Report of the BSSH team visit to the Holy Spirit Hospital, Makeni, Sierra Leone 10th – 23rd November 2018

Introduction

Sierra Leone, West Africa, formerly a British Colony till 1961, is the 10th least developed nation in the world. With a population of 7.5 million, it has progressed very slowly since the end of the brutal civil war in 2002. There are estimated at most 300-500 doctors in the country and very few of these are practising surgeons. The UK meanwhile boasts a medical/capita ratio 80 times as great, with an estimated >600 times as many surgeons per capita.

The Holy Spirit Hospital (HSH) was established in Makeni, formerly a rebel stronghold, after the civil war, by the Catholic Bishop of the Makeni Diocese. This was in response to the complete absence of medical care in the region, which is 3 hour's drive from the capital Freetown and has a local population of 600,000. In 2018, this 100-bed non-Government hospital had two main operating theatres, a lab and pharmacy. Their X-ray machine was temporarily awaiting new parts. There were on average 50 outpatients daily and 300 inpatient treatments per month. Surgical staff consisted of one retired Italian resident and one visiting general surgeon.

Dr Patrick Turay has been the medical director at HSH, since its inception and has been instrumental in developing links which have enabled multiple medical and surgical teams from not only the UK, but Europe and recently Re-Surge Ghana to visit every 2-3 months and provide much needed surgical care in their 3rd operating theatre.

BSSH – HSH Project

For the last 8 years, the BSSH in conjunction with the charity ReSurge Africa (set up in 1992 by Jack Mustardé from the Canniesburn Plastic Surgery Unit, Glasgow) has been sending two to three teams per year with a long term goal to establish a service that will eventually be provided by two resident Sierra Leonian reconstructive surgeons at HSH. They are currently being trained in Ghana by ReSurge Africa (RSA) and plan to start in mid-2019.

To further prepare the hospital for this next chapter, RSA have their own Clinical Project Coordinator from the Philippines, Roderick Labicane (fondly known as 'Dickya'), who was our guide and mentor throughout the visit. He has, over the last year or so, coordinated the various teams, and enhanced overall management through training the HSH staff. RSA has also supported staff to be trained in neighbouring Ghana and more recently India.

We visited as one of the last BSSH teams attending to "provide" surgery, with future teams focusing on teaching and supporting the 2 new surgeons.

Patient Costs

Unlike in the NHS, subsidised healthcare costs usually have to be met by the patients. Previously, such surgical charges were subsidised by BSSH and RSA. However, in a shift towards enabling the hospital to become more sustainable, this 'subsidy' was moved to paying the BSSH team's travel and accommodation costs directly. It was then left to us, as the team, to provide or raise funds to pay for our impending patients' operations. Patients still had to fund their own registration, consultation, and medication fees. Thankfully

between us, we were able to start off this “patient assistance fund”, with the addition of some donations both before and also during the visit, following urgent calls home for support.

Despite this, many of the patients’ costs were in fact borne by a lone American, Tom Johnson, and his charity Africa Surgery (AS). He has been spending half of every year for over 15 years, cycling around the villages identifying festering problems and referring them in to HSH and other hospitals and visiting teams such as ours. Without that source of funding, we would have had to stop operating within a week. His amazing concern for the Sierra Leonian people definitely put our own generosity into perspective.

Pre-Visit Preparation

Preparation started well in advance, with complex negotiation to first agree the time slot between HSH and team members, then coordinating with the HSH administrator, Mohammed Tarawally re: visas, and registration with the SL Medical council. Of note is that previously the HSH lodging of papers was deemed sufficient, but the new Medical Council Registrar ‘requested’ we attend a 5-minute interview in the capital - a 7 hour round trip and an operative day lost.

Team members were initially left to identify and update their own immunisations, such as for Yellow Fever, Hepatitides, Typhoid and Cholera, as these would prove helpful for future work. HIV Post-Exposure prophylaxis was variably donated by / purchased from local ID departments. None were required and were donated to the RSA team at HSH.

Potential cases were screened by email, and we determined the current state of the set-up at the hospital. This guided our collection of hospital ‘disposables’ and ‘Rep’ donations, such as dressings, drugs and surgical and anaesthetic equipment. We were able to purchase medications and supplies, either personally or through Durbin plc. They efficiently delivered a large consignment of anaesthetic drugs and equipment such as propofol, LA, laryngeal masks, and bags of saline, direct to the hospital. We also sought to raise charitable funds to cover patient costs, as discussed later.

