Impact of the World Health Organization Basic Emergency Care Course in Tanzania and Uganda

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Abstract

Background: There is a pressing need for emergency care training in low-resource settings. We assessed the feasibility and acceptability of training front-line health care providers in emergency care with the WHO-ICRC Basic Emergency Care Course using a training-of-trainers model with local providers.

Methods: Observational study of an educational intervention at four first level district hospitals in Tanzania and Uganda. A two-day training-of-trainers course was held in both Tanzania and Uganda. These were immediately followed by a 5-day BEC course, taught by the newly trained trainers, at two district level hospitals in each country. Difference between pre- and post-basic emergency care knowledge assessments and difference in pre- and post-emergency care skill confidence scores were assessed. Secondary outcomes include qualitative feedback on the training from participants and trainers.

Results: 59 participants completed the BEC courses. All participants were current health care workers in the selected hospitals. An additional 10 participants completed a training-of-trainers course. Knowledge assessment scores improved significantly at all four sites with an overall 20.7 point (95%CI: 16.8 to 24.6; $p < 0.0001$) absolute increase on a 100-point scale. Confidence scores on emergency care skills also improved significantly at all sites, 0.74 point (95%CI 0.63-0.84; $p < 0.0001$) absolute increase on a 4-point scale. Main qualitative feedback themes were: positive reception of the sessions, especially hands-on skills; request for additional BEC trainings; request for obstetric topics; and need for more allotted training time.

Conclusions: Implementation of WHO-ICRC BEC Course by locally trained providers was feasible, acceptable, and well-received at four sites in East Africa. Knowledge assessment scores and trainee confidence increased significantly at all sites. The BEC is a low-cost intervention that can improve knowledge and skill confidence across provider cadres.

Background

Everyday, people seek care for health emergencies. Over 50% of mortality worldwide can be attributed to emergency medical conditions.[1] In low-resource settings, the need is particularly great: 90% of injury related deaths occur in low- and middle-income countries (LMICs) and patients in LMICs suffer the highest rates of mortality from acute complications of chronic diseases.[2, 3] Overall 54% of annual deaths in LMICs could be potentially addressed by emergency care, suggesting an opportunity to improve these outcomes.[4] Recognizing this need, the World Health Assembly Resolution 72.16 called for increased efforts to strengthen the provision of emergency care, including training.[5]

Improving patient outcomes for emergency medical conditions requires several conditions to be met including: patient awareness of an emergency medical condition, ability to seek emergency medical care, access to a medical facility capable of providing emergency care, and high-quality care in the emergency unit.[6, 7] Patients in LMICs face barriers within each of these conditions. Emergency service utilization rates are extremely low in low-income countries (8 per 1,000 population) when compared to high-income

countries (264 per 1,000 population).[8] In one review, 192 emergency facilities were identified in 59 LMICs; in the United States alone there are roughly 5,000 emergency facilities.[9] Utilization and access to a health facility does not guarantee access to quality emergency care. Within emergency units in LMICs, mortality is extremely high: 1.8% for adults and 4.8% for paediatrics, as compared to 0.04% in the United States.[9] Quality of care can be poor due to a lack of resources and variability in provider training.

The sick and injured do not present to the emergency unit with a diagnosis and in many settings, children, adults, and pregnant patients all present to the same front-line providers with a chief complaint that may result from traumatic, medical, infectious, and non-communicable causes, or combinations of these. These chief complaints ultimately represent a broad set of diagnoses, benign to life-threatening, which may span a number of specialties. The front-line provider must be prepared to care for all of these emergency patients, particularly in a resource-limited setting that may be hours or days removed from advanced or specialized care.[10]

