Orthoplastic Hand Surgery Collaboration in Ethiopia

15th – 22nd April 2017
An illustrated report by Matt Fell[1] and Neil Cahoon[2]

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1.0 Summary

A visit of 5 hospitals in Addis Ababa took place over 1 week to investigate the current situation of hand surgery in Ethiopia and explore the need for a collaboration. Hand injuries from trauma are a major problem in Ethiopia. Most patients are seen in the primary healthcare setting and referred through to the tertiary hospitals for treatment. Hand surgery is being performed in Addis by both orthopaedic and plastic surgeons in all 5 units visited. There was enthusiasm, from both orthopaedic and plastic surgeons, for a collaboration in hand surgery to develop. An educational hand surgery course for surgical trainees in the tertiary hospital setting would not solve the problems faced but would be a feasible way to start a collaboration and would enhance an orthoplastic hand surgery platform for future development

2.0 Introduction

On 15th December Neil Cahoon (Plastic Surgery and Hand Consultant) and Matt Fell (Plastic Surgery Registrar) travelled from the UK to Addis Ababa in Ethiopia to investigate the need and desire for a collaboration in hand surgery. The trip was sponsored jointly by BFIRST (British Foundation for International Reconstructive Surgery and Training) and BSSH (British Society for Surgery of the Hand).

The project had been inspired by a number of contributing factors:

- Matt Fell had previously discussed a hand surgery collaboration with plastic surgeons at ALERT hospital during previous work with the organisation Project Harar Ethiopia
- BFIRST and BSSH had been approached by WOC (World Orthopaedic Concern) to suggest the development of a hand surgery educational programme due to WOCs involvement with Black Lion Hospital
- Neil Cahoon had expressed an interest in involvement with Ethiopia due to living in Addis Ababa during the 1980s

The aim of the 1-week visit was to meet with the people and organisations currently involved with surgery of the hand in Ethiopia; to find out whether collaboration was desired and if so, what form that collaboration would take.

3.0 Itinerary

Map of Addis Ababa

3.1 Day 0- Arrival on Easter Sunday

Neil arrived at Bole International Airport in the early hours of Easter Sunday morning followed by Matt a few hours later. Addis Ababa was in a state of celebration for Easter (Fasika in Amharic) after 40 days of fasting.

3.2 Day 1 - Black Lion Hospital

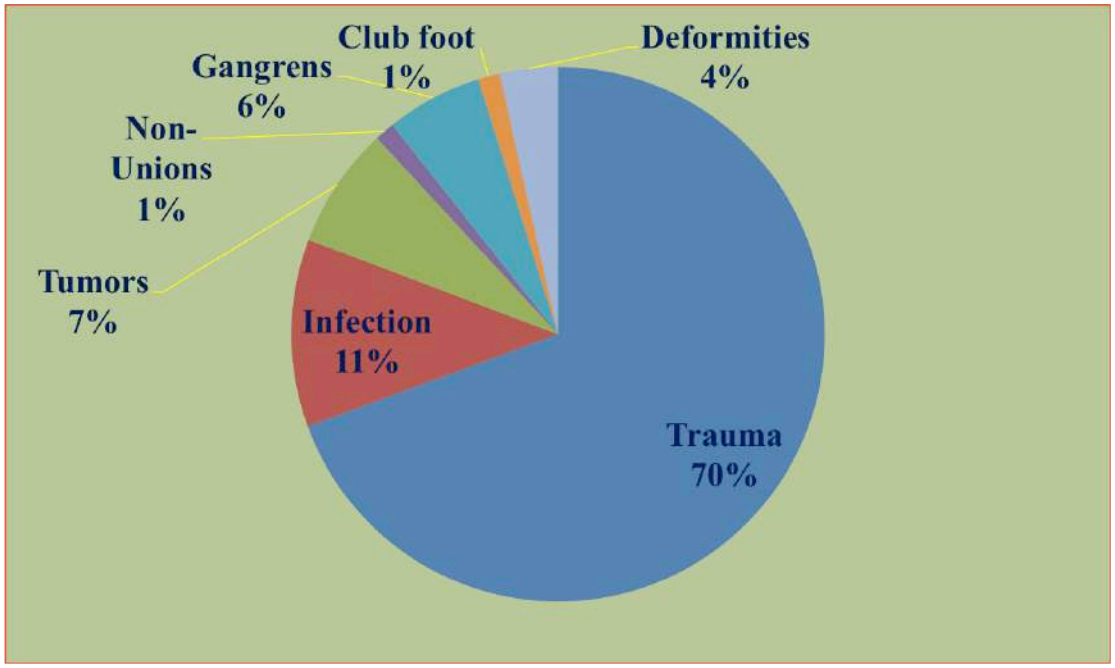
Neil and Matt arrived at the orthopaedic department building to meet Dr Rick Gardner (Paediatric Orthopaedic surgeon at CURE) who provided an introduction to the head of the orthopaedic department Dr Biruk Wamisho. Neil and Matt attended the departmental trauma meeting then joined the team in theatre to get a feel for how things work. Dr Biruk gave a tour of the department before discussing the proposed hand surgery collaboration at length over traditional Ethiopian injera and coffee.

Menawe (Chief Resident), Matt, Dr Biruk, Neil, Dr Zegene

The Black Lion Hospital (BLH) is the largest hospital in Ethiopia, with 1500 patients seen per day and a bed capacity of 1000. The BLH is closely associated with the Addis Ababa University and is the main teaching hospital in Ethiopia. The BLH incorporates the leading orthopaedic tertiary centre in Ethiopia, consisting of 11 orthopaedic consultants (soon to be increased to 15) and 88 residents (some on offsite rotations). The orthopaedic department is located in a separate building and has 4 operating theatres (3 in use), wards, OPD and physiotherapy. Intensive care facilities (Adult and Paediatrics) are located in the main hospital building along with the emergency department (where trauma patients are seen and can sometimes wait weeks before admission for treatment or referral). A new stand-alone trauma admissions unit is under construction alongside the orthopaedic department.