The Team

Our team came from across the North of the UK, and consisted of:

Sahan Rannan-Eliya (Team Lead), Consultant Hand and Plastic Surgeon, Newcastle upon Tyne
Zak Sheriff, Consultant Hand and Plastic Surgeon, Bradford
David Dickson, Consultant Hand and Orthopaedic Surgeon, Bradford
Chrishan Mariathas, Post CCT Fellow Hand and Orthopaedic Surgery, Sheffield
Jonathan Womack, Consultant Anaesthetist, Newcastle upon Tyne
Sara Dixon, Senior Hand Therapist, Bradford

Travel to Makeni

Flight costs were generously covered by BSSH. We flew out on Air France, separately and rather early, to rendezvous at Charles De Gaulle prior to heading to Freetown. There we were met by Amadu the hospital’s long-standing driver and fixer (he is waiting to train as their biomedical technician), and arrived late the same day in Makeni, after a 3 hour drive along the much improved highway.

The Team from left: (Albert); Zak Sheriff; Sahan Rannan-Eliya (Team lead); Jonathan Womack; Sara Dixon; Chrishan Mariathas; David Dickson; 'Dickya' Labicaine; Sheena Labicaine

Desperate to get on with work, but respectful of the strong and vibrant mainly Christian faith of the staff & local population, we joined them for, & were unexpectedly and publicly introduced to the Hospital's church congregation. Many others of the staff are Muslim, but all live and work in respectful harmony.


We then spent that first Sunday afternoon sorting through the theatre, and the equipment that we ourselves had brought and the all too frequently expired or incomplete supplies that were already there.


Left: The storeroom – nb Hoods and Breast implants top left; **Right**: Assorted plates – some used!

Outpatients

In our first day's clinic we saw nearly 50 patients, who attended thanks to the radio, and newspaper advertising of our visit in advance. SL is so desperately poor that there being so few doctors, let alone surgeons, even for the middle classes, many patients had travelled 3 hours from the capital, to see us, with problems which no other doctors in SL would treat.

With no effective fans, the small OPD was hot, but being the "coolest" time of year (disliked by most Sierra Leonians!), it was much more bearable than SRE remembered from his last visit.

Left: Setting up for clinic – SRE / DD / ZS; **Right**: Nurse-translators – Lamrana / Fatmata

Having 2 each of Orthopaedics and Plastic surgeons, enabled us to have 2 consulting tables, which worked both for efficiency, but also allowed discussion of difficult cases. However, this would have been impossible were it not for the fabulous translation and efficiency of the HSH nurses Anthony, Fatmata, Foday, Frances, and Lamrana. They also ran the parallel, relatively clean (in the circumstances) dressings station to allow inspection and treatment of wounds and later grafted sites, alongside the OP area.

Left: Dressings station; **Right**: Our youngest patient patiently having his dressings changed

Operative Decision Making

Our basic principle was that any operative treatment needed to be "a one stop shop", as we had no idea when the next 'experienced' surgeon would be passing through, and as mentioned, there was realistically no one else to refer to in the country. Certainly nothing that would require a second procedure after a fixed interval such as a groin flap. Some such patients had already been pre-screened by pre-visit communications. Furthermore, we felt that ORIFs were to be avoided as the sterility of such procedures could not be guaranteed, even to the lower standards normally accepted by us plastic surgeons (!), especially as the AC unit blows straight on to the op table.

Our first 2 consultations were actually in the car park at the airport as we arrived, but having triaged the first wave in the morning of our first Monday, one Ortho-Plastic pair peeled off to theatre to start surgery that afternoon. We then had the luxury of being able to continue seeing patients as and when they attended, without having to stop surgery. However interestingly, probably due to the pre-advertising, the vast majority of the nearly 100 patients, attended in the first 3-4 days, but with occasional attendances and referrals throughout the fortnight.

Having the 2 pairs of surgeons also proved vital when SRE was laid low for 24 hours by gastroenteritis. Thankfully no hospital policy requiring a 48 hour lay off once 'fit to work'.

Anaesthesia

A safe GA, to basic UK standards was impossible due to having only halothane, no longer used in the UK, and the lack of end tidal CO2 and agent monitoring. However, JW felt that it was sufficiently safe for anyone >2 years old, if the surgery was considered justified on a risk-benefit basis given the lack of any alternative, and there were no "obvious" life threatening co-morbidities.