In order to strengthen emergency care delivery in resource limited settings, the World Health Organization (WHO), in collaboration with the International Committee of the Red Cross (ICRC) and the International Federation for Emergency Medicine (IFEM), developed the Basic Emergency Care (BEC) course in 2015. [11] The BEC course is a five-day intensive training course covering core emergency care content, including didactics, practical skills, and small groups. Participants are taught a systematic (ABCDE) approach to use for every patient encounter and review signs and symptoms and management of life-threatening conditions during the chief complaint-based modules; Shock, Trauma, Difficulty in Breathing, and Altered Mental Status. Content is delivered via didactics and small group exercises. A significant portion of the course is dedicated to practical skills stations, such as bag-valve mask, bleeding control, and log rolling patients. Skills training re-emphasizes the systematic ABCDE approach. The course is designed to be taught by local providers who have previously taken the course and attended an additional two-day train-the-trainer course after completing the BEC. Here, we describe an early implementation of the BEC Course in two East African countries using a train-the-trainer model.

Methods

The BEC course was implemented in two hospitals in Tanzania and two hospitals in Uganda over one month in 2017. The implementation was performed with the support of the African Federation for Emergency Medicine (AFEM), which has a long history of collaboration with the national emergency medicine societies and Ministries of Health in both Tanzania and Uganda. Both countries have strong national emergency care leads who identified participating hospital sites based on their high volume of emergency visits, location on major roads, and support of hospital leadership. All sites provide emergency care services, and at all sites these services are delivered in a less formal manner than the standard emergency unit staffed by non-rotating personnel who have received specialised training in trauma and acute care found in high-income countries.

The Ugandan healthcare delivery system is composed of seven levels - health centres level I-IV; district hospitals; regional referral hospitals, and tertiary referral hospitals. The two participating hospitals in Uganda were Kawolo District Hospital and Mubende Regional Referral Hospital. Kawolo is located 40 km from Kampala in Buikwe district and serves approximately 1.2 million people. It frequently receives casualties from road traffic accidents on the busy Kampala-Jinja Highway. Mubende is located 170 kilometres west of Kampala in Central Uganda. It is a public hospital, funded by the Uganda Ministry of Health and general care provided by the hospital is free. It is the referral hospital for the districts of Mubende, Mityana, Kiboga, and parts of Mpigi District.

The Tanzanian public health system functions in a pyramidal structure composed of six main levels, with the vast majority of health care interactions occurring in the lower tiers: village health posts; dispensaries; health centres; district hospitals; regional hospitals, and referral hospitals. The two participating hospitals in Tanzania were Kisarawe District Hospital and Bagamoyo District Hospital. Kisarawe Hospital is located in the town of Kisarawe, in the Coastal region, about 42 km southwest from Dar es Salaam city. Bagamoyo Hospital is located in the Coastal region in Bagamoyo town, about 65 km northwest from Dar es Salaam city.

The delivery of the intervention in each country followed the same two-step implementation. First, local providers who participated in a BEC pilot course the previous year were brought to the capital city for the Training-of-Trainers (ToT) course. During this two-day ToT course, these local providers were trained to teach the five-day BEC course. After successful completion of the ToT course, they qualified to become trainers of the BEC course and then delivered the five-day BEC training to front-line providers who participate in the delivery of acute and emergency medical care. Both phases of the intervention in both countries—the two ToT courses in the capital city and the four BEC courses at each hospital—were supported in person by a representative of the national emergency medicine society, physicians who participated in the development of the BEC course, and support personnel from AFEM.

The ToT course consisted of background information about the BEC course, training sessions with peer feedback on giving a lecture, how to teach skills and a session on course logistics.

BEC course participants were required to attend all sessions, and attendance was taken. The schedule of the course is shown in Fig. 1. In all, the course involves 8 core lectures, 6 small group sessions, and 6 skills stations. A multi-method approach was used to evaluate implementation including an assessment, confidence ratings and feedback surveys. Each participant completed a 25-question multiple choice assessment that was developed during BEC pilot testing and covered core concepts in BEC. Differences in pre- and post-test scores were evaluated for each site with a paired t-test. Each participant also completed a confidence reporting questionnaire before and after training. Participants rated their confidence to complete 12 emergency care actions on a scale of 1 (least confident) to 5 (most confident). Differences in pre- and post-confidence scores across all sites were evaluated with a paired t-test by question. Participants completed structured feedback forms after each BEC module and each block of skills training. Post-course qualitative data was collected as free text and analysed for themes.

