 Recognise anaphylaxis: sudden airway, breathing or circulation problems after a trigger, usually with skin changes.

02 Perform IM adrenaline into the outer thigh, drawn up from an ampoule; repeat after 5 minutes if needed.

03 Position safely: no standing or walking; lie flat, legs raised, if blood pressure is low.

04 Give IV fluids for shock after the AEMT endorsement; for throat swelling, repeat IM adrenaline and pre-alert early.

05 Recognise refractory anaphylaxis after two IM doses and pre-alert a facility with critical care.

06 Explain why antihistamines and steroids are not emergency treatment.

SKILLS AND OSCE STATIONS

Anaphylaxis after an injection: recognition, IM adrenaline from an ampoule, repeat dose, fluids (AEMT). Child with anaphylaxis: dose from the weight band in a 1-mL syringe. Mass bee attack at a school: triage and adrenaline priorities (Module 43). Throat swelling: repeat IM adrenaline, position of comfort, pre-alert.

KENYA FOCUS

- A bee swarm in Kisii County in 2023 hospitalised 49 pupils, 14 with severe allergic reactions (Kenyans.co.ke, 2023).
- The commonest triggers are drugs (antibiotics, painkillers), food and insect venom (WAO, 2020). Keep adrenaline ready whenever antivenom is given (Module 26).
- Auto-injectors are absent mainly in low- and middle-income countries (WAO, 2020).

WHY THIS WAY · EVIDENCE

- IM adrenaline is first-line, even with IV access; repeat after 5 minutes. IV boluses only in cardiac arrest (Resuscitation Council UK, 2021).
- Antihistamines are not initial treatment, routine steroids are not advised, and nebulised adrenaline is only an adjunct (Resuscitation Council UK, 2021).
- About 5% relapse hours later, so all need hospital review (Resuscitation Council UK, 2021). IM adrenaline has no absolute contraindication (WAO, 2020).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL antihistamine and hydrocortisone first, adrenaline later. **WE TEACH** IM adrenaline first, every time.

TRADITIONAL walking the patient to the vehicle. **WE TEACH** carry them lying down. **WHY** standing up can cause sudden death (Resuscitation Council UK, 2021).

MODULE 25

INFECTIONS AND SEPSIS

THEORY 14 H | SKILLS 8 H

Malaria, pneumonia, meningitis and cholera kill many Kenyans through sepsis. Crews must spot it early, give only care that helps, and reach the right hospital.

LEARNING OUTCOMES

On completion the student can:

01 Recognise sepsis and septic shock in adults and children from vital signs, mental status and glucose.

02 Recognise severe malaria danger signs (prostration, convulsions, reduced consciousness, breathing difficulty, shock, low glucose) and decide on urgent transfer.

03 After the AEMT endorsement, give IV or IO fluid only for shock, in small boluses, reassessing breathing after each.

04 Recognise severe dehydration in cholera, start oral rehydration salts (ORS) if the patient can drink, and plan IV rehydration (AEMT) and transport.

05 Apply infection prevention and control (IPC) for TB, meningitis, cholera and suspected viral haemorrhagic fever (VHF).

06 Consider HIV and TB, choose a facility giving injectable antimalarials and antibiotics, and pre-alert.

SKILLS AND OSCE STATIONS

Febrile child with danger signs; adult sepsis with a fluid decision; cholera: ORS preparation and continuous rehydration during transport; IPC donning and doffing; VHF screening and isolation call.

KENYA FOCUS

- About 30% of Kenyans live in high-risk malaria areas; prevalence reaches 19% near Lake Victoria (Kenya MoH, 2024).
- Cholera in 2022–2023 caused 12,123 cases and 202 deaths in 27 counties (WHO, 2023).
- Kenya confirmed its first imported case of Bundibugyo virus disease (Ebola) in October 2026 (Kenya News Agency, 2026).

WHY THIS WAY · EVIDENCE

- Do not use quick SOFA (qSOFA) alone to screen for sepsis (Surviving Sepsis Campaign, 2021).
- In FEAST, including Kenyan children, fluid boluses raised 48-hour mortality by 45% (Maitland et al., NEJM 2011).
- In Zambian adults with sepsis and low blood pressure, early high-volume fluids raised mortality from 33% to 48% (Andrews et al., JAMA 2017).
- WHO flags sepsis as infection plus danger signs, e.g. heart rate >130 or breathing rate >30 (WHO prehospital protocols, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL large fluid boluses for every hot, sick patient. **WE TEACH** small boluses only for shock. **WHY** FEAST and the Zambian trial showed harm.

MODULE 26

POISONING, BITES AND ENVENOMATION

THEORY 14 H | SKILLS 8 H

Pesticides, illicit alcohol, paraffin, snakes and dogs harm many Kenyans far from hospital. Crews must stay safe, avoid harmful first aid, and reach the antidote, antivenom or rabies vaccine.

LEARNING OUTCOMES

On completion the student can:

01 Recognise organophosphate, opioid, alcohol, methanol and paraffin poisoning from history, pupils, secretions and breathing.

02 Decontaminate safely: stop exposure, remove clothing, wash skin, irrigate eyes; never induce vomiting.

03 Manage airway and ventilation, check glucose, give intranasal naloxone, and treat seizures with a benzodiazepine within protocol (Module 22).

04 Recognise a methanol cluster, call the Poison Information Centre, and alert the county.

05 Give snakebite first aid (calm, splint, eye irrigation for spitting cobras), recognise neurotoxic envenoming (drooping eyelids, weak breathing) and support ventilation, and go to a facility with antivenom. Observe scorpion stings and relieve pain.

06 Wash dog, cat and wild animal bites with soap and running water for about 15 minutes; leave them open. Grade the exposure (category I–III) and refer for rabies post-exposure prophylaxis (PEP) the same day.

07 Recognise carbon monoxide poisoning from a charcoal stove (jiko) or generator in a closed room; ventilate the room before entering, remove the patient and give high-flow oxygen.

SKILLS AND OSCE STATIONS

Organophosphate patient (protection, decontamination, suction, bag-valve-mask, pre-alert for atropine); snakebite splint, full and improvised; intranasal naloxone; dog bite: timed wash, exposure category, PEP referral (minimal tier: jerrycan and soap); carbon monoxide in a closed room.

KENYA FOCUS

- At a Rift Valley referral hospital, pesticides caused 52% of acute poisonings (Bundotich et al., 2015). Methanol outbreaks in 2014 caused about 467 cases and 126 deaths (Rostrup et al., PLoS ONE 2016).
- In Samburu, about 440 per 100,000 people are bitten by snakes yearly; 22% sought a traditional healer (Tianyi et al., 2024).
- In 2017–2023, facilities reported an average of 6,417 dog bites a month and 480 rabies deaths. Kenya aims to end dog-mediated human rabies by 2030 (Kahariri et al., 2025).
- Kenyatta National Hospital's Poison Information Centre: toll-free 0800 720021 or 0800 730030 (The Star, 2023).

WHY THIS WAY · EVIDENCE

- Remove clothing, wash skin, never induce vomiting; splint snakebites, without tourniquet, cutting or sucking (WHO prehospital protocols, 2025).
- Three hospital staff were poisoned by an organophosphate patient who was not decontaminated (CDC, 2001).
- Puff adders and spitting cobras cause most serious East African bites (WHO AFRO, 2010). Pressure bandages are not suggested for tissue-destroying venoms (UN DHMOSH, 2024).
- Dogs cause up to 99% of human rabies. Wash bites for at least 15 minutes; category II needs vaccine, category III also immunoglobulin (WHO, 2026). Suture only after immunoglobulin (WHO position, 2018).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL tourniquet, cutting, sucking, herbs or a pressure bandage. **WE TEACH** splint and go. **WHY** harm and delay (WHO, 2025; UN DHMOSH, 2024).

TRADITIONAL a quick rinse, then stitches or a dressing. **WE TEACH** a 15-minute wash, an open wound, same-day PEP. **WHY** WHO, 2018 and 2026.

MODULE 27

ENVIRONMENTAL EMERGENCIES

THEORY **8 H** SKILLS **6 H**

Drowning, lightning, heat and cold kill healthy, often young people. Simple actions on scene, such as cooling, rescue breaths and warming, save the most lives.

LEARNING OUTCOMES

On completion the student can:

01 Recognise exertional heat stroke (hot and confused during exertion) and start cooling on scene before transport.

02 Perform cold-water immersion with a tarpaulin, or wet-sheet and airflow cooling when water is short.

03 Perform shore-based rescue (reach, throw, do not go) and ventilation-first drowning resuscitation with oxygen.

04 Manage lightning casualties with scene safety, reverse triage (non-breathing patients first) and prolonged ventilation.

05 Prevent and treat hypothermia: gentle handling, wet clothes off, insulation, warm vehicle.

06 Explain crew limits in floods and fast water, and pre-alert the destination.

SKILLS AND OSCE STATIONS

Heat-stroke cooling (immersion, or wet sheets and fan); drowning resuscitation with bag-valve-mask and AED; lightning reverse-triage drill; improvised hypothermia packaging.

KENYA FOCUS

- The WHO African Region has the world's highest drowning rate, 5.6 per 100,000 (WHO, 2024).
- Among Kenyan Lake Victoria fishers, 69% of storm drowning victims wore no life jacket (Rasolofoson & Fiorella, 2024).
- Kisii and Nyamira recorded the worst thunderstorm incidents in the Lake Victoria basin (Obiero, 2012).
- Cold highland nights, floods and long transports cause hypothermia even near the equator.