Though of course very few indeed had ever seen a 'western' doctor, and diabetes and hypertension were not uncommon. Intriguingly smokers seemed uncommon – probably simply due to the cost, and that the tobacco companies don't yet see peddling their wares in such a poor nation as 'cost-effective'.

Left: A safe General Anaesthetic **Right:** One of our 7 year olds, patiently getting his block

Thankfully the stoicism and resilience of the Sierra Leonian patients, meant that JW was able to 'comfortably' perform regional anaesthesia in all but a couple of patients, including a number of 7-8 year olds! JW's Mindray Z5 ultrasound machine proved invaluable.

Physiotherapy

RSA have had a Therapist Gaelle Smith based there for some time, but she was back in UK. Our therapist, Sara, had her own not-insignificant workload, dealing with not only the post-operative splinting, but also many non-surgical contractures, children with Cerebral Palsy, chronic hand conditions and deformities. She linked up with the local prosthetic 'service' and further supported an Italian therapy duo, who arrived to follow-up their Orthopaedic team's cases from a few weeks before.

Left: Post-Contracture release Therapy assessment **Right:** With new Thermoplastic splint

Sadly the dangers of 'parachute' missions, such as even ours, without due diligence, was brought home to us at the start. We were asked to review a boy, who had never walked, due to long standing, albeit not congenital, isolated knee contractures. The Orthopaedic team had released his hamstrings and casted the legs, but he had represented soon after in pain and with necrosed toes. There was little we could do, a few weeks done the line, apart from amputate through the ankle. But with Sara's and the HSH team's help he is making a good functional recovery.

Left: Sara and another happy customer **Right:** Adikali after his Foot amputation

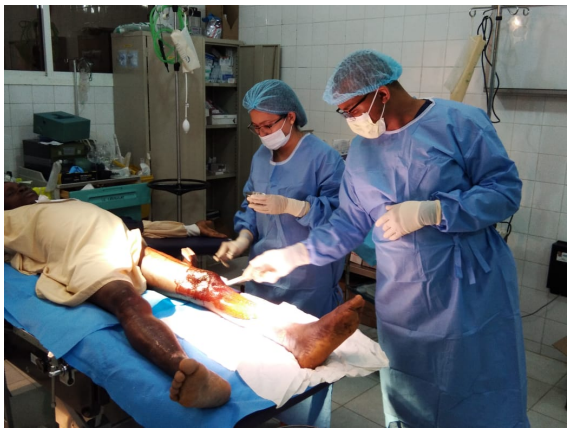
Theatre

The theatre team were led by the nurses mentioned earlier, who were extraordinarily efficient, competent, adaptable, and constantly accommodating and cheerful! We were humbled at the care and dedication these colleagues had for the patients and their work. At least one of the nurses, Frances, assisted us in clinic / theatre over a few mornings, then dashed home for a few hours' sleep, before returning at 8pm to do her series of nights!

Left: HSH staff team

Right: Some of the HSH theatre team

Left: The Theatre



Right: Foday and Sheena

As found previously, the theatre was itself kept clean and ordered, and there was a wide range of instruments, kit and sutures available - though most were a few years after expiry, including some breast implants, and orthopaedic helmets! A spring-clean is planned, not least of the numerous incomplete instrument and ORIF sets from all round Europe!

Most frustratingly, was the fact that we realised only a few weeks before going that their power tools – Dermatome and Drill – were no longer functional because the battery chargers were irreparable. Attempted pre-visit sourcing was unsuccessful, due to those models no longer being manufactured. We were later still, advised that there may not be enough hand knife blades! But thankfully despite a late purchase of them ending stuck in a UK PO depot as the team lead flew, there were sufficient, and we took all grafts by hand. And despite donations of K-wires, none were actually needed!

Meanwhile, non-adherent dressings such as mepitel and even jelonet, being routinely required, were soon in short supply, and should be a staple of future team provision.

The theatre staff seemed routinely to be continuing measures encouraged by earlier teams such as the WHO checklist, & passing instruments in kidney dishes. However the scrub dispensers were still being perched on the sink edge, as they were on SRE's earlier visit.

Case load

During the fortnight we performed 31 operations, and 3 keloid scar injections. Patients ranged from 2 – 80 years, with all bar one being under 50, and 2/3 under 35. The majority were under Regional technique, with only 3 planned GA's and 2 conversions (one attempted but failed spinal, one overly ambitious LA excision of an SCC from forehead).