This project was considered exempt by the Partners Human Research Committee, and was approved by the Uganda Ministry of Health and the Tanzania President's Office.

[Figure 1: Basic Emergency Care Course Schedule – uploaded separately at PDF]

Results

Training-of-Trainers Participants

A total of 10 participants completed the ToT courses. There were three participants from Tanzania, all participants had previously taken the WHO BEC course and worked in the emergency unit at Muhimbili National Teaching Hospital in Dar es Salaam, two as nurses and one doctor. In Uganda seven participants were trained who also had taken the BEC pilot course.

BEC Course Participants

A total of 59 participants completed the BEC courses. 46% of participants were nurses, 32% doctors, and 22% other cadres (Fig. 2). Overall course attendance, taken daily, was 97%.

Uganda Participant Characteristics		
Role	Kawolo District Hospital	Mubende Regional Referral Hospital
Enrolled Nurse	3	2
Nursing Officer	4	5
Medical Officer	3	3
Total	10	10
Tanzania Participant Characteristics		
Role	Kisaware District Hospital	Bagamoyo District Hospital
Medical Attendant	7	0
Nurse (officer, enrolled)	7	6
Clinical Officer	2	6
General Doctor	3	2
Nurse Midwife	1	0
Other (radiographer, dental surgeon, lab tech, pharmacist, nurse anaesthetist)	0	5
Total	20	19
[Figure 2: Trainee Roles]		
Multiple Choice Assessment		
<p>Post-test score improvement was statistically significant at all sites, ranging from a 10.8 to 28-point absolute increase on a 100-point scale, an average improvement of 18.8 percentage points (Fig. 3). Two participants did not complete both the pre- and post-test and were excluded from analysis. The largest improvement in test scores was seen at Bagamoyo District Hospital.</p>		

Multiple Choice Assessments						
Site	n	Pre-Test	Post-Test	Difference	95% CI	P value
Kawolo	10	70.0	80.8	10.8	5.4–16.2	0.0014
Mubende	10	68.4	82.0	13.6	7.2–20.0	0.0009
Kisaware	19	47.4	70.1	22.7	14.7–30.8	< 0.0001
Bagamoyo	18	47.1	75.1	28	20.9–35.1	< 0.0001
Confidence Ratings						
Site	n	Pre	Post	Difference	95% CI	P value
Kawolo	12	2.87	3.92	1.05	0.95–1.15	< 0.0001
Mubende	10	3.30	3.81	0.51	0.39–0.63	< 0.0001
Kisaware	20	3.24	3.63	0.39	0.21–0.55	0.0005
Bagamoyo	19	2.88	3.88	1.00	0.88–1.12	< 0.0001
[Figure 3: Knowledge Assessment Test Scores and Emergency Care Skills Confidence Scores]						
Confidence Rating						
<p>Confidence in emergency care skills also improved significantly at all sites with an average improvement of 0.74 and ranging from a 0.39–1.05 absolute increase on a 4-point scale (Fig. 3). The largest improvements were seen at Kawolo and Bagamoyo. Improvement was observed across all topics, with the strongest being in the evaluation of a patient with altered mental status and in skills to manage an obstructed airway. This improvement achieved statistical significance for all but two questions (emergency management of the injured adult and skills to immobilise patients). The change in confidence score by question across all sites is shown in Fig. 4.</p>						