WHY THIS WAY · EVIDENCE

- Whole-body (neck-down) immersion in 1–26 °C water, until core temperature is below 39 °C, cools fastest (ILCOR, 2019).
- WHO's low-resource method is a wet sheet, a fan or mist, and vehicle air conditioning (WHO prehospital protocols, 2025).
- After drowning, ventilation is essential and comes before AED use (AHA/AAP via AFP, 2026).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL load and go with ice packs. **WE TEACH** cool first, transport second. **WHY** immersion cools fastest (ILCOR, 2019).

TRADITIONAL compression-only CPR for drowning. **WE TEACH** ventilation first (AHA/AAP).

MODULE 28

BEHAVIOURAL AND PSYCHIATRIC EMERGENCIES

THEORY **10 H** SKILLS **8 H**

Many patients called "mad" or "drunk" are hypoxic, hypoglycaemic, septic or head-injured. Crews must find the cause, keep everyone safe, respect the law, and prevent restraint deaths.

LEARNING OUTCOMES

On completion the student can:

01 Recognise medical causes of disturbed behaviour: hypoxia, low glucose, head injury, infection, intoxication, withdrawal.

02 Perform verbal de-escalation with one lead speaker, and call police when weapons are present.

03 Restrain only as a last resort, with enough staff, never face-down with weight on the trunk, and monitor continuously.

04 Assess suicide risk with direct questions, remove means such as pesticides, and never leave the patient alone.

05 Apply the Mental Health Act as amended in 2022, and document reasons and observations.

06 Give psychological first aid to survivors of gender-based violence and link to post-rape care (Module 2).

SKILLS AND OSCE STATIONS

De-escalation with a simulated patient; team restraint with SpO2 monitoring; suicide-risk conversation; hypoglycaemic "drunk" patient; transport under the Mental Health Act with police, including documentation.

KENYA FOCUS

- Under the 2022 amendment, emergency treatment lasts at most 72 hours. Police must bring a person to a facility within 24 hours (Act No. 27, 2022).
- In January 2025 the High Court struck down the attempted-suicide offence (Penal Code s. 226) (Citizen Digital, 2025).
- One in eight Kenyans aged 15–65 drinks alcohol; one in 28 uses khat (miraa, muguka) (NACADA, 2022).
- Just over 150 psychiatrists serve more than 50 million people (The Star, 2025).

WHY THIS WAY · EVIDENCE

- De-escalate first and throughout; avoid prone holds and pressure on chest, neck or abdomen; monitor vital signs (NICE NG10, 2015).
- Look for a medical cause first, check glucose, and monitor every restrained patient (WHO prehospital protocols, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL face-down holds with weight on the back. **WE TEACH** side or upright position, monitored. **WHY** it blocks breathing (NICE NG10).

TRADITIONAL attempted suicide as a police matter. **WE TEACH** a medical emergency (High Court, 2025).

PART 06

TRAUMA

MODULE 29

TRAUMA PRINCIPLES AND KINEMATICS

THEORY 12 H | SKILLS 10 H

Road crashes and violence kill many young Kenyans, often before they reach hospital. This module teaches how to read a scene, find life threats fast and reach the right hospital.

LEARNING OUTCOMES

On completion the student can:

01 Explain how mechanism predicts injury in boda boda, pedestrian, matatu, fall and assault cases.

02 Perform a trauma primary survey in xABCDE order (exsanguinating haemorrhage, airway, breathing, circulation, disability, exposure).

03 Decide early whether the patient is time-critical, and limit scene time to life-saving actions.

04 Choose a capable destination (theatre, blood, surgeon) from the local map of KEPH level 4–6 hospitals.

05 Pre-alert and hand over using ATMIST.

SKILLS AND OSCE STATIONS

Trauma primary survey at full-kit and "gloves and torch" tiers. Scene size-up at a mock matatu crash and at a boda boda crash with two casualties. ATMIST pre-alert by phone. OSCE: trauma primary survey.

KENYA FOCUS

- The National Transport and Safety Authority (NTSA) recorded 4,748 road deaths in 2024, up from 4,324. Pedestrians were 38%, motorcyclists 25% (NTSA data via Nation, 2025).
- WHO estimated 14,926 road deaths for 2021, against 4,579 reported (WHO road safety profile, 2023).
- Stabbings and mob violence add penetrating trauma, often at night.

WHY THIS WAY · EVIDENCE

- Prehospital trauma systems in low- and middle-income countries cut trauma mortality by about 25% (low certainty) (Henry & Reingold, 2012).
- NICE treats catastrophic haemorrhage before airway and limits scene time to life-saving interventions (NICE NG41, 2016).
- The WHO Injured Patient protocol follows the same order (WHO prehospital protocols, 2025).

> **WHAT WE TEACH DIFFERENTLY**
>
> **TRADITIONAL** the nearest facility, whatever it can do. **WE TEACH** life-saving care on scene, then the nearest *capable* facility, pre-alerted. **WHY** the benefit of a trauma system comes from matching patients to hospitals that can treat them (Henry & Reingold, 2012).

MODULE 30

BLEEDING AND SHOCK

THEORY **10 H** SKILLS **14 H**

Uncontrolled bleeding is a leading preventable cause of trauma death. A tourniquet or packed wound in the first minutes saves lives that hospitals cannot.

LEARNING OUTCOMES

On completion the student can:

01 Control life-threatening bleeding with direct pressure, wound packing, haemostatic dressing or tourniquet.

02 Recognise shock early from pulse, skin, capillary refill and mental state, not blood pressure alone.

03 After the AEMT endorsement, give tranexamic acid (TXA) IV within 3 hours of injury, per the Sahara medication protocol.

04 After the AEMT endorsement, titrate small crystalloid boluses to a palpable central pulse (Module 42), with a higher target in suspected head injury (systolic blood pressure 110 mmHg or more, Module 31) and earlier fluids in pregnancy (Module 34); prevent hypothermia at every level.

05 Recognise when pelvic bleeding needs a binder (applied in Module 34).

06 Document tourniquet time and pre-alert a facility with blood and a theatre.

SKILLS AND OSCE STATIONS

Commercial and improvised tourniquet, including self-application. Wound packing trainer. Junctional wound packing (groin, armpit). IV or IO access with TXA (AEMT). Shock scenario. OSCE: timed haemorrhage control.

KENYA FOCUS

- Boda boda crashes and machete or knife wounds cause limb bleeding far from hospital.
- Kenya needs at least 550,000 units of blood a year; collections in 2024/25 reached 62% of need (Citizen Digital, 2026). Blood saved on scene matters.
- Long transfers and cold highland nights cause hypothermia; blankets are treatment.

WHY THIS WAY · EVIDENCE

- In combat casualties in Baghdad, tourniquets applied before hospital: mortality 11%, versus 24% when applied in the emergency department. Transient nerve palsy occurred in 1.7% (Kragh et al., Ann Surg 2009).
- In 20,211 patients, TXA cut death from 16.0% to 14.5% (CRASH-2, Lancet 2010). Given after 3 hours, it gave no benefit and may increase deaths from bleeding (CRASH-2 timing, 2011).
- NICE: restrictive fluids titrated to a palpable central pulse; purpose-made pelvic binder (NICE NG39, 2016).
- AHA: direct pressure, then tourniquet or wound packing (AHA/Red Cross First Aid, 2024).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL litres of fluid to raise blood pressure. **WE TEACH** small boluses to a central pulse (NICE NG39).

TRADITIONAL tourniquet as a last resort. **WE TEACH** early, tight, timed, not loosened in transit (Kragh et al.).

MODULE 31

HEAD, FACE AND EYE INJURIES

THEORY 10 H | SKILLS 8 H

Head injury is the commonest injury in Kenyan road deaths. Many patients face a long trip to CT, so oxygen, blood pressure and breathing rate on the way decide much of the outcome.

LEARNING OUTCOMES

On completion the student can:

01 Assess and record GCS, pupils and limb movement in adults and children, and repeat them during transport.

02 Keep SpO2 above 90% and adult systolic blood pressure at 110 mmHg or more (with IV fluids after the AEMT endorsement), and explain why permissive hypotension is not used when head injury is suspected.

03 Manage the airway step by step: position, suction, OPA or NPA, two-person BVM and, after the AEMT endorsement, a supraglottic airway with CO_2 detection.

04 Ventilate adults at about 10 breaths per minute and children at age-appropriate rates, without hyperventilating, and recognise signs of brain herniation.

05 Manage facial injuries that threaten the airway, including letting a conscious patient sit up to keep the airway clear.

06 Give eye first aid: start irrigation of a chemical injury at once and continue for at least 20 minutes; cover a penetrating injury with a rigid shield without pressure, and leave any embedded object in place.

SKILLS AND OSCE STATIONS

GCS and pupil practice with actors (adult and child); airway ladder on manikins, from positioning to SGA with CO_2 detection (AEMT); ventilation-rate drill with a timer; two-person helmet removal after a boda boda crash; facial bleeding with a threatened airway; chemical eye irrigation; rigid eye shield. Minimal-equipment tier: irrigation with clean tap water from a bottle, a paper-cup eye shield, breath counting by watch, manual blood pressure. OSCE: (1) severe head injury after a boda boda crash: airway, SpO2 and blood pressure targets, ventilation rate, destination and handover; (2) eye injury: choose irrigation or shield, and carry it out.