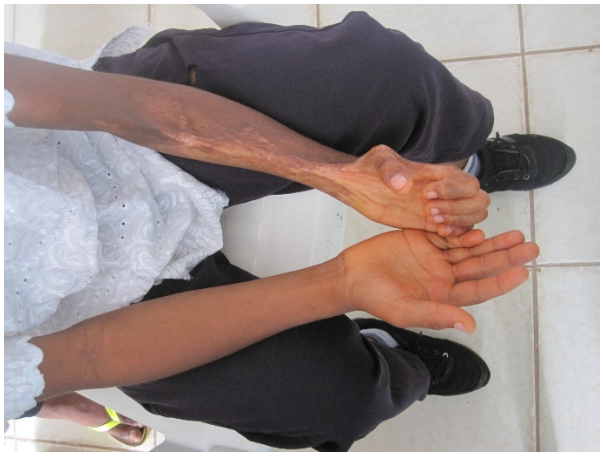
Left: JW and his newly trained ODPs

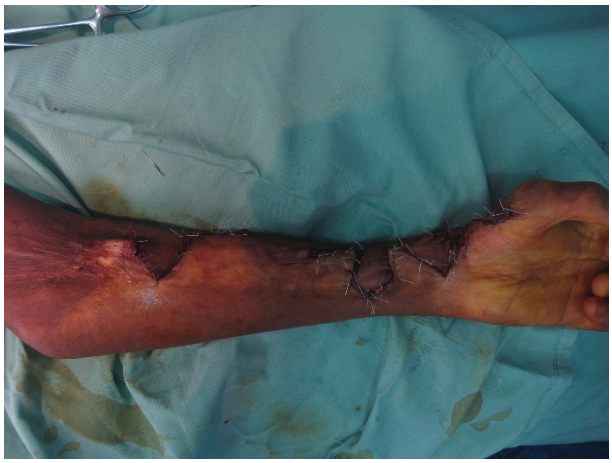
Right: Team and Foday Kamara, Snr Nurse

Our focus was primarily on the upper limb, but we soon realised that there was a burden of other pathology that could be successfully treated by our team. Nonetheless priority was given to Upper Limb cases, and we ensured that none of these were deferred due to lack of funds or time.

Eight were to release burn contractures, some caused >10 years previously. Where possible we released with local flaps, rather than grafts, in view of presumed high risk of graft loss. In retrospect, having achieved such good rates of healing with our SSG's (as mentioned below), perhaps more extensive releases could have been achieved for these cases too.

Four cases were to deal with post-operative complications or delayed healing.

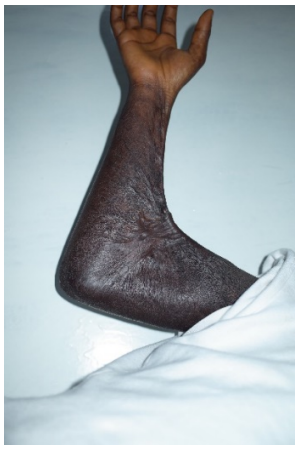


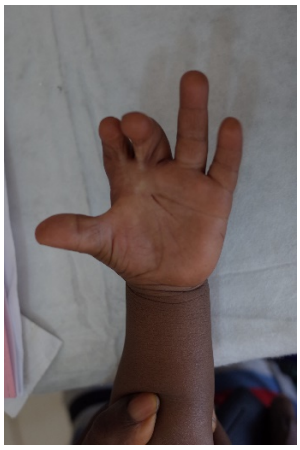
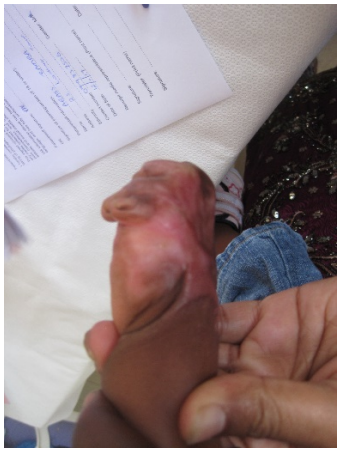


