



**Zambia Anaesthesia  
Development Program**

# Impact Report 2018





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## About Us

The Zambia Anaesthesia Development Program (ZADP) is an entirely volunteer-led medical organisation which has worked in collaboration with local anaesthetists in Zambia since 2012.

Our aim is to support the sustainable development of anaesthesia and critical care through training, improvement in safety, quality of care and research.

Volunteering with ZADP also provides a unique training experience for healthcare providers from the UK and other countries, that they can then take back to enrich their own healthcare system.

**To date 55 ZADP international volunteers, who are all anaesthetists of Registrar, Senior Registrar or Consultant level, have provided over 207 months of faculty time in Zambia**

Please consider supporting the work of the Zambia Anaesthesia Development Program and the Global Anaesthesia Development Project through our charity donation page at:



<https://www.justgiving.com/campaigns/charity/globalanaesthesiadevelopmentproject/zadp>



## Foreword

2018 has been an exciting year for ZADP, and the perfect time for publication of our first Impact Report, developed to showcase the achievements of the organisation over the last year.

This year has seen the largest intake of volunteers to date, including the launch of a new programme for visiting consultants to support the development of anaesthetic subspecialties in Zambia and a partnership with UK Defence Medical Services to collaborate with a new group of medical professionals.

ZADP has been instrumental in the expansion of Physician Anaesthesia training outside the capital of Zambia for the first time, in line with the national aim from the Zambian Ministry of Health. This is the most significant expansion of ZADP's work to date, and represents the success of all that has been achieved over the last seven years. This expansion also highlights the importance of continuing ZADP engagement and activity, as the 2.5 million people of the Copperbelt Province of Zambia will have increased access to specialist anaesthetic care.

2018 also saw the first opportunity created by ZADP for UK healthcare professionals to contribute to the development of safe surgery in Zambia without needing to volunteer overseas, due to the first leadership fellowship set up in partnership with Western Sussex Hospitals NHS Foundation Trust. Five doctors undertook four weeks of leadership training in the NHS, learning about developing systems of care, staff management, financing, and many other aspects of leadership.

Finding the necessary funding and resources to continue the work of ZADP is constantly at the forefront of our minds. The establishment of the Global Anaesthesia Development Project (GADP) this year as a registered charity, providing an umbrella organisation to support the work of ZADP, means that our opportunities to seek out and attract new funding have expanded. This represents a vital step in ensuring we can support the ongoing efforts in Zambia, and the potential to apply our expertise and learning in future to similar programmes in other low- and middle-income countries.

The creation of this report has provided a fantastic opportunity for us to reflect on the breadth of projects that ZADP is engaged with, and the wide variety of activity that is necessary to underpin the development of high quality anaesthesia and critical care in Zambia.

We would like to take this opportunity to thank all our volunteers and partners, and hope that you enjoy reading about our achievements.

### **ZADP committee, 2018**

Dr. Sonia Akrimi

Dr. Emma Lillie

Dr. Emma Coley

Dr. Lowri Bowen

Dr. Christine Msadabwe

# The Challenge

**5 billion people worldwide do not have access to safe or timely surgical and anaesthetic care**

**30% of the global health burden of disease can be attributed to surgically treatable conditions.**

The Lancet Commission on Global Surgery described the crisis for surgery and anaesthesia in low and middle-income countries (LMIC), reporting that a significant number of people worldwide lack access to safe and affordable surgical care when needed. A key component of developing safe surgery is the development of safe anaesthesia.

Zambia is one country where this problem is evident. With a growing population, currently estimated to be 17 million, Zambia lacks sufficient numbers of well-trained anaesthesia providers, equipment and a sufficient supply of essential anaesthetic drugs. In addition, in Zambia there is also little capacity for critical care and pain medicine- key components of safe anaesthetic and surgical care.

In 2016, the World Federation of Societies of Anaesthesiologists reported that Zambia had only 0.49 qualified physician anaesthetists per 100,000 population, less than neighbouring countries which share similar health needs for example Zimbabwe or Botswana. This is significantly short of the Lancet Commission target of 20

physician anaesthetists per 100,000 population by 2030, and similarly short of the targets set by the Zambian Ministry of Health (National Surgical, Obstetric and Anaesthetic Strategic Plan, 2017-2020).