KENYA FOCUS

- In 100 road deaths studied in Nairobi, 76% had a head injury, and head injury caused 57% of the deaths (Okemwa et al., 2008).
- In Kitale, 72% of 341 motorcycle crash patients wore no helmet, and 42% had head injuries. Helmet use was linked to fewer head injuries (Sisimwo & Onchiri, 2018).
- A national programme began placing 98 CT scanners, two per county, in its first phase (AllAfrica, 2025). Crews must still confirm that the scanner is working before a long transfer.
- In East Africa, children with eye injuries often arrive late: 2.5% reached the eye clinic within 24 hours at Mulago, Uganda (Mayeka et al., 2017), and 35% at Bugando, Tanzania (Krauss et al., 2025).

WHY THIS WAY · EVIDENCE

- In major TBI, hypoxia alone tripled the adjusted odds of death (aOR 3.0) and hypotension alone raised them 2.5 times. Both together raised them about six times (aOR 6.1) (Spaite et al., 2017).
- EPIC study (21,852 patients): after EMS were trained to avoid hypoxia, hypotension and hyperventilation, survival to discharge rose in severe TBI (aOR 2.03) and in severe TBI with an advanced airway (aOR 3.14). Overall survival to discharge did not change significantly (Spaite et al., 2019).
- The BTF prehospital guidelines say: correct SpO2 below 90% at once. Target adult SBP of 110 mmHg or more, with age-specific targets for children. Ventilate at about 10 breaths per minute with $EtCO_2$ of 35–45 mmHg, and avoid hyperventilation unless there are signs of herniation. Take moderate to severe TBI to a facility with CT available at once (BTF 3rd ed., Hawryluk et al., 2023).
- TXA: in CRASH-3, TXA reduced head-injury deaths in mild to moderate TBI (RR 0.78) but not in severe TBI. Earlier treatment worked better (CRASH-3, 2019). The BTF 3rd edition does not support routine prehospital TXA for suspected bleeding inside the skull (Hawryluk et al., 2023).

- Collars can raise intracranial pressure. ITLS cites a study in which nine of ten head-injured patients had a rise after a collar was fitted (ITLS, 2019). The WHO protocols say "In head injury, avoid use of collar" and to raise the head of the stretcher if possible (WHO, 2025).
- Chemical eye injury: "Time to initial irrigation has the greatest influence on visual prognosis." EMS should irrigate for at least 20 minutes. Tap water is acceptable, and irrigation is not used for an open globe (AAO EyeWiki, accessed 2026). Bystanders should flush for at least 15 minutes and should not bandage the eye (Prevent Blindness, 2026).
- Penetrating eye injury: do not touch, press on or remove objects. Place a shield without pressing it on the eye; the bottom of a paper cup will do (AAO, 2024).
- Maxillofacial trauma: a conscious casualty may sit up to keep the airway clear (TCCC Guidelines, Respiration).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL hyperventilate head injuries to "shrink the brain". **WE TEACH** about 10 breaths per minute. Brief hyperventilation only for signs of herniation, and only with waveform capnography. **WHY** the BTF 3rd edition says to avoid hyperventilation and to keep $EtCO_2$ at 35–45 mmHg (Hawryluk et al., 2023).

TRADITIONAL permissive hypotension for every bleeding trauma patient. **WE TEACH** if head injury is suspected, keep adult SBP at 110 mmHg or more. **WHY** low blood pressure and low oxygen together raise the odds of death six times (Spaite et al., 2017).

TRADITIONAL a rigid collar for every head injury. **WE TEACH** a collar only when spinal criteria are met (Module 32); otherwise manual support or head blocks, and the head of the stretcher raised where possible. **WHY** WHO, 2025; ITLS, 2019.

TRADITIONAL a firm pad over an injured eye. **WE TEACH** a rigid shield with no pressure, and no irrigation if the globe may be open. **WHY** AAO, 2024; AAO EyeWiki.

TRADITIONAL give whatever analgesia is to hand. **WE TEACH** no methoxyflurane if consciousness is reduced for any reason, including head injury, drugs or alcohol. **WHY** this is a contraindication in the Penthrox SmPC, section 4.3 (EMC SmPC, 2026).

MODULE 32

SPINAL INJURIES

THEORY **8 H** SKILLS **12 H**

Kenyan hospital records show road crashes and falls are the main causes of spinal cord injury, and most patients are young men. Strapping every patient to a long board costs time and can cause harm, and the evidence supports a selective approach.

LEARNING OUTCOMES

On completion the student can:

01 Use a structured tool (NICE NG41, based on the Canadian C-spine rule) to decide who needs spinal motion restriction (SMR), and record the decision.

02 Withhold SMR in penetrating trauma and focus on bleeding control and fast transport.

03 Give manual in-line stabilisation, size and fit a collar when indicated, and reassess the airway after fitting.

04 Package a patient on a scoop stretcher and vacuum mattress with head blocks. Use the KED and long board only to extricate or transfer.

05 Explain the criteria for controlled self-extrication, and when to stop it: new spinal pain, numbness, tingling or weakness (practised in Module 37).

06 Check and record movement and feeling in all four limbs before and after each move. Adapt SMR for children, older adults and fixed spinal deformity.

SKILLS AND OSCE STATIONS

SMR decision drills with scenario cards; manual stabilisation and collar sizing; scoop stretcher and vacuum mattress packaging; KED for a seated patient; coached self-extrication from a car seat; older adult found on the floor after a fall; child in a car seat. Minimal-equipment tier: manual stabilisation; blanket rolls and tape on a scoop; letting an agitated patient find a comfortable position with manual support. OSCE: matatu passenger with neck pain: apply the decision tool, choose the method, package.

KENYA FOCUS

- A review of 290 spinal cord injury records in Nairobi, Machakos and Mombasa found motor traffic crashes and falls were the leading causes. Most patients were men aged 26–35 (Muli, 2025).
- At Kenyatta National Hospital, road traffic injury caused 41.7% and falls 18.9% of 8,701 injuries (Botchey et al., 2017).

WHY THIS WAY · EVIDENCE

- NICE NG41: screen for risk factors and use the Canadian C-spine rule. Do not immobilise low-risk, pain-free patients who can turn the neck 45° to both sides. When needed, use a collar, scoop and head blocks, ideally on a vacuum mattress. "Do not transport people with suspected spinal injury on a longboard" (NICE NG41).
- The ACS-COT/ACEP/NAEMSP joint statement says: use SMR for altered consciousness, midline pain or tenderness, focal neurology, deformity or a distracting injury. "There is no role for SMR in penetrating trauma." A scoop, vacuum mattress or ambulance cot can achieve SMR (Fischer et al., 2018).
- In 45,284 penetrating trauma patients, those immobilised had twice the adjusted odds of death (aOR 2.06). The number needed to harm was 66; the number needed to treat was 1,032 (Haut et al., 2010).
- Patients in Malaysia carried without immobilisation had less neurological disability than immobilised patients in New Mexico (OR 2.03) (Hauswald et al., 1998).
- In emergency departments, the Canadian C-spine rule had 99.4% sensitivity, against 90.7% for NEXUS (Stiell et al., 2003, via AAFP).
- Controlled self-extrication moved the neck less (13.3°) than long board extrication through the driver's door (18.8°) (Dixon et al., 2015).
- ITLS: de-emphasise collars in awake patients without focal neurology. Collars and SMR have no role in penetrating trauma (ITLS, 2019).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL a long board for every trauma patient. **WE TEACH** scoop and vacuum mattress; the long board is only for sliding or extrication. **WHY** NICE NG41 rec. 1.1.19; Fischer et al., 2018.

TRADITIONAL collar and board for stab or gunshot wounds to the neck or torso. **WE TEACH** no SMR in penetrating trauma; treat bleeding and go. **WHY** immobilisation was linked to twice the odds of death (Haut et al., 2010).

TRADITIONAL keep the patient still in the car until cut free. **WE TEACH** coached self-extrication when criteria are met. **WHY** Dixon et al., 2015; NICE NG41 recs 1.1.16–1.1.18.

TRADITIONAL a collar on everyone with a mechanism. **WE TEACH** selective collars; none with a compromised airway or fixed deformity such as ankylosing spondylitis; manual support for agitated patients. **WHY** NICE NG41 recs 1.1.12–1.1.13; ITLS, 2019.

TRADITIONAL routine log-roll. **WE TEACH** scoop stretcher, with as little rolling as possible. **WHY** "There is no place for routine logrolling in blunt trauma victims" (Scott et al., 2013).

MODULE 33

CHEST INJURIES

THEORY 8 H | SKILLS 10 H

Chest injuries are common in road deaths and assaults. AEMTs may not decompress a chest, so they must spot tension pneumothorax early, use chest seals correctly and get the patient to surgery fast.

LEARNING OUTCOMES

On completion the student can:

01 Examine the chest (look, feel, listen, breathing rate, SpO2) and identify the life-threatening chest injuries: tension pneumothorax, open pneumothorax, massive haemothorax, flail chest and cardiac tamponade.