Left: Burn Contracture; **Right:** Reasonable contracture release without grafts

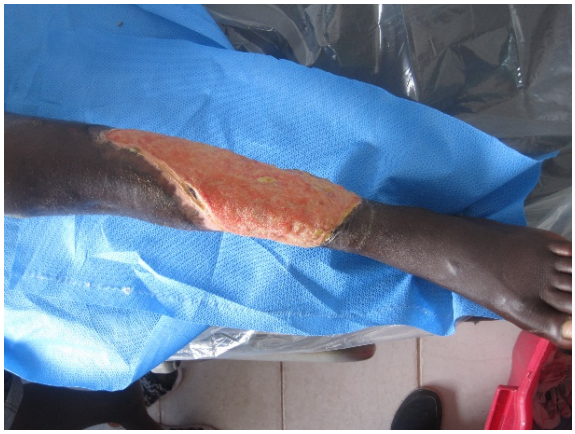
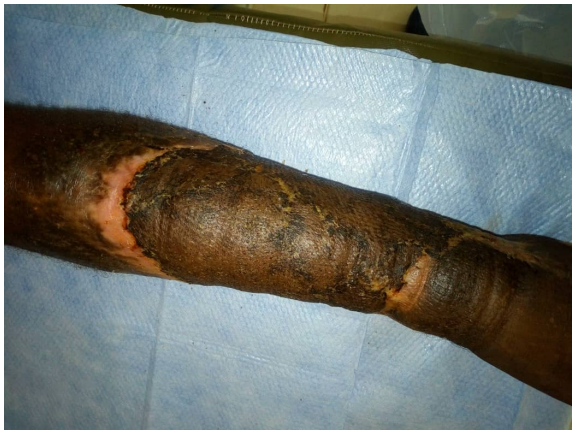


Left: Electrical Burn Contracture with replacement of Median N, and flexors with internal scar
Right: Good contracture release with return of Position of function, albeit no nerve



Left: Another elbow Burn Contracture successfully released;
Rest: Contractures that had to be deferred due to comorbidities or young age

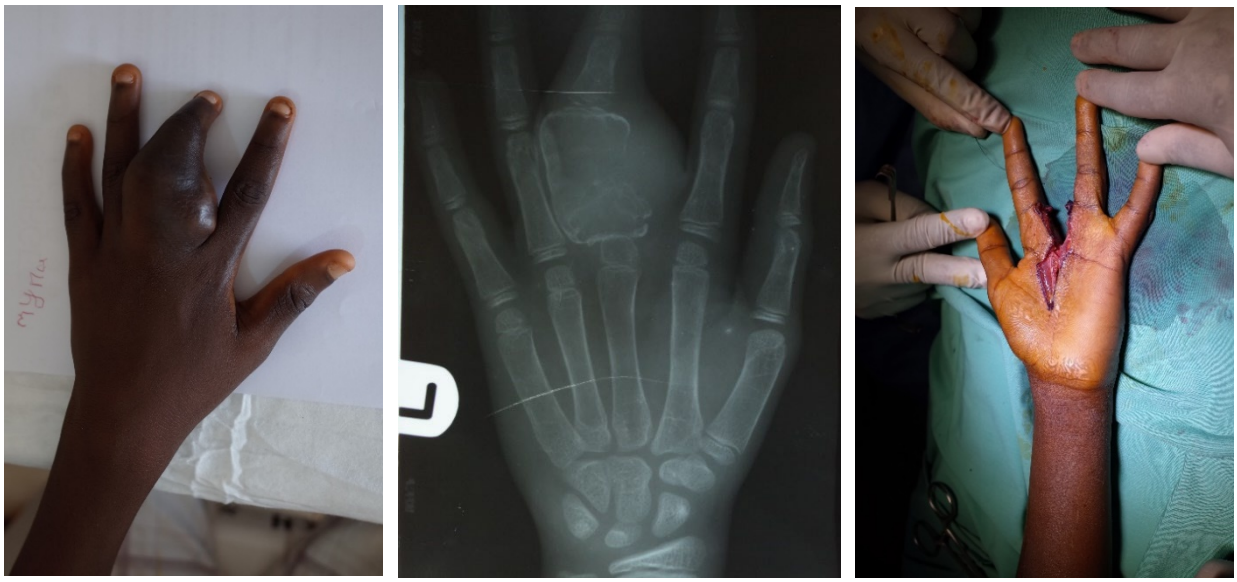
Left: Chronic wound – post minor trauma; **Right:** Fully healed graft at 3 weeks

We grafted 8 chronic ulcers, all of which had an initial history of trauma. We were pleasantly surprised that these all achieved near 100% healing at 3 weeks. All were dressed initially with vinegar dressings, till surgery within 48 hours. At surgery, good debridement with curettage or Watson knife, followed by re-washing,

betadine / chlorhex soaked dressings, and admission for strict elevation and induction and post-op course of oral Co-Amoxiclav, appear to have enabled the high take rate.