Traditionally, anaesthesia services in Zambia were mostly provided by non-physician anaesthetists (NPAs). Although NPAs have been the backbone of anaesthesia service delivery in Zambia for many years, the role was intended to be supported by Physician Anaesthetists, who, unlike NPAs, have completed training to be a doctor and then anaesthesia training, so are specifically trained to deal with the most unwell or complex patients, including training in critical care. Thus, the Lancet Commission for Global Surgery has specifically set a target for the number of trained Specialist Physician Anaesthetists.

Maternal and child health, areas that good anaesthesia services can positively influence by providing safe anaesthesia for caesarean section, good neonatal resuscitation services and safe paediatric anaesthesia, illustrate the scale of the problem.

	Zambia	UK
Physician Anaesthetists/ 100,000 population*	0.49	17.85
Neonatal mortality/1,000 live births**	22	2.6
Children <5yrs mortality/1,000**	60	3.5
Maternal mortality**	224	9

\*Data taken from World Federation of Societies of Anaesthesiologists, 2016, <https://www.wfsahq.org/workforce-map>

\*\*Data taken from UNICEF, 2015, accessible at <https://data.unicef.org>

# ZADP Highlights

## 2018 in numbers

**20** volunteers directly supporting anaesthesia development through long-term placements

**12** months of dedicated consultant time

**11** Zambian physician anaesthetists have received one-to-one subspecialty training from a consultant volunteer through short-term placements

**87** training days were provided by visiting consultants

**356** Zambian healthcare professionals trained on neonatal resuscitation

**78** Zambian healthcare professionals completed the Inspire through Clinical Teaching training course

# 2018 in milestones

## January

First intake of STP doctors start training at UTH with support from ZADP volunteers

## February

32 healthcare providers at UTH are trained through the Inspire through Clinical Teaching course

## March

Zambian Anaesthetists and ZADP volunteers presented recent achievements at an international GADP meeting at the Royal College of Anaesthetists, UK

## April

Advanced subspecialty training and career mentoring programme starts. Two Zambian anaesthetists received one-to-one Consultant-led training in Regional and Paediatric anaesthesia



## May

14 maternal resuscitation workshops held at UTH, led by ZADP, training 127 healthcare providers



## June

ZADP conducted the first training visit to the Copperbelt Province of Zambia, accrediting Ndola Central and Arthur Davison Hospitals for anaesthesia training

# 2018 in milestones

## July

Final year MMed examinations took place, involving local examiners with the support of the ZADP in-country consultant. All six candidates were successful in the examinations!

## August

Anaesthesia trainees from the UK Defence Medical Services join as ZADP volunteers

## September

The first MMed examination entirely run by Zambian examiners conducted

## October

ZADP supported a training visit to Levy Mwanawasa Hospital, another newly accredited site for anaesthesia training

## November

65% of Zambian Physician Anaesthesia training faculty were trained as clinical and educational supervisors, through courses held in Lusaka and the Copperbelt Province



## December

Zambian Leadership Fellows independently train 21 healthcare providers at UTH in aspects of clinical leadership



# Physician Anaesthetist Training in 2018

**6 Anaesthesia trainees successfully completed final year training, bringing total qualified physician anaesthetists to 23, with 11 still in training**

**First intake of trainees to the new *Zambian Anaesthesia and Critical Care Specialty Training Programme (STP)***

**4 further hospitals accredited as physician anaesthesia training sites increasing the availability of physician-led anaesthetic care outside of University Teaching Hospital, and a more diverse training experience for anaesthesia doctors**

ZADP volunteers have supported anaesthesia training through training in both operating theatres and Intensive Care as well as through simulation, supporting the academic lecture programme, teaching on courses, supporting preparation for examinations and mentoring local trainees. They have also been central to developing additional training sites through assessing training capacity and supporting pilot placements.

The ZADP in-country consultant has supported local Consultants into becoming an independent training faculty with examinations led by local *Zambian Anaesthetists* and newly trained clinical and educational supervisors.

ZADP volunteers also provided support for a national recruitment drive to highlight anaesthetics as a speciality for newly qualified doctors to consider.