02 Manage an open chest wound with a vented chest seal or a clean, non-occlusive dressing, and watch for tension.

03 Recognise tension pneumothorax in breathing patients and in ventilated patients (BVM or SGA); burp or remove a chest seal, pre-alert and transport without delay.

04 Manage rib fractures and flail chest with position, oxygen, assisted ventilation if needed, and methoxyflurane where it is not contraindicated.

05 Leave an impaled object in place and stabilise it.

06 After the AEMT endorsement: IV or IO access, fluids and TXA as in Module 30.

SKILLS AND OSCE STATIONS

Chest examination on actors with simulated findings; vented and non-vented chest seals; burping a seal; a ventilated patient (BVM, then SGA) who deteriorates on a high-fidelity manikin; flail chest and rib fracture analgesia; stab wound with an impaled knife. Minimal-equipment tier: a clean cloth as a non-occlusive dressing; manual pulse and breath counts; BVM without capnography. OSCE: (1) stab wound to the chest: seal, monitor, burp when tension develops, transport; (2) crash patient ventilated through an SGA (AEMT) who becomes hypoxic and hypotensive: recognise tension and act within scope.

KENYA FOCUS

- In 100 road deaths studied in Nairobi, 70% had chest injuries, and chest injury caused 13% of deaths (Okemwa et al., 2008).
- At Kenyatta National Hospital, assault caused 25.3% of 8,701 injuries (Botchey et al., 2017).
- In Moshi, Tanzania, chest trauma was 19.4% of trauma admissions. Road crashes caused 65.8%, 60.5% also had a head injury, 38.9% needed a chest drain and 21% died (Mduma et al., 2023).
- In Kigali, Rwanda, road crashes caused 68% of chest trauma. 61% had a head injury, 29% needed a thoracostomy and 5% died within seven days (Nsengiyumva et al., 2022).

WHY THIS WAY · EVIDENCE

- For an open chest wound, AHA/Red Cross accept three options: leave the wound open to air, cover it with a clean, non-occlusive dressing, or use a vented chest seal (AHA/Red Cross, 2024).
- NICE NG39: diagnose pneumothorax by clinical assessment. Decompress only when there is haemodynamic instability or severe respiratory compromise. Cover an open pneumothorax and watch for tension (NICE NG39).
- Ventilated patients deteriorate faster. Hypoxia was reported in 91.8% of ventilated cases against 50.0% of breathing cases. Ventilated patients had 12.6 times the adjusted odds of hypotension and 17.7 times the odds of cardiac arrest, and 70.4% of those who became hypotensive or arrested did so within minutes (Ann Surg systematic review, 2015).
- If tension develops under a seal, lift one edge to let it escape ("burp" the seal) (TCCC CLS skill card, 2020). Warning signs include worsening breathing, SpO2 below 90% and shock (TCCC Guidelines, Respiration).
- Bleeding: restrict fluids and titrate to a palpable central pulse. Give TXA as soon as possible, and not more than 3 hours after injury (NICE NG39). In CRASH-2, deaths from bleeding were 4.9% with TXA and 5.7% with placebo (CRASH-2, 2010).
- Impaled objects: "do not remove, stabilize the object in place" (WHO, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL a three-sided dressing. **WE TEACH** a vented chest seal, or leave the wound open, or use a clean non-occlusive dressing. **WHY** these are the three options in the AHA/Red Cross 2024 guidelines; the three-sided dressing shown in the WHO 2025 protocol is not one of them (AHA/Red Cross, 2024).

TRADITIONAL wait for the "textbook" signs before suspecting tension. **WE TEACH** in a ventilated patient, falling SpO2 and blood pressure are the warning, and action is needed within minutes. **WHY** Ann Surg systematic review, 2015.

TRADITIONAL needle decompression by every crew (it appears in the WHO 2025 protocols). **WE TEACH** AEMTs burp or remove the seal, support breathing, pre-alert, and transport or meet a team that can decompress. **WHY** decompression is outside the Sahara Scope of Practice v1.0, and NICE limits it to patients with instability or severe respiratory compromise (NICE NG39).

TRADITIONAL run in large volumes of fluid for a shocked chest patient. **WE TEACH** small boluses to a palpable central pulse. **WHY** NICE NG39 recs 1.5.18–1.5.19; WHO uses 100–250 mL boluses to a palpable central pulse or SBP above 90 (WHO, 2025).

MODULE 34

ABDOMINAL AND PELVIC INJURIES

THEORY **8 H** SKILLS **8 H**

A tourniquet cannot stop bleeding in the abdomen or pelvis, and in Nairobi treatment of abdominal gunshot wounds started on average about 10 hours after injury. Crews must recognise internal bleeding early, bind the pelvis correctly and move fast.

LEARNING OUTCOMES

On completion the student can:

01 Assess the abdomen and pelvis by looking and gentle palpation, without springing the pelvis, and identify signs of internal bleeding and shock.

02 Apply a purpose-made pelvic binder centred over the greater trochanters, before moving the patient where possible; use a folded sheet if no purpose-made binder is available or it does not fit; bind the knees and ankles.

03 Manage evisceration (do not push bowel back; cover with a moist sterile dressing) and stabilise impaled objects in place.

04 Recognise pregnancy over 20 weeks (fundus at or above the umbilicus) and relieve pressure on the great vessels with manual uterine displacement to the left, or a left tilt of at least 15°, including during SMR.

05 After the AEMT endorsement: IV or IO access, fluids and TXA as in Module 30; in pregnancy, consider fluids earlier, and give TXA as for other patients.

06 Move the patient on a scoop with as little rolling as possible, and pre-alert a hospital with surgery (and obstetrics for a pregnant patient).

SKILLS AND OSCE STATIONS

Abdominal assessment with actors; finding the greater trochanters on each other; purpose-made binder (SAM Pelvic Sling or T-POD); improvised sheet binder; binder before extrication and scoop transfer; evisceration dressing on moulage; impaled object stabilisation with bulky dressings; pregnant trauma patient (actor in pregnancy suit) on a scoop with manual uterine displacement. Minimal-equipment tier: folded bed sheet binder, moist clean cloth for evisceration, rolled towels around an impaled object, rolled blanket wedge for tilt. OSCE: (1) boda boda pillion passenger with pelvic pain and shock: binder at the trochanters, scoop, fluids and TXA (AEMT); (2) woman 30 weeks pregnant after a matatu crash: manual uterine displacement, assessment, destination.

KENYA FOCUS

- At Kenyatta National Hospital (2013–2017), 209 of 1,588 abdominal injury records were gunshot wounds. 20% died, and the mean time from injury to treatment was about 10 hours (Bonko et al., 2020).

- In 100 road deaths studied in Nairobi, 60% had abdominal injuries and 24% pelvic injuries. Abdominal injury caused 17% of deaths (Okemwa et al., 2008).
- In Harar, Ethiopia, 71.6% of 352 penetrating abdominal injuries needing laparotomy were stab wounds, and 27% of patients arrived more than 12 hours after injury (Abdulkadir et al., 2022).

WHY THIS WAY · EVIDENCE

- Springing the pelvis had a sensitivity of 59% and a specificity of 71%. It "can cause further haemorrhage" and is no longer recommended. Apply the binder before extrication, move on a scoop, and do not log-roll routinely (Scott et al., 2013). "Pelvic springing must not be performed" (QAS CPG, 2021).
- Place the binder at the level of the greater trochanters. In one cited series only 50% of binders were placed correctly and 39% were too high. In cadavers, a SAM sling at the iliac crest reduced pelvic volume less (Privalov et al., 2024).
- NICE NG39: use a purpose-made binder for suspected bleeding from a pelvic fracture after high-energy blunt trauma, and an improvised one only if it does not fit. Restrict fluids to a palpable central pulse. Give TXA within 3 hours (NICE NG39).
- Evisceration: "do not replace into body"; cover with sterile moist gauze. Impaled object: "do not remove, stabilize the object in place" (WHO, 2025).
- Pregnancy: use manual uterine displacement or lateral tilt at once, with a left tilt of at least 15° (30° in some patients). Spinal care is the same as for non-pregnant patients, with manual displacement when supine. Pelvic binders are indicated. Pregnancy is not a contraindication to TXA. "The harm from permissive hypotension may be greater than the benefits in the pregnant patient" (FPHC, 2025).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL spring the pelvis to test for stability. **WE TEACH** never spring; bind on mechanism plus signs. **WHY** Scott et al., 2013; QAS CPG, 2021.

TRADITIONAL binder "round the hips" at the iliac crests. **WE TEACH** centre the binder over the greater trochanters. **WHY** binders placed too high work less well (Privalov et al., 2024).

TRADITIONAL push the bowel back in, or cover it with dry gauze. **WE TEACH** leave it out and cover it with a moist sterile dressing. **WHY** WHO, 2025.

TRADITIONAL a pregnant patient strapped flat on a board, or always on her left side. **WE TEACH** tilt left; if she must lie flat for spinal care or CPR, push the uterus to her left by hand. **WHY** FPHC, 2025. The WHO protocol says to always position her left lateral (WHO, 2025), which is not possible during supine SMR.

TRADITIONAL the same permissive hypotension for every bleeding patient. **WE TEACH** in pregnancy, consider fluids earlier. **WHY** restricted fluids may reduce blood flow to the placenta (FPHC, 2025).

