Advanced Burn Care (ABC) Surgery
International training for surgeons in low-resource settings.
9th - 13th March 2020
Addis Ababa, Ethiopia

Funded by:

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National Institute for Health Research

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What is Advanced Burn (ABC) Surgery?

ABC Surgery is a 5-day specialist training programme built ‘from the ground up’ for surgeons working on burn-injured patients in low-resource settings. It covers all key aspects of surgical care, from the acute and emergency stages in the first 24 hours, to reconstructive surgery months, or even years, post-injury.

The course is highly participatory. Expert surgical faculty from Asia, Africa and Europe bring a wealth of experience to stimulate and enrich lectures, small group work and simulated tasks.

The high faculty to participant ratio encourages real participation and critical thinking that helps surgeons absorb and utilise best practice in burn surgery in their own country.

“A practice-changing experience” - participant.

“The Interburns ABC Surgery programme is an ideal opportunity for our highly experienced surgeons to share their knowledge and skills with the next generation of burn surgeons who will lead the development of burn care across some of the poorest regions of the world. All our material is contextualised and we use novel educational techniques that emphasize interchange of ideas and focus on implementing change in a real world environment. I would like to take this opportunity to thank our dedicated and knowledgeable faculty and the bright and enthusiastic participants who give one great hope for the future of burn care across the region and beyond.”

Professor Tom Potokar OBE
Interburns Director
The vast majority of burn injuries are sustained by people living in low and middle income countries (LMICs), women and children are the most vulnerable. Burn patients are often treated by surgeons who have had little or no training in burn surgery which can lead to long term complications, disability and death.

Interburn’s integrated approach to improving the quality of burn care in low resource and conflict settings has been developed by, with, and for, health professionals working in Asia, Africa and the Middle East.

Operational Standards and self-assessment tools are backed up by a comprehensive training portfolio that equips staff with appropriate knowledge and skills to give good quality care at three levels.

❖ Level 1 Basic
❖ Level 2 Intermediate
❖ Level 3 Advanced

First held in Nepal in 2019, the course has been updated and improved for Ethiopia 2020 based on faculty and participant feedback.

All Interburn’s courses, invite participants to turn knowledge into action, to make real changes to their own practice and to bring about improvement within their wider healthcare teams.

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Advanced Burn Care (ABC) Surgery is one module in Interburn’s specialist course package which also includes: ABC Rehabilitation and ABC Nursing.

This course was generously funded by the National Institute for Health Research (NIHR) and UKAID’s Small Charities Challenge Fund (SCCF).

Many thanks to our partners in Ethiopia: AMREF Health Africa, for working with us to arrange and facilitate this course; and the Federal Ministry of Health (FMoH) for their ongoing commitment to improving the situation for burn patients in the country.

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ABC Surgery has been developed by an experienced cohort of burn surgeons and professionals from Asia, Africa, the Middle East, Europe and North America.
Since 2015, Interburns has worked in support of the government's strategy to improve and develop burn services. Initiatives include: assessment of national and regional burn centres against Operational Standards; training in ABC Nursing; training of trainers in Essential Burn Care (EBC) and Basic Burn Care (BBC); and community prevention activities. In 2019, use of Interburn’s Delivery Assessment Tools (DAT) at 2 national and 2 regional hospitals (Jimma and Hawassa), demonstrated the urgent need for specialist training for surgeons. This is a need echoed across many African and low-resource settings worldwide. Demand for ABC Surgery in Ethiopia was extremely high and selection focused on high calibre surgeons in the early stages of their career. Many applicants were the only surgeon working in burns in their region and served vast numbers of people.

18 surgeons from Ethiopia attended the course, and 12 from: Kenya, Malawi, Nigeria, Rwanda, Sierra Leone, Sudan, Tanzania, Uganda, Zambia and Afghanistan.
Session 1: The Importance of Surgery
The opening lecture set the week up by covering the importance of early surgery to support the burn recovery process, and barriers to effective surgery in low-resource settings.