BLH orthopaedic residents keen to learn in the theatre environment

Trauma accounts for 70% of the workload in the orthopaedic department (of that, 47% caused by RTA, 18% from construction and 18% from factory based machinery which is the leading cause for hand trauma). Hand injuries account for a significant proportion of the patient presentations but a small proportion of the operative caseload (due to the high volume of lower limb trauma). The orthopaedic team assess hand trauma in their emergency department and treat a proportion of the cases, with the more complex trauma referred to ALERT



Cohort of patient diagnoses presenting to the orthopaedic department at the Black Lion Hospital

The orthopaedic department has a well-developed teaching programme for its residents with dedicated teaching each Thursday for the whole day. The BLH has good teaching facilities including lecture halls (80-person capacity) and the university dissection room for cadaveric dissection.

3.3 Day 2 - Yekatit 12 and CURE Hospital

Neil and Matt visited the plastic surgery department at Yekatit 12 hospital to meet with Dr Yohannes Demissie Gebremedhen (Plastic Surgeon, Head of Department) and Dr Mekonen Eshete (Plastic Surgery Consultant). The hand surgery collaboration was discussed then Dr Yohannes provided a tour of the plastics and burns unit.

Matt, Dr Mekonen, Dr Yohannes and Neil

Yekatit 12 (Y12) Hospital was originally a private hospital built by Emperor Haile Selassi in the 1950s. It was named after the February 19 (January 12 in Ethiopian Orthodox Calendar) massacre by Italian occupation forces in 1937. It is now a government hospital affiliated with Addis Ababa University (plastic surgery unit 1 of 2) and is the centre for burns, cleft lip and palate in Ethiopia. There are 5 plastic surgery consultants, 6 plastic residents (plus additional orthopaedic and general surgery residents rotating through the unit), 2 dedicated plastic surgery theatres, wards (28 plastic beds, 19 burns beds), ICU

and hand therapy (HT department originally set up by a physiotherapist from Denmark). The caseload is dominated by trauma and 50% of that is hand trauma.

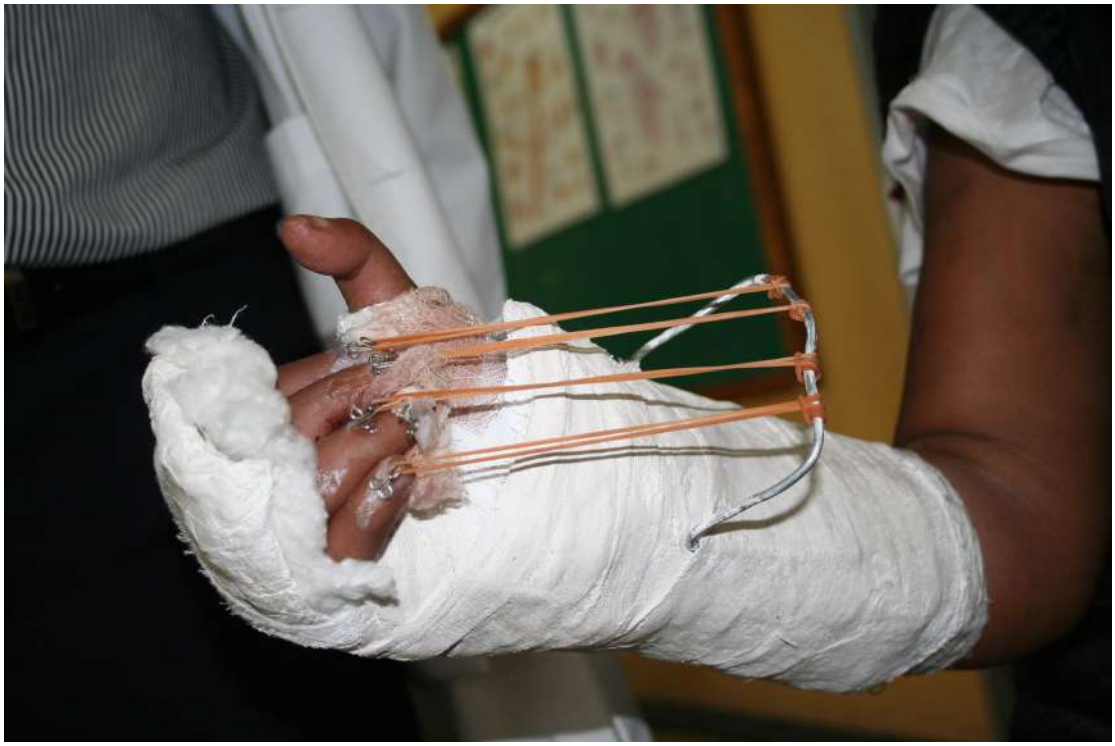
Y12 plastic surgery theatres set in beautiful grounds

During the afternoon Neil and Matt visited CURE hospital and had a tour of the facilities with Dr Rick Gardner and Dr Tim Nunn (Orthopaedic surgeons). CURE International was founded by an American Orthopaedic Surgeon named Dr Scitt Harrison and aims to provide treatment for children with disability. The first CURE childrens hospital was built in Kenya in 1998 and they now have 11 hospitals worldwide, 7 of which are in Africa. Addis CURE Hospital opened in 2008 and specialises in paediatric orthopaedics with an interest in club foot. There is also an interest in burn contracture and a dedicated area of the ward to care for these patients, staffed by 2 plastic-trained burns surgeons (Norwegian and Ethiopian). CURE is visited on a regular basis by Mr Andrew Wilmshurst (Dundee Plastic Surgeon) for operative assistance with congenital hands and cleft. There have also been two clinical visits by Dr Scott Kozin from Touching Hands (linked to the American Society for Surgery of the Hand) for brachial plexus and congenital hand surgery. CURE have collaborated with the BLH for six educational orthoapedic courses in the past, most recently a tumour and soft tissue lower limb reconstruction course in March 2017.