# Physician Anaesthetist Training in 2018

## Consultant Subspecialty Training and Career Mentoring Scheme

A particular highlight of ZADP support for training in 2018 was the launch of the advanced subspecialty training and career mentoring scheme.

The Zambian physician anaesthetists we worked with informed us that they would like more Consultant-led teaching in clinical environments. Further to this, in 2017 we conducted a survey of anaesthesia trainees at UTH and found that due to the small training faculty, the opportunity for direct supervision was infrequent. Also, now we have a number of trainees who have completed their anaesthesia training in Zambia, there is a need for them to each take on and develop different anaesthetic subspecialties. However, the opportunity of Fellowships and other advanced subspecialty training to support them in doing this is rare.

Through this scheme, Zambian Physician Anaesthetists are matched with a visiting Consultant Volunteer based on their anaesthesia subspecialty of interest. They make contact and set objectives before the visit. Then for a two-week placement, the mentor-mentee pair work together in the clinical environment, managing cases, discussing complex patients and learning and practicing new skills. After the two weeks, both parties are encouraged to stay in touch to continue the mentoring online, for example through sharing interesting research papers, and discussing conference and other professional development opportunities.



**11 Zambian Physician Anaesthetists or Physician Anaesthetists-in-training** have received one-to-one training from a Consultant volunteer

Consultant volunteers have provided subspecialty training in **Paediatrics, Regional, Critical Care, Anaesthesia for emergency and high-risk cases, Advanced Airway** and **Orthopaedics and Trauma**

**87 training days** have been provided by short-term visiting Consultant volunteers as part of this scheme

**188 patients** have been directly cared for by a short-term visiting Consultant volunteer and a Zambian Physician Anaesthetist working together

Consultant volunteers have also supported our neonatal, obstetric and general resuscitation courses and facilitated the trainee teaching programme.

## Feedback from the mentees

*"Also, Raj wasn't just mentoring me. He was mentoring everyone. We had a routine. We got a session every day of teaching on the specific cases on ICU. He would lead me in teaching the nurses. I have developed an interest in working in ICU because of this. The day went so fast. I was inspired working with him- every patient was treated like they were very special. He would dedicate all of his time on that patient until we got it right. He was a good guy."*

*"The opportunity with Consultants gives hands-on teaching. They are understanding of our limitations. They approach a case thinking about how we can do this safely. They have also been very easy to work with. It is also useful to have them moderate lectures. Direct training helps by reminding us that we are here for training, not just service provision."*

*"It was a wonderful experience to have Dr Pavan mentor me in regional anaesthetic techniques. I really cherished his mentorship. He was quite helpful with every patient which made it easy to learn from him. Looking forward to more of such training."*



# Medical Education

One of the key aims of ZADP is to use training in medical education as a tool to develop anaesthetic and critical care for patients, believing that for care to develop, healthcare providers must be trained in being quality teachers also.

ZADP volunteers have worked with Zambian Anaesthetists to facilitate a range of opportunities to develop medical education and training during 2018.





***INSPIRE* through Clinical Teaching** is a four-day multi-disciplinary course specifically developed for training in low-resource settings, which aims to build healthcare capacity through

equipping local healthcare providers with skills in clinical teaching. This course was developed and piloted for the first time in Zambia in 2016. Since then it has been accredited by the World Federation of Societies of Anesthesiologists and the Society of Anaesthetists of Zambia.

*INSPIRE* through Clinical Teaching has been run five times in Zambia since the first course in November 2016, and now has an established multidisciplinary local faculty.

## **In 2018:**

**78** healthcare providers in Zambia were formally trained in clinical teaching skills through the *INSPIRE* through Clinical Teaching

**10** local faculty were trained and supported in delivering components of the course independently

# Quality Improvement

Below is a snapshot of Quality Improvement projects and Quality Improvement training that ZADP volunteers have supported over the last 12 months. Problems tackled were identified by Zambian anaesthetists as being priorities for change, and these projects have been the result of collaborations between ZADP, the anaesthesia department at UTH and the wider hospital. Practically this work must understand how a whole system is working and provide solutions to different parts of the problem; for example, through staff training, improved availability of drugs or equipment and implementation of up-to-date guidelines. Ongoing review of the system is then essential to ensure changes made are impacting clinical care and outcomes adequately.

