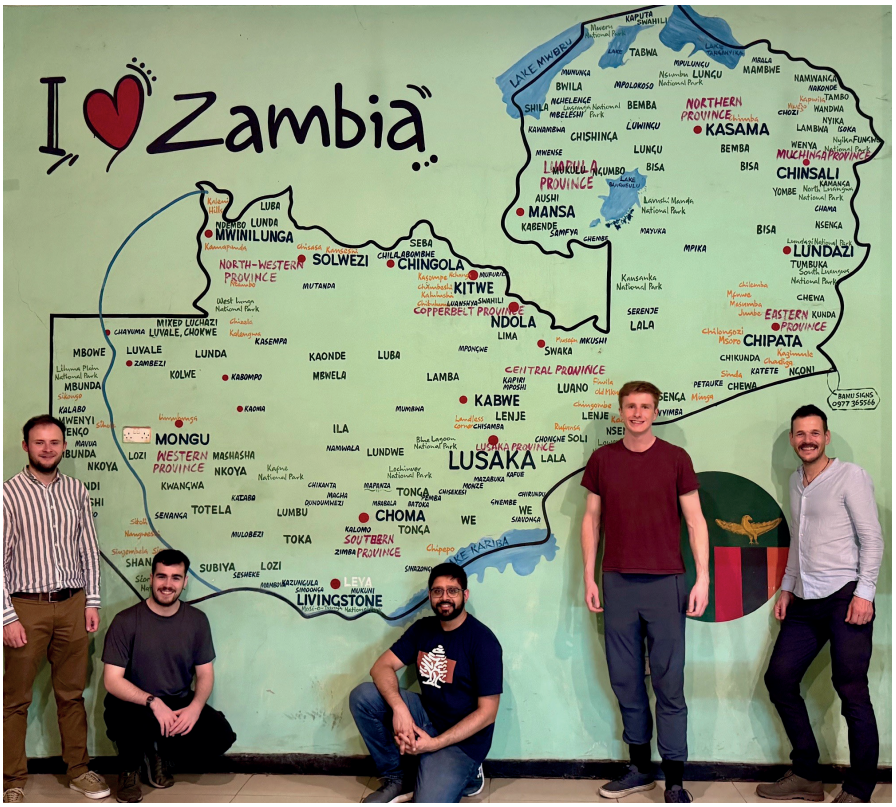
Developing ENT services in Zambia

BY MATTHEW CLARK AND LUFUNDA LUKAMA

Lufunda Lukama is an ENT surgeon in Zambia. In a country of 19.6 million, he is one of five such specialists. It is not difficult to see the problem that he, and the country as a whole, face. Qualifying in Zambia, he had specialist training in South Africa for five years, during which he researched the challenges faced in delivering an ENT service in Zambia [1], now continuing with his PhD [2,3]. In brief, Zambia's ENT services were found to be deficient at all levels of hospital care, in infrastructure, human resources and equipment, despite a huge burden of disease. There was poor delivery of surgical procedures and availability of essential medication. Where non-specialist clinicians were managing ENT conditions, there was a high diagnostic error rate, resulting in inappropriate treatment and referrals.

Through contacting ENT UKs Global Health Committee, the initial goal was to update ENT guidelines published by the Zambian Government. The existing guidelines were dated and written with little ENT input [4]. 'Tiered' advice was required, acknowledging that most of the care would be provided by health workers not trained in ENT. Rather than create guidelines specifically for Zambia, the committee elected to create a set of global guidelines suitable for use in any low-resource setting. They aim to provide a free, readily accessible resource for anyone providing ENT care in resource-limited settings. Different levels of advice are provided for health workers who have no formal ENT training and very limited resources, to those working in formal medical centres but with no formal ENT training, to those who have had formal ENT training and may have access to more specialist equipment. Succinct and practical, they are based on best evidence and sensitive to different levels of human and physical resource availability. Each chapter has authors from both high and low-resource settings, and authors come from all over the world to help make the guidelines applicable to as many settings as possible. It is a work in progress, with completed chapters available through both the ENT UK and Global OHNS websites [5,6].