3.4 Day 3 - ALERT Hospital

Neil and Matt visited the plastic surgery department at ALERT Hospital to meet Dr Atakiltie Baraki (President Ethiopian Plastic Surgery Society), Dr Ygeremu Kebede (Head of Department), Dr Abraham Gl Egziabher (Plastic Surgeon) and

Dr Abdurazak Mohammed (Plastic Surgeon). The hand surgery collaboration was discussed at length with many creative ideas brought to the table. Dr Abraham provided a tour of the department (through the extensive and beautiful grounds) to include the wards, trauma centre, outdoor café, visitor accommodation, hand therapy, occupational therapy, prosthetics, research centre and education centre (large hall with catering facility). We saw several post-operative patients on the wards, including two patients with posterior interosseous artery (PIA) pedicled flap reconstruction following release of 1st web burn contracture; and a patient undergoing hand therapy rehabilitation with the modified Kleinert Regime.



Patient in hand therapy at ALERT Hospital

ALERT (All Africa Leprosy Rehabilitation Training Centre) was founded in 1922 and initially targeted the treatment of leprosy. In 1965 it was reformed by WHO in combination with NGOs (multinational including Norway and UK etc) to create a multifaceted hospital and an associated medical school. Now it is incorporated into the Federal Health system and is linked to Addis Ababa University. The hospital has an emergency department, ICU, internal medicine and orthopaedics specialities. It is the main centre in Addis Ababa specialising in Plastic Surgery and Dermatology.

Dr Abraham, Neil, Dr Ygeremu, Dr Atakiltie and Matt

The plastic surgery unit has 2 dedicated operating theatres (mainly for scheduled cases) and access to 2 trauma theatres (24 hour access but shared with other specialties). Most of the hand procedures are performed in these theatres, however, the unit is soon to be allocated an additional theatre for hand trauma with 24-hour access. There are 4 wards with 130 plastic surgery beds. COSECSA (College of Surgeons East, Central & Southern Africa) are due to come in the next few months to assess the unit for credentialing.

The plastic surgery department at ALERT originally focused on reconstruction for leprosy patients but with the prevalence of leprosy declining, the unit has expanded its remit to incorporate many areas of reconstructive surgery. The bulk of the caseload is hand surgery (40% of caseload, mostly trauma with acute and chronic presentations). Other elective cases are seen such as leprosy, Dupuytrens, congenital hand and peripheral nerve surgery including some acute brachial plexus injuries, burns contractures and facial trauma.

The busy plastic surgery OPD at ALERT

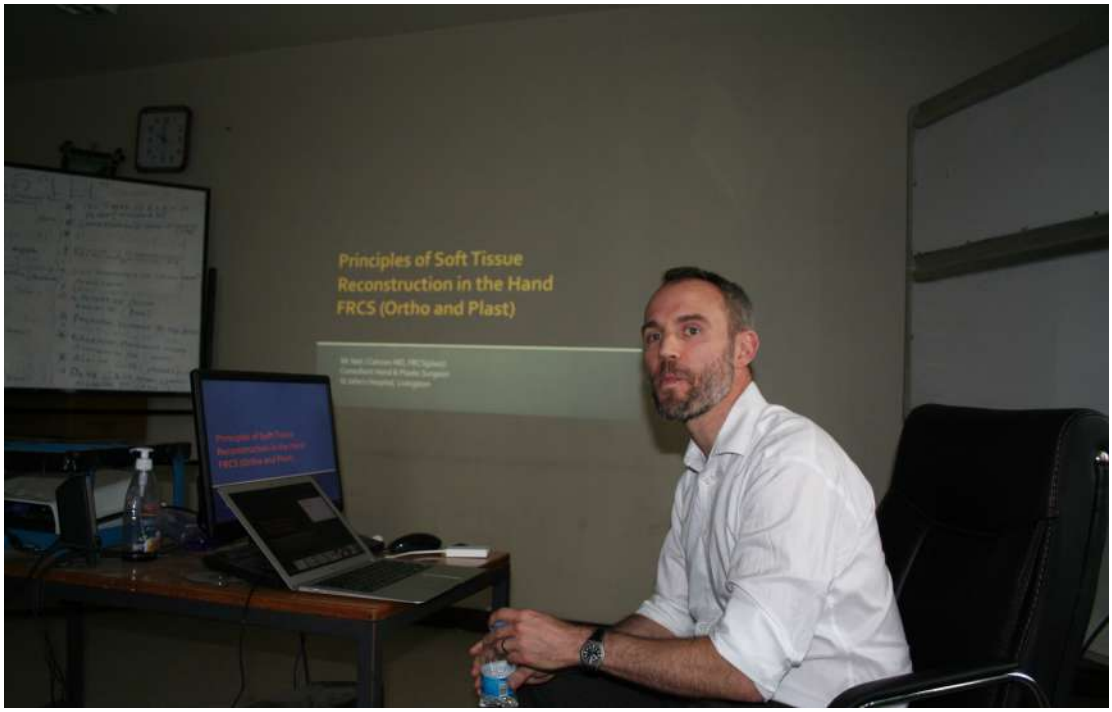
There are 4 consultant plastic surgeons at ALERT. The training scheme is linked with Addis Ababa University (ALERT is Plastic Surgery Unit 2) so the current 12 plastic residents are shared with Y12 (6 at each site). In addition, there are 20 non-plastic residents rotating through the department including orthopaedic trainees (from BLH, keen to gain trauma experience), general surgery trainees (keen to learn about soft tissue cover) and maxillofacial trainees (a new specialty in Ethiopia and yet to be established – they are keen to get involved in facial trauma and head and neck cancer)

There is a well functioning hand physiotherapy unit, occupational therapy and prosthetics department. There is an MDT planning meeting for complex cases every Tuesday morning.