Sequence: Previous lip tumour excision – Diagnosis unknown

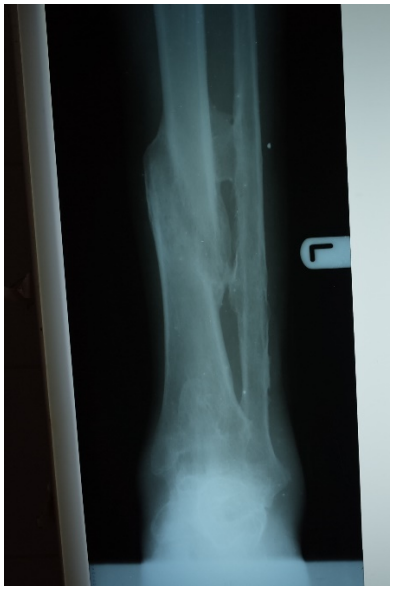
One young woman presented post upper lip 'tumour excision' and 'reconstruction' in Freetown. Lacking histology, she was found to have an enlarged lymph node. Thankfully after a CT, paid for by AS, at the local government hospital, we did proceed.



Sequence: 3rd Ray 'presumed benign' osteochondroma. No histology available

This lack of pathology is arguably an even bigger problem for patients with a potentially surgically curable lesion. However, the lack, let alone cost of chemo, means disseminated disease such as for one of our last patients, is fatal. Nonetheless, with this in mind, we felt it was appropriate to proceed with a simple ray amputation for a presumed 'benign' osteochondroma in a 13 year old.

Sadly, we saw a number of osteomyelitics including 2 from the civil war nearly 2 decades ago, where in that situation, the only option was amputation. However, there are good quality locally made low cost prosthetic limbs, but despite this, amputation was accepted by only one patient.



Left: Osteomyelitic Tibia **Middle & Right:** Local prosthetics

Post-Op Management

The post-operative nursing ward care had significantly improved from SRE's last visit, with dedicated night nurses, and the feasibility of giving antibiotics and analgesia overnight. However, it is still limited compared to what we expect in the UK, thus making free flap surgery somewhat untenable. The ward itself, is reserved for the visiting teams' patients, so we were able to keep our grafted patients in, beyond their first graft check, and request that they were seen frequently in the OPD after we left. All these costs were funded by us or AS.

Sara's expertise was invaluable and as hand surgeons all know, is often the difference between a successful operation and functional failure. As mentioned, RSA have had a therapist working at HSH, but it was unclear what the long-term provision will be, though the expansion of therapy schools in SL bodes well.


Left: Sara with some of her tools of trade **Right:** Happy splinted customer

As with previous teams, after our departure we have conducted online ward rounds of our cases via WhatsApp, and referred some cases to other NGO hospitals, and later visiting teams. This was only possible because of the enthusiasm and dedication of the HSH staff. They have continued to keep us informed and have ensured that we have essentially had all our grafts, mainly lower leg, fully healed and dressing free within 4 weeks, and seem to have remained so since.

Future Developments

The long-term plan is to establish the 2 newly-trained Sierra Leonian surgeons at HSH. However, the health system is far from integrated, so we sought to build on links with clinicians elsewhere, both during and beyond our visit. One of the local Government hospital physicians does do rounds at HSH, and when other teams, without an accompanying anaesthetist visit, the anaesthetists from their do come across. However the surgical options are far more limited.

We were informed about and visited the old Leprosy hospital in Masanga, 90 mins drive away into the interior. A Danish-Dutch collaboration revived the hospital there after the war, and provides much needed basic care, but has also enabled the establishment of a nursing and physiotherapy school. We reviewed cases face to face and by WhatsApp and transferred and successfully performed the reconstruction of a scalp defect on 8 year old Fatmata (see pictures).

Roderick 'Dickya' Labicaine continues to encourage links between HSH and Masanga, and other hospitals, to perhaps enable smaller secondary procedures or follow-up to be performed, after a patient is discharged, especially if that is nearer their home.