Session 2: Escharotomy and Fasciotomy.
The session started with a lecture and a video demonstrating procedures. Following this participants broke into small groups and worked together around specific examples, working as a team to arrive at the most appropriate actions.

Session 3: Debridement and Grafting
To introduce this topic there was a presentation, video and discussion around indications, techniques and challenges. The wider faculty group then worked with small groups to discuss individual case studies.

Session 4: General Perioperative planning.
As part of perioperative care, planning and patient and team management is essential. This session tested participant’s ability to make decisions around operating theatre, patient and surgical factors, and nutrition.

Session 5: Fluid Management
This session explored the many myths and controversies around fluid management in the burn patient. An interactive mentimeter quiz using participant’s mobile phones was used to great effect showing that there can be many ‘right’ answers depending on patient and location (see Fig. 1).

The discussion focussed on some of the main differences in practice, and was less around specific theories of fluid use, and more a debate on appropriate methods of fluid resuscitation in different contexts.

Which 3 would you use to assess effectiveness of fluid resuscitation?

![Figure 1. Example results from interactive quiz](image-url)
DAY 2

Session 1: Analgesia and Anaesthesia

The introductory lecture on analgesia stressed that there needs to be a paradigm shift in LMICs, to bring pain management to the forefront of any care plan.

Burn injury can lead to hyperalgesia induced by the acute inflammatory response. This makes pain management a crucial component in the treatment of burn patients. Insufficient pain management can lead to PTSD and depression among other mental ailments.

Participants discussed the four phases of pain, pain management tools and checklists, pharmacological and non-pharmacological approaches and the ladder of pain management. As with many of the topics, there is no universal approach to analgesia, which is dependent on clinical setting, available resources, treating clinician etc.

Participants split into small groups with a simulated patient case, associated medication charts and nursing notes, and were challenged to create a plan for moving forward with pain management.

Session 2: Extensive Burn Management

The session began with a lecture covering:
- Definition of extensive burns.
- Impact of resources and context on the definition.
- Active and conservative approaches to decision-making.

An expert panel made up of surgeons Sandesh Maskey from Nepal, Mohammed Khan (Papon), from Bangladesh, Richard Nnabuko and Tony Olekwu from Nigeria, discussed specific cases. A key issue is knowing what defines a “complicated case”. Factors mentioned were clinical setting, %TBSA, burn depth, the site of the burn, age, comorbidities and immunosuppression.

The panel also talked about antibiotic use in extensive burns, different surgical procedures, and washing and dressing wounds. A consistent message was the importance of getting the basics right to get the best treatment outcomes.

Session 3: Critical care

This session focussed on critical care patients and the role of intensive care. ICU is often not available in low-resource settings, but improved knowledge of a patient’s critical care course can help surgeons decide which patients need to be managed more intensively as well as how to refer appropriately.

The session was delivered as an interactive lecture covering the zones of injury of burn physiology, the patterns of oedema and cellular responses. It also explored reducing the hypermetabolic state of a burn patient and the different methods for achieving this.
Participants were asked to brainstorm clinical early warning signs indicating patient deterioration. This evoked many responses such as urinary output, respiratory distress and change in consciousness. Participants emphasised that patient outcomes are highly resource dependent and variables, such as nurse ratio, ability to conduct invasive monitoring (central line/arterial), access to advanced airway management resources, nutrition, analgesia and antibiotic access, all play a major role in outcomes.

Groups reviewed 7 patient case studies including detailed clinical and observation charts, and decide which 2 should be prioritised for the limited ICU beds available, as well as establish a case management plan for each patient.

**Session 4: Inhalation Injury**

Victims of inhalational burns often need higher levels of care due to airway compromise and altered respiratory physiology. This session provides a step wise approach to the recognition, physiology and management of inhalational burns including an overview of airway management. Four of members of faculty held a panel discussion on factors to consider when assessing a patient for inhalation injury and different investigations needed.

A participant demonstrated how to be very clear when calling an anaesthetist for assistance with a patient needing intubation.