MODULE 35

MUSCULOSKELETAL INJURIES AND SPLINTING

THEORY 8 H | SKILLS 14 H

Broken limbs rarely kill, but a badly handled fracture can bleed, lose its blood supply or become infected. Good splinting and pain relief make long, rough journeys safer.

LEARNING OUTCOMES

On completion the student can:

01 Recognise fractures, dislocations and open fractures; check circulation, sensation and movement before and after splinting.

02 Apply a traction splint for suspected femoral shaft fracture, and vacuum, improvised or sling splints otherwise.

03 Manage open fractures: control bleeding, photograph, apply a saline-soaked dressing, do not irrigate.

04 Splint a deformed limb in the position found; if it is pulseless, apply one gentle in-line traction by protocol to restore circulation before splinting. Fractures and dislocations are not reduced.

05 Give methoxyflurane, paracetamol or ibuprofen per protocol, and reassess pain.

06 Choose and pre-alert a facility that can give IV antibiotics and surgery promptly.

SKILLS AND OSCE STATIONS

Traction splint. Vacuum splint. Improvised splints (cardboard, blanket, adjacent leg). Sling. Open fracture dressing. Methoxyflurane coaching (Module 41). Splint and pain check on a long, rough transfer. OSCE: traction splint; improvised splint with neurovascular check.

KENYA FOCUS

- Boda boda crashes commonly cause lower-limb and open fractures.
- Antibiotics are outside the EMT and AEMT scope. Speed, destination and pre-alert are the EMT's antibiotic intervention.
- Some families prefer traditional bone-setters. The EMT explains the risks respectfully and documents any refusal.

WHY THIS WAY · EVIDENCE

- NICE: traction splint or adjacent leg for suspected fractures above the knee; vacuum splint for other long bones (NICE NG37, 2016).
- NICE: IV antibiotics for open fractures as soon as possible, ideally within 1 hour; no prehospital irrigation (NICE NG37).
- WHO: splint large fractures, but do not delay transport (WHO first aid responder guide).

> **WHAT WE TEACH DIFFERENTLY**
>
> **TRADITIONAL** wash open fractures on scene. **WE TEACH** no irrigation; photograph, dress and cover (NICE NG37).

MODULE 36

BURNS

THEORY **8 H** SKILLS **8 H**

Burns are common in Kenyan homes, especially among small children. Cool water in the first minutes limits how deep a burn becomes.

LEARNING OUTCOMES

On completion the student can:

01 Make the scene safe and stop the burning (gas, electricity, chemicals, fuel).

02 Cool with cool running water for 20 minutes, within 3 hours, while keeping the patient warm.

03 Estimate total body surface area (TBSA) burned with the palm method, rule of nines or Lund-Browder chart.

04 Recognise airway burns and carbon monoxide poisoning, give oxygen and pre-alert early.

05 Cover burns with cling film in loose strips, give analgesia (methoxyflurane, paracetamol), and, after the AEMT endorsement, IV fluids by protocol on long transfers.

06 Recognise burn patterns suggesting child abuse, and follow safeguarding steps.

SKILLS AND OSCE STATIONS

Cooling and cling-film dressing, including a jerrycan tier. TBSA estimation on moulage. Airway burn scenario. Chemical burn irrigation (eye injuries: Module 31). Mass burns after a fuel tanker fire: triage tabletop (Module 43). OSCE: cooling and dressing; TBSA estimation.

KENYA FOCUS

- At Kenyatta National Hospital (KNH), a surgeon links almost 70% of burns to the 6 kg gas cylinder (Nation, 2025).

- KNH's 16-bed burns critical care unit is reported as Kenya's only dedicated one (same source).
- Children under five are most affected; burns are about 20% of KNH trauma (The Conversation).

WHY THIS WAY · EVIDENCE

- In 2,495 children, at least 20 minutes of cool running water cut skin grafting odds by over 40% (Griffin et al., 2020).
- Cool for 20 minutes within 3 hours; no ice; cling film in strips (British Burn Association, 2018).
- WHO warns against paste, oil, turmeric and ice (WHO fact sheet, 2023); see also ISBI guidelines, 2016.
- One service starts fluids above 15% TBSA in adults, 10% in children (Scottish Ambulance Service, 2023).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL toothpaste, eggs, oil, ice or a quick splash. **WE TEACH** 20 minutes of cool running water, nothing else.

TRADITIONAL delay departure to set up drips. **WE TEACH** cool, cover, warm and go; fluids on long transfers (Scottish Ambulance Service).

MODULE 37

RESCUE, EXTRICATION AND MULTI-SYSTEM TRAUMA

THEORY **6 H** SKILLS **14 H**

Most road deaths are pedestrians and motorcyclists (Module 29). Fire and rescue cover is thin, with about 1,500 firefighters for some 50 million people, so crews must plan for little or late fire support and work safely with police, Red Cross, county teams and bystanders.

LEARNING OUTCOMES

On completion the student can:

01 Make a roadside scene safe: park to protect the scene, wear high-visibility clothing, control traffic with police, manage hazards, and reassess often (Module 5).

02 Agree a patient-centred extrication plan with county fire and rescue, choosing between time-critical extrication (fastest route) and controlled extrication, and give clear "go" and "stop" calls.

03 Coach controlled self-extrication when criteria are met, and use the KED, scoop and long board as extrication tools only.

04 Triage a multi-casualty roadside incident with the primary triage system of Module 43 (START in this draft), give life-saving interventions, and share patients between hospitals.

05 Manage common boda boda and matatu injury patterns, completing the xABCDE primary survey within the first 5 minutes.

06 Lead a long transfer of a multi-system trauma patient: reassess often, prevent heat loss, give analgesia within scope, record, and give a structured handover.

SKILLS AND OSCE STATIONS

Scene safety walk-through at a staged roadside with cones; joint drill with county fire and rescue (vehicle stabilisation, glass management, patient protection); self-extrication coaching; time-critical extrication; controlled extrication with KED and long board after roof removal; boda boda crash with rider and pillion; matatu rollover with 8–12 casualties and triage cards; full multi-system trauma simulation with a long (time-compressed) transfer in an ambulance, ending in handover. Minimal-equipment tier: triage with coloured tape; self-extrication and manual handling where no hydraulic tools are available; improvised high-visibility markers. OSCE: (1) trapped driver: decide between self-extrication, time-critical and controlled extrication, and brief the fire crew; (2) multi-system trauma: xABCDE, interventions within scope, reassessment and handover after a long transfer.

KENYA FOCUS

- From 1 January to 13 November 2025, 1,085 of 4,195 road deaths were motorcyclists, and 8,888 people were seriously injured (Citizen Digital, NTSA data, 2025).

- The Chief Fire Officers Association said Kenya has about 1,500 firefighters for about 50 million people, and some counties have no fire stations (Kenya News Agency, 2024).
- In August 2026 a matatu crash in Makueni killed seven people. Survivors went to two hospitals (41 and 28 patients), and the response involved Kenya Red Cross, county disaster officials and police (Capital FM, 2026).
- Only 7.4% of 8,701 injured patients at Kenyatta National Hospital received prehospital care (Botchey et al., 2017). In Eldoret, 30% of patients with leg fractures arrived by public service vehicle, and 72% had no analgesia before arrival (Korir, 2022).

WHY THIS WAY · EVIDENCE

- The Faculty of Pre-Hospital Care consensus: "All patients with injury should be considered time dependent." Self-extrication or minimally assisted extrication "should be the standard 'first line' extrication". Collars are an interim measure. Rescue teams should work to one plan that cuts entrapment time (Nutbeam et al., FPHC 2024; SJTREM, 2025).
- Entrapment kills. In 63,625 English crash patients, mortality was 8.9% if trapped and 5.0% if not. Trapped patients had higher injury scores (median ISS 18 vs 13), and only 0.71% had a spinal cord injury (Nutbeam et al., 2021).
- About 40% of trapped patients had no injuries likely to stop them getting out by themselves (Nutbeam et al., 2022).
- Self-extrication caused the least spinal movement (2.6 mm) and was fastest (6.4 s). Rapid removal caused the most movement (Nutbeam et al., 2022).
- NICE NG41: when there is an immediate threat to life, limit spinal movement without delaying treatment. Self-extrication is for patients who are not trapped and have no high-risk features. After self-extrication, lay the patient supine on a stretcher and reassess (NICE NG41).
- WHO: "Identify threats - if unsafe, await police or additional assistance"; complete the primary survey (cABCDE in WHO terms) in the first 5 minutes (WHO, 2025).
- Long transfer: "Minimise ongoing heat loss". The best destination for major trauma is usually a major trauma centre (NICE NG39).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL cut the car away from every trapped patient to keep the spine still. **WE TEACH** self-extrication first; the fastest route for time-critical patients; controlled extrication only when it helps the patient. **WHY** trapped patients die more often, and spinal cord injury is rare (Nutbeam et al., 2021; FPHC, 2024).

TRADITIONAL collar and board before any movement. **WE TEACH** a collar only if indicated, as an interim measure; the long board as a slide only. **WHY** FPHC, 2024 rec. 8; NICE NG41 rec. 1.1.19.

TRADITIONAL the first crew treats the first patient it reaches. **WE TEACH** triage first (Module 43), then treat. **WHY** poor coordination and training raise deaths in Kenyan incidents (Wachira & Smith, 2013).