ALERT is set within beautiful and extensive leafy grounds

3.5 Day 4 – Teaching at Black Lion and COSECSA meeting

Neil and Matt gave prepared lectures by request for the orthopaedic and general surgery residents years 1-4 (approx. 60 in attendance). Lecture topics included principles of soft tissue reconstruction in the upper limb, hand infections and tendon injuries. Both were presented with white coats embroidered with ESOT (Ethiopian Society of Orthopaedics and Traumatology).



Neil gives the first lecture of the day

Neil and Matt had a meeting with Dr Milliard Derbew who is a paediatric surgeon at the Black Lion hospital and the current president of the College of Surgeons of East, Central and Southern Africa (COSECSA). Dr Milliard explained the set up of COSECSA, which incorporates 10 African countries. COSECSA is keen to develop fellowships as a way of training surgeons. ALERT and Yekatit 12 hospitals have been identified as COSECSA hub units for plastic surgery. Plastic surgery fellowships will begin next year whereby plastic surgeons from the COSECSA countries will be able to gain experience in the two hub units in Ethiopia (5 fellowships in 2018 sponsored by Smile Train and Second Chance). There are currently no COSECSA hand surgery fellowships but Dr Milliard supported the proposed hand surgery collaboration and was keen for COSECSA to be involved with it.

3.6 Day 5 – AaBET Hospital

Neil and Matt were collected by Dr Zegene Taye (Orthopaedic Surgeon and Head of Department) and taken to the AaBET hospital. During the morning trauma rounds a patient was discussed with a traumatic hand injury following a crocodile bite! Dr Zegene arranged a tour of the hospital before Neil presented lectures to the orthopaedics residents on the topics of principles of soft tissue cover in the hand and hand fractures.

The Addis Ababa Burn, Emergency and Trauma (AaBET) hospital is allied to St Paul's Hospital and provides care in emergency medicine, orthopaedics, burns, neurosurgery and critical care. There are 4 operating theatres (2 for orthopaedics, 1 for burns and 1 for neurosurgery), a 250 bed space capacity and a 12 bed adult ICU capacity. The orthopaedic unit is twinned with the BLH and consists of 5 consultants and 18 orthopaedic residents. The Burns Unit opened recently, is allied with Y12 and has a 19 bed capacity (including 7 paediatric beds). A specialised burn physiotherapy and hydrotherapy facility is under development. A UK team from Interburns visited the unit during its inception 2 years ago and provided advice with its development.

4.0 Reflections

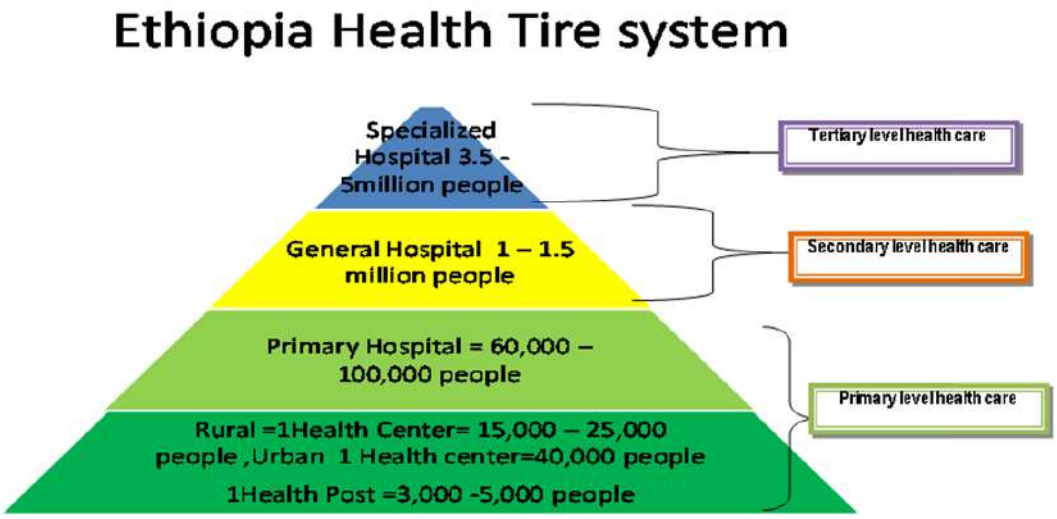
4.1 Country Profile

Ethiopia is the second-most populous country in Sub-Saharan Africa with a population of 99.4 million and a population growth rate of 2.5% in 2015. Ethiopia is one of the world's oldest civilisations but is also one of the world's poorest countries. However, the country is progressing resiliently with the economy growing (10% per year 2003-2015) and poverty decreasing (55 to 33% from 2000-2011). The government has a Growth and Transformation Plan (GTP), which aims to improve the physical infrastructure through public investment projects, but Ethiopia still needs considerable investment and

improved policies to reach its development objectives, given the country's low starting point (The World Bank, 2016).

4.2 Healthcare in Ethiopia

Healthcare in Ethiopia is arranged via a decentralised three-tier system of primary, secondary and tertiary care (see figure). The health sector provides key services free of charge such as immunisations, HIV treatment and prevention of mother-child transmission. Ministry of Health statistics show that the health status of Ethiopians has improved in recent years and infant mortality has decreased (African Health Observatory, 2017).