**Session 5: Sepsis**

Sepsis is a major cause of mortality in burn patients. This lecture helped participants understand local and systemic effects of infection, implement infection prevention protocols, assess patients and wounds for signs, define causes of infection and contributory factors, and instigate appropriate and timely treatment. There was animated discussion around when to use antibiotics, causative factors, early recognition and intervention, and surgical procedures which can reduce the risk of infection.

**Session 6: Complex Cases**

The session looked at complex burn injuries, for instance burns affecting the perineum, face, neck, hands, feet and exposed joint areas. Participants learnt about dressings and the resultant functional and healing challenges which may result from burn injury to complex areas.
**DAY 3**

**Session 1: Palliative care**
This topic was introduced by a video about the work of the Ndi Moyo Palliative Care Trust in Malawi, which works to alleviate suffering and provide dignity to the dying.

Participants took part in a Mentimeter quiz which asked them to estimate the likelihood of survival of a number of different burn patients. With such a broad range of participants from across Sub Saharan Africa, and different settings - urban and rural - it was clear that 'place' has such an important impact on life and death from burns in Africa.

Participants were split into two groups to develop and consider arguments for, and against, palliative care in relation to a mass fire disaster. They showed impressive acting talents in a mock court case chaired by esteemed “Judge” Richard Nnabuko, and demonstrated the wide range of moral and ethical issues linked to palliative care, which are all too common in low resource settings.

**Session 2: Quality Improvement**
This session looks at the role of research, audit, and data in developing an effective burn service and ways in which these activities can be implemented in participant's own service.

From a quality improvement perspective, this section sought to increase critical thought surrounding how data and research can be used to support implementation of relevant interventions.

**Session 3: Morbidity and Mortality (M+M)**
Morbidity and mortality meetings are vital in terms of improving patient safety and health system strengthening. The session focused on effective communication within the healthcare team, and the importance of infrastructural, logistical, environmental and human factors on patient outcomes.
Participants worked around a simulated M+M meeting with a patient case study, form, reflective template and cause and effect ‘fishbone’ diagram. Participants had to consider: the likely cause of an outcome; system and human factors that influence the outcome; and measures to reduce a similar incident happening again.

**Session 4: Infection Prevention and Control.**
This session used three scenarios to engage the participants to think critically around infection rates as well as the associated causes and solutions. Participants were split into small teams to discuss scenarios: staff members not washing their hands; overuse of antibiotics; and how to deal with increasing infection rates.

There was a short lecture to provide a holistic overview covering the global burden of infection and impact on morbidity and mortality, the importance of IPC, the patient, staff and environment as sources of infection, IPC measures, team and WHO hand hygiene guidance.

**Session 5 Managing change, Leadership and Teamwork.**
This broad ranging session was a mix of video presentation, discussion and fun teamwork. Hamish Laing’s compelling video on *Leadership and Management* emphasises the importance of good leadership in healthcare and fully engaged participants.

Following this was a fun and very competitive challenge that demonstrated communication, strategic planning, leadership and the importance of teamwork through building a high tower of spaghetti and marshmallows.

Teams were judged on criteria including: good communication, overall teamwork, the tower’s height and stability, and strategy. Prizes were awarded to the successful team.
**DAY 4**

**Session 1: Electrical Injury**
After a short, informative lecture on electrical burns, participants were split into 6 teams to create posters. The competitive element of this exercise added motivation and energy to the session. The posters were aimed at junior doctors to aid them in electrical burn management. They were hung on the wall and judged on quality of content and layout with the winners being awarded a prize.

**Session 2: Burn reconstruction**
This session provided an introduction to reconstructive surgery for burn injuries. Participants split into small groups and discussed various cases. This activity came after a lecture to help consolidate new knowledge. The lecture covered general principles of reconstructive surgery in addition to providing a systematic approach to decision-making through the 5 ‘P’s: Problem; Priority; Possibilities; Perception: Plan of Action.

**Session 3: Ectropion**
This session provided an overview of the approach to ectropion management and challenges. It looked at definition, prevalence and causes of ectropion, appropriate surgical techniques to manage ectropion (tarsorrhaphy and full thickness skin graft), post-surgical care, and rehabilitation and recovery.