TRADITIONAL take everyone to the nearest facility. **WE TEACH** choose a hospital that can treat the injury (CT, surgery), and spread casualties across hospitals in a mass casualty incident. **WHY** NICE NG39 rec. 1.1.1; BTF 3rd ed., 2023 destination recommendations.

TRADITIONAL rescue is fire service work and medics wait outside. **WE TEACH** one joint plan, with the clinician leading on timing and patient needs. **WHY** the consensus stresses interdisciplinary working and empowering all responders (SJTREM, 2025).

PART 07

SPECIAL PATIENT GROUPS

MODULE 38

OBSTETRIC AND NEWBORN EMERGENCIES

THEORY **22 H** SKILLS **22 H**

Bleeding in pregnancy and after birth is the top killer of Kenyan mothers. Newborns who do not breathe need help within a minute.

LEARNING OUTCOMES

On completion the student can:

01 Perform a normal delivery: delayed cord clamping, drying, skin-to-skin warming; after checking for a second baby, give a heat-stable uterotonic (carbetocin IM or misoprostol by mouth).

02 Recognise postpartum haemorrhage (PPH) by measuring blood loss; start the bundle: uterine massage, a uterotonic, examination and escalation, adding IV tranexamic acid (TXA) and IV fluids after the AEMT endorsement.

03 Resuscitate a newborn: dry, warm, stimulate, then bag-valve-mask ventilation in air within a minute.

04 Recognise breech birth, shoulder dystocia, cord prolapse, late-pregnancy bleeding, severe pre-eclampsia and eclampsia; give first-line care, and after the AEMT endorsement the magnesium sulphate IM loading dose, with calcium gluconate ready as antidote.

05 Recognise suspected ruptured ectopic pregnancy and complications of miscarriage or unsafe abortion (haemorrhage, sepsis). Treat shock without judgement, in confidence.

06 Choose a facility with theatre and blood; pre-alert it.

07 Explain why heat-stable carbetocin and misoprostol come first, and give oxytocin only where cold storage at 2–8 °C is verified (AEMT endorsement).

SKILLS AND OSCE STATIONS

Normal delivery with uterotonic; PPH bundle with calibrated drape (minimal tier: marked container), with IV access and TXA at the AEMT level; newborn resuscitation (Helping Babies Breathe), full and minimal kit; breech; shoulder dystocia; cord prolapse; eclamptic fit with magnesium sulphate IM loading dose (AEMT); early-pregnancy collapse. OSCE: PPH bundle; newborn resuscitation.

KENYA FOCUS

- In the first national maternal death enquiry, obstetric haemorrhage caused 39.7% of deaths; abortion, miscarriage and ectopic pregnancy 8.3%. Half the women who died had been referred (MoH Saving Mothers Lives, 2017).
- In the two years before the 2022 survey, 88% of births took place in a facility and 11% at home, fewer in a facility in rural areas (KDHS 2022, via The Standard). EMTs still meet home births and births on the road.
- Kenya has added heat-stable carbetocin to its Essential Medicines List and KEMSA has announced its first supply (Nation).
- Kenyan law bars denying anyone emergency treatment, including pre-hospital care (KELIN, 2018).

WHY THIS WAY · EVIDENCE

- In four African countries including Kenya, drape plus bundle cut severe bleeding outcomes from 4.3% to 1.6% (E-MOTIVE, NEJM 2023).
- TXA within 3 hours of birth cut death from bleeding by about 30%; later, it showed no benefit (WOMAN trial, Lancet 2017).
- Heat-stable carbetocin prevented bleeding as well as oxytocin in 29,645 women in ten countries, including Kenya, and stays stable for 36 months at 30 °C (CHAMPION, NEJM 2018).

- Magnesium sulphate cut eclampsia from 1.9% to 0.8% (Magpie, Lancet 2002). Where the full regimen cannot be given, WHO recommends a loading dose and immediate transfer (WHO, via BIGG).
- Helping Babies Breathe training in Tanzania nearly halved deaths in the first 24 hours (Msemo et al., Pediatrics 2013).
- WHO: consider pregnancy complications in women of childbearing age with abdominal pain (WHO prehospital protocols, 2025). Confidentiality is a core value of abortion care (WHO, 2022).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL blood loss guessed by eye. **WE TEACH** measure it. **WHY** detection rose from 51% to 93% (E-MOTIVE).

TRADITIONAL TXA left to the hospital. **WE TEACH** TXA on scene by the AEMT. **WHY** the 3-hour clock starts at birth (WOMAN).

TRADITIONAL oxytocin carried in the door pocket. **WE TEACH** heat-stable carbetocin or misoprostol first; oxytocin only from verified cold storage. **WHY** only 6 of 17 oxytocin products sampled in Kenya and three other countries met quality standards (Ammerdorffer et al., 2022).

TRADITIONAL routine newborn suction and 100% oxygen. **WE TEACH** suction only for obstruction; air from 35 weeks. **WHY** AHA/AAP, 2025.

MODULE 39

PAEDIATRIC EMERGENCIES, WITH AHA PALS

THEORY **20 H** SKILLS **28 H**

Sick children deteriorate fast, and some routine treatments harm them. This module teaches the EMT to triage and treat children the way Kenyan hospitals do.

LEARNING OUTCOMES

On completion the student can:

01 Perform a paediatric xABCDE assessment and Emergency Triage Assessment and Treatment (ETAT+) triage.

02 Recognise and treat pneumonia, wheeze, dehydration, severe malaria, sepsis, low blood sugar and malnutrition at first-line level.

03 Decide whether a fluid bolus is indicated, using the national shock criteria.

04 Manage a convulsion: airway, glucose and, if it lasts over 5 minutes, rectal diazepam or buccal or intranasal midazolam (credentialed), as in the national protocols.

05 Estimate weight with a length-based tape, and take every dose from a weight band or dose card, measured in a 1-mL syringe for small volumes.

06 Recognise possible abuse, document it and report it.

07 Assess pain with an age-appropriate scale and give analgesia within scope: paracetamol, ibuprofen, and methoxyflurane from age 6.

08 Recognise respiratory failure, shock and cardiac arrest in a child, and resuscitate to AHA PALS standards within scope, with IO access and fluids after the AEMT endorsement.

SKILLS AND OSCE STATIONS

AHA PALS course embedded, certified separately by Sahara as an AHA Training Site; graduates use only what their scope allows. ETAT+ triage with a carer present; infant bag-valve-mask and oxygen titration; child and infant CPR as a team; infant IO access (AEMT); convulsion with buccal or intranasal midazolam or rectal diazepam; weight-band dosing in a 1-mL syringe; “bolus or no bolus” decision; severe dehydration with ORS. Minimal tier: triage without an oximeter. OSCE: ETAT+ triage; paediatric team resuscitation.

KENYA FOCUS

- Under-5 mortality is 41 per 1,000 live births; 18% of under-fives are stunted (KNBS, KDHS 2022).
- The Basic Paediatric Protocols (5th edition, 2022) with ETAT+ are the national hospital standard (MoH, 2022).
- The Children Act 2022 counts failure to report child abuse as child abuse (Children Act, 2022). Child Helpline 116 is coordinated by the Directorate of Children Services (DCS).

WHY THIS WAY · EVIDENCE

- In Kenya, Uganda and Tanzania, fluid boluses raised 48-hour deaths in feverish children with poor circulation: 10.5% versus 7.3% (FEAST, NEJM 2011).
- At Kenyatta National Hospital, ETAT+ picked out 93.8% of children needing admission (Chen et al., 2024).
- PAWPER tape estimates fell within 10% of true weight in 77% of children, Broselow in 58% (Wells & Goldstein, 2019).

> **WHAT WE TEACH DIFFERENTLY**
>
> **TRADITIONAL** a bolus for every sick, feverish child. **WE TEACH** only when all four shock signs are present. **WHY** FEAST and the national protocols.
>
> **TRADITIONAL** drugs for every febrile fit. **WE TEACH** none for up to two fits under 5 minutes; find the cause. **WHY** national protocols.

MODULE 40

OLDER PEOPLE, PATIENTS WITH DISABILITIES AND PATIENTS ON DIALYSIS

THEORY **8 H** SKILLS **4 H**

Routine care often fails these patients: a missed brain bleed, the wrong arm, a conversation they cannot follow. This module teaches the EMT to adapt.

LEARNING OUTCOMES

On completion the student can:

01 Recognise frailty and unusual illness, such as infection showing only as confusion or a fall.

02 Assess a fall for cause, injury and blood thinners, and choose a hospital with CT when needed.

03 Communicate with deaf, blind and cognitively impaired patients using basic Kenyan Sign Language (KSL), writing, pictures or an interpreter.

04 Assess a haemodialysis patient for missed sessions, fluid overload and signs of high potassium (weakness, slow pulse), and, after the AEMT endorsement, record and transmit a 12-lead ECG where a reader is available.

05 Protect the fistula arm (no cuff, no IV) and control fistula bleeding with firm pressure.

06 Obtain consent from the patient and protect dignity.

SKILLS AND OSCE STATIONS

Older patient after a fall, with medication check and padded vacuum mattress; deaf standardised patient with KSL phrases and picture card; bleeding fistula; missed dialysis with suspected high potassium, with pre-alert. Minimal tier: improvised padding, pen and paper.