ZADP also trained 30 healthcare providers in 2018 through a new training course developed to teach aspects of quality improvement and patient safety.



## Problem: High rate of maternal morbidity and mortality

**Aim 1:** Healthcare professionals involved in the care of the pregnant patient in hospital to be trained in maternal basic life support and resuscitation

**Aim 2:** Improved multidisciplinary teamwork in the management of Obstetric emergencies

**Aim 3:** Work towards an established system in which deteriorating obstetric patients are detected early and an appropriate medical response is triggered.

### Achievements:

- 127 staff across multiple specialties were trained in obstetric resuscitation through a workshop in Maternal Resuscitation and simulation training in Basic Life Support Skills including basic airway manoeuvres, chest compressions, understanding of drugs and defibrillation
- In situ multidisciplinary simulation training of an obstetric emergency to promote teamworking
- Maternal obstetric early warning score (MEOWS) system developed and adapted for use in UTH
- 84 staff across midwifery and obstetrics have been taught how to use the MEOWS system to record observations and recognise an acutely unwell obstetric patient

### Future directions:

Increase training for doctors on recognition of abnormal MEOWS scores and initial maternal resuscitation measures



## **Problem: Poor neonatal resuscitation with high levels of neonatal mortality and birth asphyxia**

**Aim:** Adopt a multidisciplinary approach to reduce neonatal mortality/ birth asphyxia

### **Achievements:**

#### **Training:**

Advanced Neonatal resuscitation training (2 day course): 74 staff trained

Neonatal resuscitation training (2 hour course): 356 staff and students attended

Train the trainers course: 12 midwives trained

- Neonatal resuscitation courses faculty manual and pre-course reading produced
- Creation of neonatal resuscitation working group to identify and change barriers to effective practice
- Telephone lines installed and a contact sheet available in Neonatal Intensive Care Unit, obstetric theatres and labour wards to allow faster access to specialist support during a neonatal resuscitation
- Daily checklist used to audit equipment shortages
- Equipment audit and implementation of daily equipment checklists for better availability of resuscitation equipment
- Fully stocked neonatal resuscitation packs developed for use in obstetric theatres

#### **Future work:**

Focus on the maintenance of neonatal equipment and continued use of the daily equipment checklist

Implementation of neonatal resuscitation packs at other anaesthesia training sites



**Problem: High number of airway critical incidents in Main Intensive Care (MICU)**

**Aim:** To improve management of difficult airways on MICU

**Achievements:**

- Difficult airway trolley developed and placed in main ICU
- On-going audit of equipment available on difficult airway trolley
- Training given to all anaesthesia trainees in using the difficult airway trolley and managing airway emergencies
- Training for MICU nurses on the difficult airway guidelines and the difficult airway trolley
- A variation in this training has been started for new medical doctors who will be covering MICU
- Implementation of portable ETCO<sub>2</sub> monitor for routine use during intubation in MICU

**Ongoing work/Focus:**

On going audit and upkeep of the difficult airway trolley

On going multidisciplinary airway simulation training on the MICU

# 4. Partnership working

## Clinical Leadership

This year saw the first leadership fellowship set up by ZADP in collaboration with Western Sussex Hospitals NHS Foundation Trust, supported by Love Your Hospital (a dedicated charity supporting Western Sussex Hospitals NHS Foundation Trust), Tropical Health and Education Trust and the British Association of Urological Surgeons.

Leadership training has been a specific focus of ZADP to address a problem common across many low and middle-income countries; newly qualified consultants are immediately required manage whole departments, manage teams and healthcare systems, advocate at national level for increased funding or improved access to drugs and equipment and to teach large numbers of healthcare staff. All of this is required with little or no formal leadership training.

In this fellowship, five doctors from anaesthesia and urology from Zambia and Malawi received four weeks of training within the NHS on aspects of leadership in healthcare. They received training from Chief Executives, Hospital Directors, Senior Managers and experienced multidisciplinary clinicians. They were able to participate in regional and national leadership training events, as well as national events relating to their own specialty including an *Anaesthesia for Major Surgery* conference and *Urology boot camp*, a national training event established to support new urology trainees.