There has been a significant increase in the number of medical schools and number of medical students in Ethiopia. In 2016 there were 17,358 medical students placed at 28 public medical schools and 6 private medical schools. Students are often sponsored by their local region to attend medical school and further training on the understanding that they will return to work in their home region when they are fully trained. It is hoped that this scheme will facilitate the dispersion of medical skills around Ethiopia and outside of Addis Ababa.

4.3 Surgery in Ethiopia

Surgery has recently been recognised by the Ethiopian Federal Ministry of Health (FMOH) as an essential pillar within its plan for development. Surgical and anaesthetic care (particular for trauma and injuries) have been prioritized in the Health Sector Transformation Plan (HSTP), which aligns with the WHO initiative for Saving Lives through Safe Surgery (SaLTS).

The Surgical Society of Ethiopia (SSETHIO) was founded in 1995 and works alongside the College of Surgery of East, Central and Southern Africa (COSECSA). The Pan African Association of Surgeons (PAAS) had its international conference in the African Union Headquarters in Addis Ababa this year (February 2017).

The surgical training programme in Ethiopia consists of:

- Undergraduate medicine for 6 years
- General Practice rotations for 2-3 years – (could be in a rural area)
- Surgical specialty residency for 3-4 years. The surgical specialty exit exams are held in the final year of residency during December. The exam consists of MCQs, short answer questions, OSCE and viva stations with clinical photographs and real patients. Successful residents then graduate the following July.
- The COSECSA specialty surgical qualifications are not mandatory but many of the residents choose to sit the COSECSA examinations as the curriculum is generally broader than the Ethiopian examinations and enables candidates to work in other COSECSA countries.

4.4 Plastic Surgery in Ethiopia

There are approximately 15 fully trained plastic and reconstructive surgeons currently working in government hospitals within Ethiopia. Plastic surgery was established as a speciality in Ethiopia only 16 years ago in 2001 by two Norwegian surgeons Dr Paul Egil Gravem and Dr Einar Erikson.

There are two main plastic surgery units in Ethiopia and both are affiliated with 5Addis Ababa University. Yekatit 12 hospital is Unit 1 and ALERT hospital is Unit 2. Most plastic surgeons are based in Addis but there are two trained plastic surgeons outside of Addis, 1 based at Awasa and 1 based in Mekele.

Both units are involved with all aspects of plastic surgery but Yekatit 12 hospital specialises in cleft lip and palate and burns surgery. There are now additional burns units at AaBET (Addis Ababa), Mekele, Bahir Dar and Gondar (the latter two are staffed by general surgeons with an interest in burns). ALERT hospital specialises in hands, facial trauma and head and neck surgery. There is currently an absence of microsurgery in any Ethiopian government hospital.

In the early years the Ethiopian plastic surgery training system involved placements in Norway and India but the training system now is self sufficient within Ethiopia. The plastic surgery residency programme lasts for 3 years, starts in January each year and is split between Y12 and ALERT hospitals. There

are currently 12 plastic surgery residents and 7 places available in the national selection for plastic surgery this year (held in September). Residents sit their final exam at end of 3-year residency in December, which is designed and moderated by consultants from the two units (plus external moderators). Many residents also aim to sit the non-mandatory COSECSA exam held each September (funds for this are expected from an NGO in Switzerland)

The Ethiopian Plastic Surgery Society was established last year in 2016 and Dr Atakiltie (ALERT) is the current president. The 2 plastic surgery units in Ethiopia have been identified as COSECSA hub units for plastic surgery and burns. In addition, Ethiopia is for the first time hosting the Pan-African Burns Conference in Addis Ababa this year (June 2017) with 250-300 delegates attending from around Africa.

4.5 Orthopaedic Surgery in Ethiopia

Trauma is not a new phenomenon in Ethiopia as shown by Kappelman et al (2016) who hypothesize the Pliocene fossil 'Lucy' died from a poly trauma over 3 million years ago! The roots of orthopaedic surgery in Ethiopia start hundreds of years ago but the first orthopaedic operation at the Black Lion Hospital was recorded in 1964. Dr Tadios Mune was responsible for Orthopaedics formally gaining independence from general surgery as a specialty in 1987. The size of orthopaedics has exponentially increased in current years with more residents being enrolled and new peripheral departments opening.

BLH is the main centre for orthopaedics in Ethiopia

There are currently 88 orthopaedic residents in Ethiopia spread over a 4-year residency. The majority of the residents are based within the main orthopaedic unit at the BLH with the remaining residents placed at the following centres:

- ALERT – for plastic surgery and hand surgery experience

- CURE – for paediatric experience
- St Paul (Addis Ababa)
- Awasa
- Bahir Dar
- Mekele

There are established orthopaedic educational courses running each year at BLH and CURE funded by collaborating partners (SIGN, AO, Australian doctors for Africa):

a. AO basics course – for first year residents. Now in its fourth year since conception
b. Soft tissue tumour course – aimed at 3rd and 4th year residents
c. Paediatric orthopaedic course
d. Orthopaedic courses for theatre staff and nursing staff

The Ethiopian Society for Orthopaedics and Traumatology (ESOT) was established in 2004 and Dr Biruk is its current president. ESOT has an annual scientific orthopaedic conference in Ethiopia.