Question	Pre (4 site average)	Post (4 site average)	Difference	95% CI	P value
Emergency management of the acutely ill adult	3.06	3.86	0.79	0.56–1.02	0.0016
Emergency management of the acutely ill child	3.07	3.86	0.79	0.19–1.40	0.0253
Emergency management of the injured adult	3.14	3.833	0.70	-0.06-1.45	0.0611
Emergency management of the injured child	3.00	3.78	0.78	0.04–1.52	0.044
Emergency management of the patient with Shock	3.19	3.90	0.71	0.11–1.31	0.0332
Emergency management of the patient with altered mental status	2.85	3.72	0.87	0.06–1.69	0.042
Emergency management of the patient with difficulty in breathing	3.24	3.93	0.70	0.19–1.20	0.0223
Understanding of emergency drugs	3.09	3.74	0.65	0.20–1.10	0.02
Have skills to manage an obstructed (blocked) airway	2.83	3.69	0.87	0.33–1.41	0.0143
Have skills to manage a patient with difficulty breathing	3.148	3.86	0.71	0.23–1.19	0.0178
Have skills to manage a patient with bleeding problems	3.25	3.86	0.61	0.20–1.02	0.0179
Have the skills to immobilise patients	3.03	3.68	0.65	-0.42-1.72	0.15

Figure 4: Change in Confidence Scores by Question Across All Sites

Qualitative Themes/Responses

Course Feedback:

86% (51/59) participated in the post-course survey. 95% (19/20) of participants from Uganda returned feedback on the overall course and 82% (32/39) participants from Tanzania provided post-course feedback. Major themes included: (1) what the participants liked about the course, (2) what they learned in the course, (3) what they would change in the course, and (4) who they would recommend the course to.

What they liked: 39.2% of participants (20/51) enjoyed the course and stated that they most enjoyed the skills aspect of the training. Many also stated that they liked the modules and knowledge that was provided with some specifically liking the topic of the ABCDE approach. Others enjoyed how the course

was facilitated as well as the materials provided. A few appreciated that the course was taught in both Swahili and English at the Tanzania sites. Comments included:

“It is a comprehensive course and it has equipped me with skills in managing emergency cases using the ABCDE approach” – Clinical officer, Kawolo, Uganda

“Demonstration of all procedures was very interesting and I have understood well. Also class sessions I have understood and was excellent. Facilitators are very competent with what they are teaching” – Pharmacist, Bagamoyo, Tanzania

What they learned:

Most participants stated that they learned the ABCDE (43%, 22/51) and SAMPLE (25%, 13/51) approach in the course. Immobilization, shock and general skills and knowledge in taking care of the emergency patient was the next most cited area of learning from the course followed by topics of trauma, wound care and airway management. Comments included:

“All emergencies should be approached following ABCDE, SAMPLE history and secondary survey. Any life threatening conditions discovered in ABCDE should be handled immediately” – Clinical Officer, Mubende, Uganda

“I learned how to manage emergencies using ABCDE approach; I learned how to use SAMPLE approach in history taking; Learned the importance of Triage in a health setting; Learned the common drugs in emergency; I also learned the importance of proper hand over” – Medical Officer, Kawolo, Uganda

“I learned different skills like management of shock, obstructed airway, burn, emergency drugs. Also I learned to have unit/solidarity to the facilitate also to protect myself from infections. Sharing ideas with others.” Pharmacist, Bagamoyo, Tanzania

What they would change:

The most frequent suggestion for improvement was increased time for the course (21.5%, 11/51) while many others stated that they would not change anything about the course (13.7%, 7/51). Other suggestions for course changes included training more people, sessions on ectopic pregnancy and other obstetric topics, and more skills sessions. Comments included:

“The time has to at least go for more than these days because participants need more practice of skills before taking up the duties on the patients” – Nursing Officer, Mubende, Uganda

“Increase course duration – BEC should be conducted several times” – Nurse, Kisarawe, Tanzania

Who they would recommend the course to:

Most participants felt that this training should be provided to all health providers including nurses and doctors. Many also stated that police officers should also receive this training (17.6% 9/51). Others stated that all support staff such as security, cleaners, and administrators should take this course. Comments included:

“Yes; all health workers from the gate man, receptionists, nurses, all clinicians + administrator to learn at least the basics” – Nursing Officer, Kawolo, Uganda

“Yes; All health workers; police men/traffic officer; taxi drivers & boda boda driver; the general public should be sensitized about this” – Orthopedic Officer, Kawolo, Uganda

Overall, the course was well-received by the participants at both the Uganda and Tanzania sites. Some comments from participants included:

“This course has been an eye opener to me because I didn’t know the airway is very important and now am going to give a CME to all the people I work with on the primary approach of ABCDE 1st” – Nursing Officer, Kawolo, Uganda

“Thank you very much for this Basic emergency course. We are going to put what we have learnt into action in our hospital” - Enrolled Nurse, Kawolo, Uganda

“Am thankful for the opportunity given to train in this course and it has helped to improve my knowledge, skills and emergency in the execution of my day to day nursing clinic” - Nursing Officer, Kawolo, Uganda

“It has been a good course cause it has changed a lot about my attitude and being the fact that among the first to be trained with it” – Enrolled nurse, Kawolo, Uganda

“Thanks for the lesson and demonstration. Plan for next time after one year if possible plan another lesson – not in Bagamoyo” – Nursing Officer, Bagamoyo, Tanzania

Costs

10 trainers were trained at an average cost of United States Dollar (USD) \$251 per participant (range \$228–273). 59 health care providers were trained at an average cost of \$240 per participant (range \$161–365). The average overall site cost was \$1,208 (range \$820–1596) for the ToT course and \$3,424 (range \$1,616–4,419) for the BEC course. Major budget components were for meals (25.9% of total budget for ToT and 34% for BEC), and daily per-diem reimbursement for the attendees (41.2% for ToT and 18.4% for BEC), and local trainers (16.6% for ToT and 15.4% for BEC). (Fig. 5) Skills equipment was loaned for free from local emergency care agencies, and space was donated at some sites but required payment at others. Printing was a nominal cost.

	ToT		BEC			
	Uganda	Tanzania	Uganda	Tanzania		
Kawalo	Mubende	Kisarawe	Bagamoyo			
Cost Per Participant (Average)	228	273	365	161	200	232
Overall Site Cost (Average)	1596	820	3659	1616	4002	4419
Meals	426	200	1588	645	874	1613
Per-diems (participants)	700	300	223	223	1066	1013
Per-diem (local faculty)	200	Included in Tanzania faculty costs	109	109	968	931
Space, Equipment, Projector, Airtime	in-kind	30	447	in-kind	269	451
Printing	Included in Uganda BEC costs	Included in Tanzania BEC costs	215	215	315	16
Local Transport	0	20	70	56	60	40
International Faculty in-country expenses	270	300	792	463	450	355
[FIGURE 5: Cost; All costs are in USD]						

Discussion

This was the first full implementation of the WHO-ICRC-IFEM Basic Emergency Care course, at four hospitals in East Africa, taught by local healthcare providers who completed a ToT course. All sites showed significant improvement in both participant emergency care knowledge and confidence in performing emergency care skills after completing the course. The course was well received by participants and supported by hospital administration. Main qualitative feedback themes were: positive reception of the sessions, especially hands-on skills; request for additional BEC trainings; request for obstetric topics; need for more allotted training time.

Strengths of this study include the recruitment of local healthcare providers to train front-line emergency care providers at the implementation sites. Attendance was near perfect for all courses and only two post-tests were not completed, allowing for valid analysis of data. By not requiring increased staffing or resources, implementation costs are kept very low and can be lowered with scale of the ToT program, eliminating international faculty expenses. Training materials are freely available online without any

licensing costs. Course skills were taught with locally used equipment, often on loan from the facility hosting the training. Ideally, training occurs at the host facility in donated space. Weaknesses include the lack of patient outcomes and long-term follow up of knowledge and skill retention. Another limitation of this pilot implementation was the relatively small scale of trainers. International faculty were present for implementation of each course, however trainers in both Uganda and Tanzania have gone on to teach BEC at additional facilities.