> "Our ENT specialists in public service reported that residents' ear microsurgery skills improved markedly following the training"



The visiting team.

In April 2024, at the invitation of the Zambia ENT, Audiology and Speech Therapy Society (ZENTAS), a small otology-focused group travelled to Lusaka, Zambia, joined by two UK medical students on their elective. With the intention of delivering a temporal bone dissection course and a basic ENT training course, this was also largely considered a recce trip to see how best we could help in the future.

Temporal bone dissection course

Based at the University Teaching Hospital (UTH) in Lusaka (through Dr Alex Malambo, Head of ENT), we were faced with an apparently fantastic, dedicated temporal bone lab donated the year before by a German charity. Sadly, beyond the superficial view, the situation was less favourable. The sinks had no running water. Two of the drills were completely seized. Irrigation tubing was blocked with mould and had become defunct. In our UK practice, we take it for granted that equipment is serviced between uses, but the importance of this had not been emphasised. We managed to get two stations working with hand irrigation. Through the week, we got all nine residents in the country through their first temporal bones. The majority had never handled a drill, so the course content was adjusted accordingly:

- Preparing the patient, the importance of the WHO checklist, how to adjust the microscope, seating position and how to maintain a good surgical field.
- Cortical mastoidectomy: the management of acute mastoiditis, from incision and drainage, grommet insertion (another procedure few had done) through to a basic cortical mastoidectomy.
- Conversion of this to a modified radical mastoidectomy to manage

Medical students undertaking research with otoscope camera and ear trainer.

Temporal bone lab, University Teaching Hospital, Lusaka.

cholesteatoma in the safest, most practical way.

The residents were visibly delighted to be drilling and enthusiastic to learn, each showing incredible progression of drilling skills and anatomy identification. It was a wonderful start to their development to one day being able to manage such conditions.

Basic ENT course

The basic ENT course ran concurrently, the content already piloted by Lufunda and Sinoya Mbewe in the Copperbelt Province and found to be highly effective in improving healthcare workers' competence in treating ENT disease (findings under review). We introduced a strong practical focus with simulation [Table 1]. Dr Manoj Matthew, Head of Clinical Services at UTH Children's Hospital, gave us use of a lecture room and cleared the schedules for staff to attend – a much larger group than we had expected. We also presented the grand rounds at the weekly paediatric department meeting. After two days, the team moved to Levy Mwanawasa University Teaching Hospital, also in Lusaka (with Dr Dalitso Mwale, Head of ENT), where a different cohort attended. In total, we taught 76 individuals, comprising medical and nursing students, nursing sisters, audiologists, clinical officers and training grade doctors from paediatrics, dentistry, general surgery and ENT. They all showed a keenness to learn a topic that they came across regularly but on which they had little knowledge on how to manage. Anecdotes are not evidence that we pitched this course correctly, but they do serve to highlight. Only a week earlier, a case of Ludwig's angina died on the operating table because an airway could not be secured in time. A junior present could not believe how straightforward a cricothyroidotomy was to perform and recognised that it may have saved this life.

Running alongside the course, our medical students conducted research evaluating the diagnostic adequacy of inexpensive in-ear cameras in low-resource settings. Using devices readily available at low cost online, they demonstrated how such simple devices could potentially help with telemedicine where access to an expert opinion is otherwise so limited (publication in preparation).

Table 1: Basic ENT course programme.