4.6 Hand pathology and surgery in Ethiopia

The Ethiopian Federal Ministry of Health (FMOH) have recognised hand injuries to be an important health problem in their recent Health Strategic Plan. Ahmed and Chaka (2006) found that the majority of hand injuries in Addis Ababa were sustained in the workplace as a result of machine related and crush injury mechanisms. The population of factory workers in Addis swells during the rainy season when farmers from the rural areas come to the city in search for employment. There is currently dramatic expansion in industry and construction within Ethiopia but this has not been accompanied with a proportionate emphasis of health and safety protocols, nor the use of personal protective equipment (Kifle et al, 2014). There has been considerable investment from China and widespread use of Chinese materials and tools. The user manuals for this equipment are written in Chinese so the Ethiopian workers cannot understand them. Multiple sources reported an increase in the incidence of electrical burns to the hand due to industrialisation accompanied with exposed wires and poor safety standards.

Although trauma accounts for most of the hand related pathology presenting to the hospitals in Addis Ababa, other hand pathologies are also present in Ethiopia and are being treated, such as hand tumours, congenital hand deformities and Dupuytren's contracture as published by Gebereegziabher et al (2016).

The following impressions about hand surgery in Ethiopia were made during the visit:

- Hand pathology is a significant problem in Ethiopia, particularly following trauma.
- Hand surgery is being performed by both plastic and orthopaedic surgeons in Addis Ababa within all the 5 units visited. The highest volume

of hand surgery was being performed by the plastic surgery department at ALERT

- Hand surgery is included within the curriculum for both orthopaedic and plastic surgery exit exams
- There is a good relationship between orthopaedic and plastic surgery in Ethiopia
    - Hand surgery cases are referred between orthopaedics and plastic units
    - Residents are shared between the two specialties so that skills are transferred
- Hand surgery lacks the national platform that other surgical specialties have developed in Ethiopia:
    - A hand surgery orthoplastic course does not currently exist (although there are teaching sessions given by hand surgeons to orthopaedic and hand surgery residents during the year)
    - A hand surgery fellowship within Ethiopia does not currently exist
    - An orthoplastic hand surgery forum (in terms of an orthoplastic hand unit or an orthoplastic hand surgery society) does not currently exist

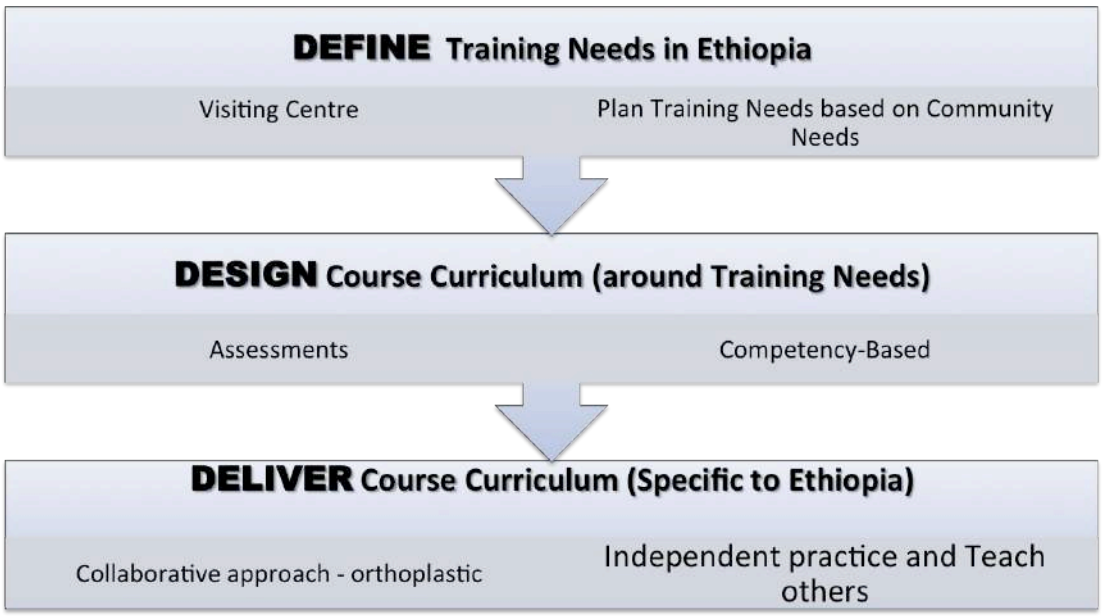
Interventions that would have the biggest positive impact (to reduce the incidence of hand trauma and to improve the clinical treatment of hand trauma) for the greatest number of patients would be:

1. Prevention programme – implementing heath and safety protocols in the workplace (Ahmed and Chaka, 2006)
2. Designing a training programme for primary healthcare workers who see the largest number of patients in Ethiopia. Education to enhance diagnosis of hand pathology would allow timely referral and simple treatment principles (wound care, splinting) would enhance outcomes.

Both of these interventions are large scale and require an infrastructure within Ethiopia to take place.

4.7 Developing a hand surgery educational collaboration

BFIRST and BSSH have had previous experience developing hand related courses and curricula in various countries including Cambodia, Sudan and Malawi. The figure below shows the template designed by BFIRST when initiating a collaboration. The first step involves visiting the host country to define the training needs. An educational course is then designed around the learning needs identified before it is then delivered. On-going evaluation and feedback is mandatory to ensure that the collaboration continues to meet the evolving training needs.



The BFIRST template for initiating an educational collaboration

A hand surgery collaboration was discussed with the teams at each of the five units visited. The following input and feedback was received unanimously by all five units:

- A collaboration with the UK via BFIRST and BSSH would be beneficial for patients and hand surgery in Ethiopia
- Enthusiasm about a combined orthoplastic approach
- A hand surgery collaboration would not be interfering or repeating the work of any other organisation
- The most pressing educational and clinical need is hand trauma but other aspects of hand surgery (congenital, peripheral nerve and brachial plexus mentioned specifically) were also important and should be included within any collaboration.
- In addition to a surgical collaboration, complimentary hand therapy collaboration would be very beneficial.