Clinical recommendations in the BEC course have been derived from several sources, including the WHO Integrated Management of Adolescent and Adult Illness (IMAI) District Clinician Manual, WHO Pocket Book of Hospital Care for Children, WHO Emergency Triage Assessment and Treatment (ETAT) and WHO Integrated Management of Pregnancy and Childbirth.[12–15]

Our study shared strengths found in the implementation of some of these related products. ETAT trainings performed in Guatemala exhibited similarly strong knowledge and skill acquisition immediately after the trainings as well as sustained knowledge and skill retention to 12 months, a strength over our study.[16] However, a large study in India and Kenya evaluating the retention of skills taught in the Helping Babies Breathe course showed significant decay over six months.[17] In Ghana, ETAT training of nurses showed significant emergency care skill uptake in a single day course, but only in a single group at a single center, as opposed to four groups in four centers for our study.[18] A large evaluation of Emergency Obstetric and Newborn Care (EmONC) across 9 countries showed significant improvement in related knowledge and skills for 99.7% of participants.[19] Implementation of ETAT in Rwandan district hospitals was similarly successful and shared challenges we encountered: intensity of training in a short time period, large clinical responsibilities of students making it difficult to free up time, and language barriers.[20, 21] Similar to our qualitative findings, a study in Tanzania showed that the understanding and perception of emergency care improved at hospitals without formal emergency units after a short training course on emergency care.[22]

A survey on use of the WHO Pocket Book of Hospital Care for Children in Indonesia found challenges with printing and distributing materials despite systematic mailings of the book by the WHO and Ministry of Health.[23] While the local emergency care societies were able to assist in printing and distributing manuals for this implementation, the cost of printing remains a challenge for any future courses. A global survey of 134 countries, including 98 LMICs, identified distribution challenges, in addition to feedback that the lack of essential drugs and equipment recommended in the book were barriers to its use. A strength of the BEC course is its reliance on only the most basic drugs and equipment, making its recommendations realistic to implement in even the most low-resource settings.[24] Lack of adequate training equipment due to international transport of mannequins has decreased satisfaction of other short courses, something we overcame by utilizing locally sourced equipment.[25] Short and directed interventions such as case-based training have been shown to be effective in low-resource settings such as the Thai-Myanmar border, which could be a sustainability model for ongoing BEC refresher training.[26]

Effective strengthening of emergency care systems requires the implementation of low-cost interventions that are context-appropriate and sustainable. The BEC Course is designed to improve the quality of care delivered with existing human and material resources by emphasizing a systematic, timely and practical approach to acutely ill and injured people. This study demonstrates that the BEC Course can be implemented in a low-resource setting at a low cost by local trainers. The training-of-trainers model supports sustainability as these locally experienced and respected providers who become trainers are leaders in their clinical setting and sources for ongoing knowledge and skill building. Additional training courses can then be held regionally by these local trainers with minimal to no external support further decreasing the cost of each course. The focus on using pre-existing equipment further enhances the scalability of this training as supply chain costs are not affected.

Future research should evaluate the impact of the BEC course on patient outcomes and emergency care process measures. Additionally, the BEC course should be tested for validity in settings outside of East Africa and across different languages as translations occur. Finally, long-term knowledge and skill retention should be evaluated through structured follow up.

Conclusion

Implementation of WHO-ICRC BEC by local provider-trainers was feasible, acceptable, and well-received at four sites in East Africa. Knowledge assessment scores and trainee confidence increased significantly at all sites. The BEC is a low-cost intervention that can improve knowledge and skill confidence across provider cadres.