Otology:	Rhinology:	H&N:
Anatomy, examination • Bedside hearing test • Tuning fork tests • Auroscope/headlight	Anatomy, examination • Headlight • Thudichum use • FB removal	Anatomy, examination Common pathology • Quinsy aspiration
External ear • FB removal using validated ear trainer [7,8] • Dry wicking technique	Epistaxis • First aid • Anterior & posterior packing	Stridor • Cricothyroidotomy simulation
Middle ear • Acute mastoid abscess I&D		Neck trauma
Vertigo • Epley manoeuvre		

The next steps

The project in Zambia will be a marathon, not a sprint. This trip helped us to better understand some of the complexities that face those wanting to improve ENT services in Zambia. We made a brief visit to theatre to see the equipment (or rather lack of). There is a real struggle to get operating room time, such that airway issues and H&N malignancy have to be prioritised over otology cases. For all conditions, presentation is very late with advanced disease, making procedures more challenging. There is a lack of coordinated help from abroad. A new operating microscope has been donated to a hospital without an ENT surgeon; audiology services have been established in rural areas whilst the main hospitals still lack them. The few trained ENT surgeons can be left performing mastoidectomy with a hammer and gouge despite all the training necessary to use a microscope that they do not have access to. Teams of surgeons from high-resource countries sweep in each year, with all their own equipment and staff (surgical, scrub, anaesthetic), performing a range of operations without providing training to the locals – a rather out-dated model of humanitarian care.

On our last day, we met with Dr Kennedy Lishimpi, Permanent Secretary, Technical Services, of the Ministry of Health. As can be common in discussion with senior management and clinicians, differences in opinion on how to improve the current ENT situation became obvious. What did stand out was a desire to provide local ENT training rather than always out-sourcing it with training abroad (with the fear that those trained elsewhere do not return to their home country – the 'brain-drain' seen across resource-poor countries). Whilst there is a clear need to increase the number in training, the lack of senior staff to provide supervision risks further diluting the already insufficient training experiences available. It is difficult to see how to resolve the issue without considerable financial input to provide basic outpatient and surgical equipment, let alone

Running the basic ENT course, UTH, Lusaka.

time to train and access to theatre to gain experience; yet, a united desire to improve the service was clear. One must first identify a problem before it can be fixed, and that much has been made transparent in the research of Dr Lukama.

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References

1. Lukama L, Kalinda C, Aldous C. Africa's challenged ENT service: highlighting challenges in *Zambia. BMC Health Services Research* 2019;**19**:443.
2. Lukama L, Kalinda C, Kuhn W, Aldous C. Availability of ENT surgical procedures and medication in low-income nation hospitals: cause for concern in Zambia. *BioMed research international, open access* 2020;1980123.
3. Lukama L, Aldous C, Michelo C, Kalinda C. Ear, Nose and Throat (ENT) disease diagnostic error in low-resource health care: observations from a hospital-based cross-sectional study. *Plos One open access* 2023;**18(2)**:e0281686.
4. Ministry of Health. Zambia Standard Treatment Guidelines, 2020. https://www.moh.gov.zm
5. ENT UK. Global ENT guidelines. https://www.entuk.org/about/groups/global_health/resources/global_ent_guidelines.aspx
6. Global OHNS. Global ENT guidelines. https://www.globalohns.org/ent-uk-guidelines
7. Clark MPA, Westerberg BD, Mitchell JE. Development and validation of a low-cost microsurgery Ear Trainer for low-resource settings. *JLO* 2016;**130(10)**:954–61.
8. Luu K, Straatman L, Nakku D, et al. Evaluation of a low-fidelity ear surgery simulator in a low-resource setting. *JLO* 2017;**131(11)**:1010–16.

[All links last accessed November 2024].

"In evaluating healthcare worker knowledge, attitudes, and practices in ENT healthcare in Zambia, there appears to be an advantage in replacing traditional CPD courses with shorter, high-frequency training sessions. This can conserve resources without compromising training quality and aligns with emerging evidence. Partnering with the ENT UK Global Health Team allowed us to achieve this, with courses that received highly positive feedback from both participants and hospital leadership. Post-training evaluations indicated substantial improvement in the quality of patient referrals for specialist care, and our ENT specialists in public service reported that residents' ear microsurgery skills improved markedly following the training. The quality and relevance of this visit has led to requests for this to become a regular undertaking, to incorporate such ENT courses into Zambia's national healthcare improvement strategy, along with establishing a local postgraduate training programme. Collaboration with ENT UK and other professional societies will be essential in sustaining these initiatives and expanding the national capacity for competent ENT care."

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