The following specific input and feedback was received from the following units:

I. Black Lion Hospital: The orthopaedic team were very keen for the development of an educational course, as they have had previous positive experiences of educational courses being run with the assistance of external organisations. The importance of formalised education in hand surgery was stressed as it is part of the exit exam curriculum and repertoire of orthopaedic surgeons in level 2 and 3 health facilities yet their operative exposure within BLH was small (due to the high volume of lower limb trauma and the large number of orthopaedic trainees vying to get experience). Dr Biruk put forward the BLH as a suitable course venue and suggested a clinical and/or operative component to the hand course, which he could help facilitate at the BLH. Between April and October was

highlighted to be the most appropriate time for the course to run and aimed at senior residents (year 3-4) due to the shear total number of residents currently.

II. Yekatit 12: The plastic surgery team were enthusiastic for an educational hand surgery course and suggested involvement of trainees in plastic, orthopaedics and general surgery so that the content could be disseminated in the widest possible way. They thought this had potential to impact clinical practices in a positive way when surgeons returned to their sponsoring home region. Dr Yohannes put forward Y12 as a suitable course venue but also suggested the potential of having the course located over multiple sites to benefit from the different site facilities.

III. CURE: The orthopaedic team had good experience with organising multiple educational courses before with the BLH and external organisations. Rick Gardner and Tim Nunn were enthusiastic about the impact of a cadaveric component as they had successfully included cadavers within their own courses (costing approximately $2300 for 5 fresh-frozen cadavers at the BLH dissection room)

IV. ALERT: The plastic surgery team were enthusiastic to develop a collaboration with BSSH and BFIRST and emphasised the importance of it satisfying interests mutually. Dr Atakiltie stressed the need for a collaboration to be sustainable and based around the three pillars of service, training and research. ALERT has had a strong history of collaboration in the past and has individual retired surgeons visiting to assist with hand operations throughout the year. They gave reassurance that there was not currently input from another hand surgery organisation and therefore collaboration with BFIRST/BSSH would bot be overlapping or repeating others work.

The department as a whole were initially sceptical about the impact of a purely theoretical course as they already provide hand surgery teaching sessions for residents (plastic and orthopaedic). They were enthusiastic to be involved with a hand surgery course that would incorporate clinical aspects as they thought this would help to strengthen a platform for hand surgery in Ethiopia, which would then cascade down to impact clinical practice in rural areas. The department were keen to view a hand surgery course as a stepping-stone towards future and progressive collaborations in areas such as research and the development of microsurgery. They requested a short-term proposal (i.e. the hand course) and a longer term plan for an evolving partnership. The team put forward ALERT as a suitable course venue due to the facilities and high clinical volume of hand surgery cases.

The team were keen to emphasis that any collaboration should go hand in hand with formal written documentation of a partnership between the organisations so that proper administrative processes could be followed within the hospitals, universities and ministry of health.

Dr Atakiltie was enthusiastic to develop and facilitate a hand surgery fellowship (South-South Training) by which surgeons from surrounding

COSECSA countries could come to the ALERT plastics unit. This was in light of COSECSA coming to accredit the ALERT plastic unit in the near future and the existence of similar fellowships occurring in COSECSA accredited units for other surgical subspecialties.

5.0 Recommendations

i. BFIRST and BSSH could proceed with an orthoplastic hand collaboration in Ethiopia. This is inline with:
    a. Needs identified by the orthopaedic and plastic surgeons currently involved with surgery of the hand
    b. Development priorities identified by the Ethiopian Government
    c. Absence of duplication with another external organisation

ii. An orthoplastic hand surgery educational course would be a feasible starting point for the collaboration, therefore a course proposal should be designed. The course proposal should be created with input from surgeons from each of the five units visited. The first draft of the course proposal should be sent to the Ethiopian units before July 2017. The proposal should include:
    a. Course target audience
    b. Course content and format
    c. Location and timings
    d. Learning objectives evaluation
    e. Evaluation and feedback
    f. Cost evaluation

iii. The following aspects for the course are recommended:
    a. Course target audience: orthopaedic and plastic surgery trainees restricted to the senior years of residency due to large numbers.
    b. Content: The course should have a significant proportion dedicated to hand trauma (soft tissue and bone) as this was identified as the area of most pressing need in Ethiopia. There should be inclusion of other subspecialty hand topics such as congenital hand, peripheral nerve and brachial plexus surgery (due to a combination of presence in exam syllabus and clinical need). There should be a clinical aspect to the course (patient examination and/or hand operations) as requested by multiple units. There should be consideration of cadaveric dissection based on cost evaluation.
    c. Location: the two units visited that had the greatest potential for course location were the Black Lion (due to large number of residents, central location and good teaching facilities) and ALERT (due to the highest caseload of hand surgery being performed there)
    d. Timing: the most convenient time for the course seemed to be between April-September (after the new academic year had settled but before the final year residents went away on study leave). The first course should aim to take place in 2018.

e. Learning objectives and evaluation: learning objectives should be in line with the Ethiopian orthopaedic and plastic exit examinations and preferably also with the COSECSA examinations. The input of the Ethiopian heads of department, consultants and COSECSA representatives will therefore be invaluable during the process of course design.
f. Evaluation and feedback – course delegates should provide written feedback so that future courses and collaboration can be improved.

iv. An orthoplastic team within BAPRAS and BSSH should be identified consisting of 2-3 surgeons spanning various subspecialties within hand surgery and with an interest in helping to deliver the course in Ethiopia
v. A hand therapist with an interest in collaboration should be identified and connected with physiotherapists at ALERT, Y12 and BLH.
vi. A formal letter should be sent from BFIRST and BSSH to the hospitals in Addis to outline the nature of the collaboration and relationship. This will help to satisfy the hospital administrations that the collaboration is official.
vii. Longer term objectives to include:
    a. Progression of hand surgery collaboration
        i. Prevention schemes – working with Federal Ministry of Health
        ii. Primary Health Care Education schemes – working with an organisation who already have a rural infrastructure in Ethiopia (ie Project Harar)
        iii. Clinical Research

    b. Developing a hand surgery fellowship scheme in Ethiopia
    c. Developing a formalised orthoplastic hand surgery platform in Ethiopia

6.0 Conclusions

Hand injuries resulting from trauma are an obvious and increasing problem in Ethiopia. Prevention programmes and education in the primary healthcare setting would have the greatest impact for the largest number of patients but require infrastructure.