Abbreviations

ABCDE Airway, Breathing, Circulation, Disability, Exposure

AFEM African Federation for Emergency Medicine

BEC Basic Emergency Care Course

EmONC Emergency Obstetric and Newborn Care

ETAT Emergency Triage Assessment and Treatment

ICRC International Committee of the Red Cross

IFEM International Federation for Emergency Medicine

IMAI Integrated Management of Adolescent and Adult Illness

LMIC Low- and Middle-Income Country

SAMPLE Signs and Symptoms, Allergies, Medications, Past Medical History, Last Oral Intake, Events

ToT Training of Trainers

USD United States Dollar

WHO World Health Organization

Declarations

Ethics approval and consent to participate: This project was considered exempt by the Partners Human Research Committee Institutional Review Board (Boston, MA; Protocol number 2016P002740/PHS). This project was provided with written approval by the Uganda Ministry of Health and the Tanzania President's Office. The need for written informed consent was waived by the Partners Human Research Committee as this project was deemed to not meet the definition of human subjects research.

Consent for publication: Not applicable.

Availability of data and materials: All data generated or analysed during this study are included in this published article.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: SK, JD, HS, JK, LW, and TR contributed to the design of the study. SK, JD, EC, and JR collected and analysed data. SK drafted the manuscript. All authors critically reviewed and edited the article and have approved this final version.

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Figures

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
0800	Faculty meeting (0830-0845)	Faculty meeting (0830-0845)			Faculty meeting (0830-0845)
	Welcome & Introduction to the REC (0845-0920)	Quick review of ABCDE and Trauma (0845-0900)	Faculty meeting (0845-0900)	Faculty meeting (0845-0900)	Review, Today's Plan, Assessments (0845-0900)
0900	ABCDE Approach (0920-1040)	Approach to DIB (0900-1030)	Quick review of DIB and Shock (0900-0915)	Quick review of skills (0900-0915)	Altered Mental Status (0900-1045)
1000	BREAK (1040-1100)	BREAK (1030-1100)	Skills 1: AIRWAY (0915-1100)	Skills 4: ASSESSMENT (0915-1100)	BREAK (1045-1100)
1100	ABCDE small group: Case Scenarios/MCQ (1100-1200)	DIB small group: Case scenarios/MCQ (1100-1200)	BREAK (1100-1115)	BREAK (1100-1115)	AMS small group: Case scenarios and MCQ (1100-1200)
1200	LUNCH (1200-1300)	Handover/Transfer (1200-1230)	Skills 2: BREATHING (1115-1300)	Skills 5: IMMOBILIZATION (1115-1300)	MCQ Exam (1200-1300)
	Icubreaker (1300-1310)	LUNCH (1230-1310)			
1300	TRAUMA PRIMARY SURVEY Lecture/Demo (1310-1430)	Approach to SHOCK: part 1 (1310-1405)	LUNCH (1300-1400)	LUNCH (1300-1400)	Lunch (1300-1345)
1400	BREAK (1430-1450)	Icubreaker (1405-1415)			Medication small groups (1345-1500)
1500	TRAUMA SECONDARY SURVEY plus demo (1450-1610)	Approach to SHOCK: part 2 (1415-1515)	Skills 3: CIRCULATION (1400-1545)	Skills 6: WOUND MANAGEMENT (1400-1545)	Results Course wrap up (1500-1600)
		BREAK (1515-1540)			
1600	Trauma small group: Case scenarios/MCQ (1610-1710)	Shock small group: Case scenarios/MCQ (1540-1640)	BREAK (1545-1600)	BREAK (1545-1600)	
		Wrap up (1640-1700)	Skills feedback: Wrap up, Workbook completion (1600-1630)	Skills feedback: Wrap up, Workbook completion (1600-1630)	
1700	Feedback forum and close (1710-1730)		Close (1630-1700)	Close (1630-1700)	

Figure 1

Basic Emergency Care Course Schedule