KENYA FOCUS

- At age 50 or over, 22.2% of women and 14.2% of men report serious functional difficulty (KDHS 2022).
- The Constitution guarantees use of sign language and Braille, and tells the state to promote KSL (Constitution of Kenya 2010, Art. 7 and 54).
- CT and dialysis sit mainly in larger hospitals, so each county needs a destination map (Modules 1 and 29).

WHY THIS WAY · EVIDENCE

- After head injury, consider CT within 8 hours for anyone on anticoagulants, even without other signs (NICE NG232, 2023).
- After missed dialysis, high potassium is an immediate threat; one missed session a month is linked to more admissions and deaths (WACHS, 2024).
- Never use the fistula arm for blood pressure or blood draws; access bleeding is an emergency (IPRO/CMS, 2024).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL "just a fall". **WE TEACH** a medical event; head injury on anticoagulants goes to a CT-capable hospital (NICE).

TRADITIONAL talking to the companion. **WE TEACH** speaking to the patient, with KSL, writing or an interpreter (Constitution, Art. 54).

PART 08

MEDICATIONS, MAJOR INCIDENTS AND TRANSFERS

MODULE 41

PHARMACOLOGY AND SAFE MEDICATION

THEORY **22 H** SKILLS **14 H**

A medicine helps only if the right drug reaches the right patient in the right dose, and is still potent after weeks in a hot vehicle. This module covers the Sahara medicines list, safe dosing, storage and the law.

LEARNING OUTCOMES

On completion the student can:

01 Explain each medicine of the EMT scope and the AEMT endorsement: indication, contraindications, route, effects and adverse effects.

02 Take every child's dose from a weight band or dose card, with read-back and an independent double check, and use a 1-mL syringe for small volumes.

03 Give medicines by oral, buccal, sublingual, rectal, inhaled, nebulised, intramuscular and intranasal routes, and by IV and IO routes after the AEMT endorsement (Module 42).

04 Coach a patient through self-administered methoxyflurane, and keep to its dose limits and contraindications (reduced consciousness, cardiovascular instability, respiratory depression, kidney disease).

05 Store medicines safely: keep a temperature log, rotate stock before heat damage, check cold storage before carrying oxytocin, and keep the controlled-medicine register for diazepam and midazolam.

06 Document every dose, and report errors and near misses.

SKILLS AND OSCE STATIONS

Weight-band dose preparation with double check; IM adrenaline from an ampoule with a 1-mL syringe; intranasal atomiser; inhaler and spacer coaching; methoxyflurane coaching; temperature log and stock rotation; controlled-medicine register. OSCE: child dose with double check; IM adrenaline from an ampoule. Minimal tier: printed dose card, phone torch.

KENYA FOCUS

- Poorer countries have similar medication harm rates to rich ones, but lose about twice the healthy life years (WHO, 2017).
- Diazepam and midazolam are controlled under the Narcotic Drugs and Psychotropic Substances (Control) Act. The Act allows administration by a qualified person on the instructions of a medical practitioner (Kenya Law, 1994). Both are kept locked, registered and witnessed.
- Temperatures logged in South African ambulances reached 56.8 °C (Wylie et al., 2021). KMPDC's ambulance checklist sets no storage temperature yet (KMPDC checklist).
- We found no Kenyan registration for methoxyflurane; it needs registration or an import authorisation before use.

WHY THIS WAY · EVIDENCE

- In simulated child emergencies, 31% of doses were wrong, including tenfold adrenaline overdoses (Hoyle et al., 2019). Switching to a 1-mL syringe for small doses raised correct infant adrenaline doses in simulated cardiac arrest from 63% to 97% (JAMA Network Open, 2022).

- Methoxyflurane relieved pain in 59% of patients, against 80% with intranasal fentanyl, but works within minutes and needs no needle (Middleton et al., 2010). Kidney damage is dose-related, so the dose stays at most 6 mL a day and 15 mL a week (NPS RADAR). The UK label covers trauma pain in conscious patients from 6 years and excludes reduced consciousness, cardiovascular instability, respiratory depression and kidney disease (Penthrox SmPC, 2026).
- After 120 days of EMS deployment in a hot climate, midazolam kept 99% and diazepam 97% of their strength (McMullan et al., 2014).
- In samples from Kenya and three other countries, only 6 of 17 oxytocin products met quality standards (Ammerdorffer et al., 2022).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL "rights" recited, doses worked out in the head. **WE TEACH** dose cards plus independent double checks. **WHY** double checks can catch most errors (AHRQ PSNet, 2021).

TRADITIONAL drugs live in the vehicle. **WE TEACH** drugs return to station storage each shift. **WHY** in deployed South African stock, adrenaline lost about a quarter of its strength in four weeks (Sobuwa et al., 2024). Under a deploy-and-return protocol in Thailand, arrest drugs lost under 10% in a year (Leela-amornsin et al., 2025).

TRADITIONAL oxytocin in the door pocket. **WE TEACH** heat-stable carbetocin or misoprostol, and oxytocin only from verified cold storage. **WHY** Ammerdorffer et al., 2022.

MODULE 42

VASCULAR ACCESS AND FLUID THERAPY

THEORY **6 H** SKILLS **18 H**

IV and IO access are the core skills of the AEMT endorsement. KMPDC already puts dextrose and saline on every basic ambulance; only crews who can place a line can use them.

LEARNING OUTCOMES

On completion the student can:

01 Decide when vascular access helps the patient and when it only delays transport.

02 Place a peripheral IV cannula in adults and children, secure it, and run an infusion by drop count or pump.

03 Place an IO needle in the proximal tibia or proximal humerus, manually or with a powered device, in cardiac arrest and peri-arrest.

04 Give fluids by protocol: small boluses to a palpable central pulse in trauma, with a higher target in suspected head injury (Module 31) and earlier fluids in pregnancy (Module 34); boluses in children only for shock.

05 Recognise and manage complications: tissued line, infection, air, fluid overload.

06 Document site, time, volume and response.

SKILLS AND OSCE STATIONS

IV cannulation on task trainers, then under supervision on placement; paediatric IV; manual and powered IO; drip-rate calculation; "line or go" decision cases on a long transfer. OSCE: IV cannulation and infusion; IO insertion. Minimal tier: manual IO needle, drip counted in drops per minute.

KENYA FOCUS

- KMPDC's ambulance inspection checklist requires dextrose and saline on every basic ambulance (KMPDC checklist).
- In FEAST, run in Kenya, Uganda and Tanzania, fluid boluses raised deaths in children with severe febrile illness (Maitland et al., NEJM 2011).
- Long transfers make fluids a supply question: carry enough for the journey, give only what helps.

WHY THIS WAY · EVIDENCE

- IO-first did not improve survival over IV-first in cardiac arrest (PARAMEDIC-3, 2024; IVIO, 2024), but first-attempt success was 91–95% for IO against 63–65% for IV (summary). AHA 2025: IV first, IO if IV fails (AHA, 2025).
- In 776,734 US trauma patients, prehospital IV fluids were linked to higher mortality, especially in patients with hypotension, penetrating injury or severe head injury (Haut et al., 2011).
- Prehospital IV success in children was 88% overall but only 64% under 2 years (Myers et al., 2013).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL two large-bore lines and a litre of fluid for every injured patient. **WE TEACH** one line on the way, small boluses to a central pulse. **WHY** Haut et al., 2011; NICE NG39.

TRADITIONAL IO as a last resort. **WE TEACH** IO early when IV fails in arrest or peri-arrest; in conscious patients only by protocol, because IO infusion hurts and lidocaine is outside the scope.

MODULE 43

MAJOR INCIDENTS AND TRIAGE

THEORY **12 H** SKILLS **12 H**

When a tanker burns or attackers strike a crowd, patients outnumber ambulances. The first crew decides how many survive.

LEARNING OUTCOMES

On completion the student can:

01 Declare a major incident and send a METHANE report (Major incident, Exact location, Type, Hazards, Access, Number of casualties, Emergency services).

02 Apply Major Incident Medical Management and Support (MIMMS) principles: command, safety, communication, assessment, triage, treatment, transport.

03 Triage (draft: Simple Triage and Rapid Treatment, START) with life-saving actions; re-triage.

04 At hostile incidents, enter only areas the police declare safe. Apply THREAT (Threat suppression, Haemorrhage control, Rapid Extrication to safety, Assessment by medical providers, Transport).

05 Recognise basic blast injury patterns (primary to quaternary).

06 Choose destinations by facility capacity; work with police, fire, county disaster teams, Kenya Red Cross and St John.

SKILLS AND OSCE STATIONS

Timed METHANE report and ten-casualty triage, life-saving actions as critical items. Table-tops: tanker fire; hostile incident with zones and casualty collection point. Re-triage at the casualty collection point; triage of children (JumpSTART). Multi-agency drill in the capstone. Minimal tier: coloured tape for tags; phone only.

KENYA FOCUS

- More than 100 people died collecting fuel from an overturned, burning tanker at Sachang'wan in 2009 (Al Jazeera, 2009).
- Attacks killed 67 people at Westgate Mall (2013) and 147 students at Garissa University College (2015) (The Star, 2019). At least 21 died at DusitD2 (2019) (Al Jazeera, 2019).
- Poor coordination and training raise deaths in Kenyan incidents (Wachira & Smith, 2013). At Westgate, a Nairobi emergency department coordinated casualties using MIMMS (Wachira et al., 2014).