A hand surgery educational course at the tertiary level for orthopaedic and plastic surgery residents is the not going to solve the problem of hand trauma in Ethiopia. However, an educational course at a tertiary level will potentially have the following impact:

a. Improve collaboration between orthopaedics and plastics
b. Create a platform for hand surgery and raise its profile
c. Train surgeons (plastic, orthopaedic, general) who will then go out to the rural areas when qualified and deal with hand trauma
d. Be a stepping stone towards on going and evolving relationship between reconstructive surgery in Ethiopia and the UK

Therefore we recommend that designing and delivering a tertiary level hand surgery education course in Addis Ababa would be a feasible way to start this collaboration.

7.0 Acknowledgements

We would like to thank all of the surgeons and their residents at the five hospitals we visited for their warm hospitality and generosity. We are grateful to BFIRST and BSSH for their support for this project.

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Appendix 1: Key Contacts

I. Surgeons

Name	Position	Hospital	Email
Abeje Brhanu	Plastic Surgeon	AaBET	abeje.brhanu@yahoo.com
Abdurezak Mohammed	Plastic Surgeon	ALERT	Abdialim@yahoo.com
Abraham Gl Egziabher	Plastic Surgeon	ALERT	abnati14@yahoo.com
Atakiltie Baraki	Plastic Surgeon, President of Ethiopian Plastic Surgery Society	ALERT	drkiltie@yahoo.com
Biruk Wamisho	Orthopaedic Surgeon, Head of Department, President of ESOT	Black Lion	lbiruklw@yahoo.com
Leoul Getachew Attlee	Plastic Surgeon	AaBET	leoulattlee882@gmail.com
Mekonen Eshete	Plastic Surgeon	Yekatit 12	mekonene@yahoo.com
Miliard Derbew	Paediatric Surgeon, President of COSECSA	Black Lion	milliardderbew@gmail.com
Rick Gardner	Paediatric Orthopaedic Surgeon	CURE	richard.gardner@cureinternational.c
Yegeremu Kebede	Plastic Surgeon, Head of Department	ALERT	yegeremukebede@yahoo.com
Yohannes Demissie Gebremedhen	Plastic Surgeon, Head of Department	Yekatit 12	gdyohannes@yahoo.com
Zegene Taye	Orthopaedic Surgeon, Head of Department	AaBET	tayezegene@yahoo.com

II. External organisations involved in plastic or orthopaedic surgery in Ethiopia

Organisation	Speciality	Base Hospital	Website*
Association of	General	Black	ao-alliance.org/2015/11/making-a-

Orthopaedics (AO) Alliance Foundation	orthopaedics	Lion	difference-in-ethiopia/
Australian Doctors for Africa	General orthopaedics	Black Lion	ausdocafrica.org/our-projects/ethiopia/
Facing Africa	Noma	MCM Korean Hosital	www.facingafrica.org
Interburns	Burns	Y12, AaBET	interburns.org/assessing-government-burn-services-in-ethiopia-april-2015/
Operation Smile	Cleft	Jima and Mekele	www.operationsmile.org/approach/where-we-work/ethiopia
Project Harar	Cleft and facial reconstruction	Y12	www.projectharar.org
SIGN Fracture Care International	General orthopaedics	Black Lion	signfracturecare.org/blog/the-future-of-orthopedics-in-ethiopia/
Smile Train	Cleft	Y12, ALERT	www.smiletrain.org
Touching Hands - Scot Kozin (ASSH)	Congenital hands	CURE	www.assh.org/For-Physicians/Get-Involved/Touching-Hands-Project/2016/Touching-Hands-in-Ethiopia-2016
World Orthopaedic Concern	General orthopaedics	Black Lion	www.wocuk.org/new-page/

*Websites accessed 22nd April 2017

Appendix 2: Practical Aspects

I. Flights

Both Neil and Matt obtained flights for £700, six weeks in advance of the trip. Neil flew from Edinburgh with Turkish Airlines (1 change) and Matt flew from London with Ethiopian Airlines (direct)

II. Visas

Matt and Neil obtained a tourist visa on arrival at the Bole International Airport for $50. Visas are less expensive if obtained from the Ethiopian Embassy in London but prior panning is required. If surgeons were to carry out clinical work, a business visa would be required instead of a tourist visa and this cannot be obtained upon arrival at the airport.

III. Accommodation

2 night stay at Betseb Guest House (5$ per night, located near Haolet Roundabout in south-east Addis) was found to not be suitable accommodation for a working trip due to noise levels, lack of internet and basic comforts (cold showers, uncomfortable bed). 4 night stay at the Ghion Hotel ($40 per person per night in shared room, breakfast included, located near Meskel Square) in Addis was much more acceptable due to simple quiet rooms, central location, good facilities (internet, garden, pool) and environment for meeting other NGO workers.

IV. Internal Travel

Taxis were easy to obtain and were typically 150-200 Birr per trip. Our taxi driver Gez has worked previously with NGOs (Project Harar and Facing Africa), has excellent knowledge of Addis and speaks good English (0912010592)