Left: Former Leprosy Hospital, Masanga

Right: the Masanga team

Left: 8 yo Fatmata, referred from Masanga

Right: Post scalp flap and SSG

The hospital has a regular educational programme and supports nursing and therapy training in the region. We lectured at their weekly hospital teaching session on Fracture management and Wound care. However, as in between visits, there are no orthoplastic surgeons, we ensured throughout that we discussed with the

staff why and what we were doing, as in the end their interventions may be the difference, when there are no surgeons.

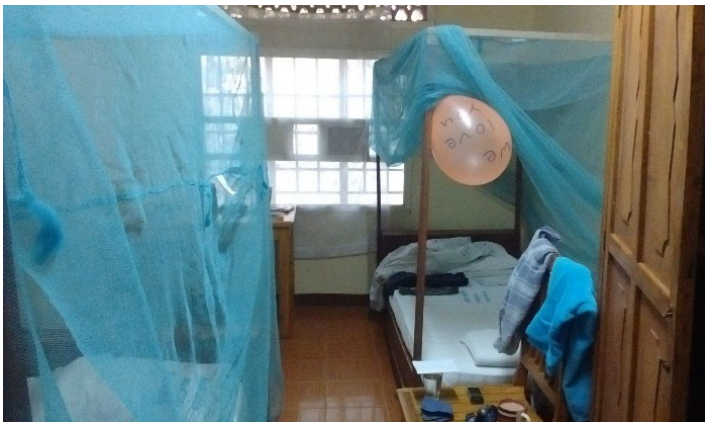
Left: Fracture teaching

Right: The ReSurge Training centre

Extra-Curricular activity

The hospital guest house was clean but basic and really hadn't changed much in 6 years. At least no more overnight power cuts, meaning functioning ceiling fans to ease the heat. And decent wi-fi allowed us to keep easily in touch with home and families. We were looked after and fed very well indeed, and all thankfully all enjoyed the short and spicy menu list, and the daily fresh fruit and vegetables. Mosquito nets were mandatory, as was repellent and the daily call to "take your malarone". However, evenings felt short, with little energy for anything other than reviewing the day, planning for the next, and catching up with home.

Left: The HSH Guesthouse



Right: Simple but more than adequate Double Room

We are extremely grateful that we were looked after very well by Dickya and his wife Sheena, and hosted generously by Dr Turay, including a farewell meal at the Wusum Hotel, just next door to the impressive President's Lodge. This and the Clubhouse were considered the best of Makeni, and these weekend visits were a welcome 'change/rest' to our labours. We were offered a weekend trip to the beach but instead chose to spend the Saturday operating and a surreal but much needed Sunday afternoon's break at a Catholic church mission, with its 2 karaoke-singing priests. And next time we look forward to making that walk to the cool of the waterfalls!

Other recommendations for future teams

- Factor in that a visit to Freetown Ministry / Medical Council, may be required.
- Current model appropriately covers travel and subsistence costs for the BSSH.
    - It is more appropriate that patient costs are covered in country, or by donations raised / personally contributed. Hopefully a more sustainable model for funding patient operations will be established with the arrival of the resident Plastic surgeons.
- Need better inventory of equipment – ongoing with 'Dickya' Labicaine and RSA support
- Main shortage: Non-adherent dressings eg Mepitel/Jelonet, Flamazine, other wound care reagents.
- Use Durbin to courier supplies including medications.
- Bring Ultrasound machine for regional anaesthesia – unless one already sourced for HSH surgeons.
- Efforts ingoing to source a cost-effective Dermatome and Drill system.
- Battery operated desk fans for OPD? Rechargeable batteries and chargers?
- Sweets / lollies not only for children but adult patients too!

Acknowledgements

These are by no means comprehensive and there will be many who contributed in other ways, including:

Theatre and Anaesthetic staff from both the Royal Victoria Infirmary, Newcastle, and Bradford Royal Infirmary, for gathering no longer needed consumables.
Nicola Corkhill (RVI Pharmacy) and Durbin plc for their efficient logistics.
Alex Emmerson and Mercian Surgical for their generous donation of K Wires.
Richard O'Brien and Elis Healthcare for their generous donation of Reuseable Operating drapes and gowns.
And of course: the BSSH itself and Steve Hodgson for advice and funding the mission.

But most of all to the staff of **Holy Spirit Hospital, Masuba, Makeni**, whom we had the amazing privilege of serving alongside. They are a credit to their people and nation, and we are hopeful that HSH could progress to be a centre for quality care in that nation.

Sahan Rannan-Eliya