WHY THIS WAY · EVIDENCE

- No triage system is reliably accurate (START 36–73%, SALT 66–70%), so we drill one system and re-triage (Bazyar et al., 2022).
- The Hartford Consensus set THREAT: "No one should die from uncontrolled bleeding" (Hartford Consensus II, 2013).

- Tactical Emergency Casualty Care: in the hot zone, only life-threatening limb bleeding is treated; casualty collection points sit in the warm zone; full care follows in the cold zone (StatPearls, 2025).
- Blast injury: primary (pressure wave), secondary (fragments), tertiary (body thrown), quaternary (all else). The most injured often arrive last (CDC).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL the first crew treats the nearest casualty. **WE TEACH** it commands, reports and triages; patients are spread across facilities. **WHY** Wachira & Smith, 2013.

TRADITIONAL triage for clinicians only. **WE TEACH** drivers train too. **WHY** some ambulances carry a driver only, and Sierra Leone trains both (Caviglia et al., 2022).

TRADITIONAL rushing into danger, crowds near a leaking tanker. **WE TEACH** wait outside the cordon, upwind of tankers, until the police declare it safe; nobody collects fuel. **WHY** WHO prehospital protocols, 2025.

MODULE 44

INTER-FACILITY TRANSFER AND REFERRAL

THEORY **8 H** SKILLS **4 H**

Many Kenyan ambulance journeys move patients between facilities, up the KEPH levels. A poorly prepared transfer can harm a patient who was stable.

LEARNING OUTCOMES

On completion the student can:

01 Accept a referral: check the referral form, reason, confirmed receiving facility and escort level.

02 Decide whether the patient is fit to travel and needs an AEMT, nurse, clinical officer, doctor or paramedic as escort.

03 Calculate oxygen and supplies for the whole journey, including delays.

04 Continue only in-scope treatments. Others started by the sender (magnesium sulphate infusion, blood, oxytocin infusion) need a qualified escort; otherwise stop or clamp them only on medical direction.

05 Manage deterioration en route: stop safely, call medical direction, divert to the nearest capable facility.

06 Hand over using ATMIST; complete the transit form, PCR and SHA documents.

SKILLS AND OSCE STATIONS

Transfer acceptance checklist; packaging for a long transfer, with oxygen and supply calculation; handover with the transit form. Assessed in the capstone simulation (transfer scenario) and signed off in the logbook. Two tiers: monitor; manual observations on paper.

KENYA FOCUS

- National guidelines require advance phone notice and a trained escort for every emergency referral (MoH Referral Guidelines, 2014).
- Half of the women in the first national maternal death enquiry had been referred; needing blood was a main reason (MoH Saving Mothers Lives, 2017).
- SHA pays facility-to-facility transfers for clinically justified maternity emergencies, and for other conditions only for POMSF beneficiaries. Claims need a Dispatch ID, transfer record and signed handover (SHA, 2026).

WHY THIS WAY · EVIDENCE

- Reported adverse events in inter-hospital transfer range from 3% to 75%; one study judged up to 91% of incidents preventable (Droogh et al., 2015).
- In Addis Ababa, over two in five referred road-crash patients arrived without prior notice (Abebe et al., 2018).

- UK guidance recommends checklists and requires an oxygen calculation allowing for delays, recorded observations and formal handover (Intensive Care Society, 2026).

WHAT WE TEACH DIFFERENTLY

TRADITIONAL take the patient as handed over. **WE TEACH** an acceptance check before leaving. **WHY** Kenyan guidelines require advance notice and a trained escort (MoH, 2014).

TRADITIONAL the EMT alone runs ward infusions. **WE TEACH** a qualified escort travels, or medical direction decides. **WHY** even UK paramedic scope excludes drug infusions without extra training (Intensive Care Society, 2026).

OUTLOOK

OUTLOOK: PROGRESSION AFTER THE CERTIFICATE

The Certificate starts a career. Under the Scope of Practice v1.0, the next steps are:

01 **AEMT endorsement.** Six months of supervised practice as an EMT, a logbook of AEMT skills and credentialing by the medical director.

02 **Keeping competence.** AHA BLS, AHA ACLS and AHA PALS renewal every two years, monthly manikin practice of rare skills (supraglottic airway, IO access, newborn resuscitation), re-verification every 6–12 months, and case review with the medical director.

03 **Further roles within the scope.** Preceptor, AHA instructor, EVOC instructor, dispatcher or shift leader, each with its own short course.

04 **Paramedic.** The BSc in Paramedic Science (four years and a one-year internship) leads to the Paramedic level set by TPAK. Sahara will seek credit for Certificate graduates through recognition of prior learning.

Diploma holders. Under the Scope of Practice v1.0, holders of an existing diploma, such as the KMTC Diploma in Emergency Medical Technology, qualify for the AEMT endorsement once their programme has been mapped to the scope. Intubation, opioid analgesia, needle decompression and 12-lead ECG interpretation stay with the degree-level paramedic. Any Sahara diploma would follow only once the national process has settled the levels.

NEXT STEPS

OPEN DECISIONS FOR THE NATIONAL PROCESS

This curriculum rests on the Scope of Practice v1.0, and its open decisions apply here too. Ten points decide the final form of the Certificate:

01 **National certificate.** Option B as proposed: a national minimum of 1,600 hours, at least 40% of them with real patients. Sahara offers 1,800 hours, of which 720 are placements.

02 **Register model.** AEMT as an endorsement on the EMT register, or as a separate register.

03 **Independent examination.** Which body sets and conducts the national examination, separate from the training institutions.

04 **Existing workforce.** Recognition of prior learning, bridging modules and a transition window for EMTs already working.

05 **Placements.** Agreements with counties and hospitals, and a national standard for preceptors.

06 **Medical direction.** A named medical director for each service and nationally consistent clinical protocols.

07 **EVOC.** A national standard for emergency vehicle operator training and its link to the EMT Certificate.

08 **Resuscitation certification.** Recognition of AHA or equivalent ILCOR-based provider courses.

09 **Medicine storage.** A temperature rule for ambulance medicines, which the KMPDC checklist does not yet contain.

10 **Titles.** Which level may use the title Paramedic.

Clinical questions for medical direction. Each needs a ruling before the Sahara medication protocol is final:

- **Controlled medicines.** The legal route for EMTs and AEMTs to give diazepam and midazolam under the Narcotic Drugs and Psychotropic Substances Act (Modules 22, 39 and 41).

- **Methoxyflurane.** Registration or an import authorisation, and whether the protocol allows it outside trauma, since the UK label covers trauma pain only. Without it, EMTs have no strong pain relief (Modules 13, 23, 31, 33, 35, 36 and 41).
- **12-lead ECG beyond chest pain.** The Scope of Practice allows recording only where a reader and a reperfusion pathway exist. Use after a faint or with suspected high potassium needs a ruling (Modules 22, 23 and 40).
- **Pulseless deformed limb.** One gentle in-line traction by protocol before splinting, at EMT level (Module 35).
- **Severe pain where methoxyflurane cannot be used.** Its label excludes children under 6, reduced consciousness and cardiovascular instability, and opioids and ketamine stay at Paramedic level. Many children and multi-system trauma patients then get only paracetamol (Modules 23, 31, 37 and 39).
- **Magnesium sulphate and tranexamic acid at EMT level.** For long rural transfers without an AEMT on board (Modules 30 and 38).
- **Pre-referral treatment.** Rectal artesunate for children with severe malaria, and antibiotics on long transfers, appear in WHO protocols but not in this scope (Modules 25 and 39).
- **Organophosphate poisoning.** Atropine is out of scope; the module teaches pre-alerting for it (Module 26).
- **High potassium.** Salbutamol is in scope, but not for this indication (Modules 23 and 40).
- **Intraosseous access in conscious patients.** Without lidocaine, IO infusion is painful, and lidocaine is not on the AEMT list. Add IO lidocaine, or limit IO in conscious patients to time-critical cases where IV access fails (Module 42).
- **Tranexamic acid in isolated head injury.** CRASH-3 showed benefit only in mild to moderate head injury, and the Brain Trauma Foundation does not support routine prehospital use. A rule for isolated head injury is needed (Modules 30 and 31).
- **Neurotoxic snakebite.** Whether a pressure pad is used after mamba bites without swelling (Module 26).
- **Cervical collars.** NICE keeps a sized collar within spinal motion restriction; ITLS and the WHO protocol play it down. This draft teaches "not routine" (Module 32).
- **Termination of resuscitation and pronouncing death.** The legal basis for EMT-led termination under medical direction (Module 19).
- **Triage system.** One primary triage system for all agencies. This draft names START; the evidence does not clearly favour START or SALT (Module 43).
- **Escort level for inter-facility transfers.** National referral guidelines require "a trained staff" as escort but do not define levels. A national decision aid should match patient risk to EMT, AEMT, nurse, clinical officer, doctor or paramedic (Module 44).
- **Hostile incidents.** Who declares hot, warm and cold zones, agreed with the National Police Service (Module 43).
- **Pain relief in sickle cell crisis.** NICE recommends strong opioids, which are outside this scope; this draft uses paracetamol, and methoxyflurane where the protocol allows it (Module 23).

APPENDIX

SOURCES

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