**Session 4: Scar Management**
This session explored risk factors for pathological scarring and engaged participants in discussion about surgical and non-surgical approaches. Case studies were used to facilitate discussion and engage participants.

**Session 5: Mass Casualty Disasters**
Beginning with a short lecture on WHO Guidelines for mass casualty events the session became extremely participatory.

Participants were split into two groups for a role play activity - one group were asked to play victims of a mass burn casualty event, while the other was a team of surgeons sent in with limited information to assess and support patients.

Victims, crammed into an overburdened ‘mock’ ICU, wore boiler suits painted to indicate size, depth and place of burn injury. Small teams entered this distinctly stressful situation and had to manage as best they could.

Participants noticed how those with the loudest screams often got more attention than quieter patients and how hard it was to focus on injury while families, local staff and media crowd around. Mass fire disasters are all too common in many low resource settings and all participants agreed that this is a vital part of burn team training.
DAY 5

Session 1: Interactive Ward round and Vivas
Running simultaneously, faculty held vivas for participants around issues covered during the week, while a ward round was simulated with patient case studies on the screen and participants being invited to discuss possible approaches to their care.

Session 2: A Burn Survivor. It is so important for healthcare workers at all levels to stay aware of the individual behind the burn. This was a very valuable and eloquent perspective that gave rise to many questions and greater understanding of the speed at which a whole life can change.

Certificates and Close: Many thanks to all the faculty and participants, each of whom received a Certificate, Interburns T-shirt, and a USB stick with learning resources and photos from the week. Most participants arrived as strangers and, through an intense week of multi dimensional learning, gained much from each other and established firm connections for the future. This is the way Interburn’s network grows. Thank you to all.
Average confidence levels of ABC surgery course participants pre- and post-course.

- Decision-making with early surgical interventions
- Using analgesia effectively
- Managing your burn team
- Recognising the impact of human, environmental & system factors in burn management
- Feeling able, as part of a team, to implement change
- Infection, prevention and control strategies
- Decision-making in the management approach to extensive burns including palliative care
- Early recognition of a deteriorating patient needing a higher level of care
- Starting and working in audit and research relevant to burn care
- Managing electrical injuries
- Decision-making about reconstructive surgery for burn injuries
- Dealing with mass casualty scenarios

Participant feedback on measures of quality for the course:

- Would recommend to others: Yes
- Opinion of the teaching methods: Excellent, Average
- Applicability of content to home context: Very, Somewhat

- Inspired by the course: Very, Slightly
- Found the training useful: Very, Quite

- Relevant to everyday work in home context: Highly, Quite
- Enjoyability of the course: Highly, Quite
- Appropriateness of training complexity: Appropriate, Too Basic
I can’t think of a more elaborate 5 day approach to addressing the holistic nature of burns.

The interactive elements, combined with theoretical parts, split and spread amongst participants and faculty, is really conducive to learning. It creates a friendly, casual, and inclusive learning environment.

It’s been fun to see the dynamics within the participants and faculty shifting between humorous and attentive in the many serious and relevant topics. Andrea Frestadius, Observer, Anaesthetic Nurse, Akademiska Hospital, Sweden

This course has changed our concept in managing burn patients in our country. Though we can’t offer advanced health facilities, we can give them the best management using our resources. I would definitely say this course was a practice-changing experience.

Dr Yousra Karmalla Ali
Plastic surgery resident, Sudan.

I am 4th year plastic surgery resident in Ethiopia and one of the participants of the Interburns 2020 Advanced Burn Care course. Our training has been fantastic in every way and I found it to be very helpful in advancing our knowledge and practice. Today I want to share with you one of the reconstructive training you gave us & which I applied to my patient. I found the course to be very helpful in managing such kind of cases and have made my procedures and decisions efficient to treat my patients.

Email received from an ABC participant who has improved their practice since the training course
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<thead>
<tr>
<th>Name</th>
<th>Occupation</th>
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