In addition to this packed training programme, they also had a dedicated project mentor for the duration of the fellowship to support them in developing a quality improvement project that they personally saw as important for their local healthcare setting and would like to lead upon returning home.



Our leadership fellows went on to share what they had learnt with their colleagues in Zambia. Dr. Naomi Shamambo and Dr. Christine Msadabwe trained 21 Zambian healthcare providers and 6 UK volunteers at University Teaching Hospital in December in aspects of clinical leadership.

### **What did the participants say....**

*"It gave me a different perspective in dealing with challenging situations and ways others such as the Western Sussex have gone about to improve patient care. It's been a great eye opener and has given me skills in my role as a leader. It has also helped me form networks."*

*"I been taught the qualities of communication, handling conflicts, financial planning. I have been given the leadership styles befitting my personal capacity as a driver. I am able to evaluate what are my strengths and weaknesses and how I can improve them or overcome them respectively"*

*"Personally and professionally, I am better than four weeks ago. I now recognize the need for a shared vision among team members. Most importantly I know how to relay that shared vision to the team. There will be a lot of learning along the way, but so long as we stay on track and focus on "our true north", we will prevail. Finally, success will not come in a day or month, it will take time. What is important now is that we have begun that journey towards our ideals and visions. We will make progressive steps in that desired direction, regardless of how small they are, until we get there."*



## ZADP & UK Defence Medical Services

This year has also seen the regular involvement of the UK Defence Medical Services in ZADP placements. Since August 2018, ZADP has already supported three UK anaesthesia trainees from the military in placements in Zambia alongside other ZADP volunteers.

For military trainees a placement within ZADP provides a unique opportunity for ongoing development of skills relevant to a medical role within the Armed Forces. Technically the work is challenging, being exposed to late disease presentation, high trauma work-load related to the high incidence of road traffic accidents, and multiple co-morbidities. Additionally, medical staff in Zambia work with limited resources including equipment and drug supplies. This requires the use of techniques and equipment similar to those seen in a military medical environment.

Starting in August 2018 military trainees have begun to be more regularly involved in this programme. There have been two senior RAF trainees and one Army trainee attached to the program for three-month periods. We hope to continue to provide two senior trainees funded by the military for each three-month period. This relies on ongoing support from the military and ZADP faculty. The majority of military trainees will be carrying out their placement as out of program training towards the optional Royal College of Anaesthetists training module in 'Anaesthesia in developing countries', similar to the opportunity available for other ZADP volunteers.



## 5. Strategic Planning & Management

With the establishment of a core cohort of physician anaesthetists now in place in Zambia, 2018 has seen an expanding focus on how ZADP can support the wider strategy and management associated with running anaesthetics as a core speciality in the Zambian Healthcare system.

During this year, ZADP has supported the establishment of a monthly departmental meeting, incorporating audit presentations, morbidity and mortality presentations and journal clubs.

The ZADP team also facilitated a strategic workshop in July 2018, and multiple other collaborative meetings, enabling Zambian physician anaesthetists and ZADP colleagues to discuss how the anaesthetic specialty can develop, the priorities for action, and what support ZADP can provide to help achieve the objectives identified.

In December, we saw two major breakthroughs for anaesthesia training in Zambia. The first of these was an agreement from the Zambian Ministry of Health that anaesthesia is an area of need and that they should encourage each province in Zambia to identify and support doctors interested in training in the specialty. The second is the advertisement by the University of Zambia (UNZA) for a lecturer and faculty member in Anaesthesia. This is a long-awaited and essential development which will help ensure the sustainability of the programme now that a critical mass of Zambian anaesthetists exists.



## What's Next

2019 is anticipated to be an exciting year for ZADP. There are now sufficient Zambian faculty to extend training with the support of ZADP to Ndola Central Hospital and Arthur Davison Hospital in the Copperbelt Province, as well as Levy Mwanawasa University Teaching Hospital in Lusaka. This is a very exciting development for the programme as more physician anaesthetists will be positioned more rurally, closer to the communities that lack physician-anaesthetist care the most.

This is alongside the continued transfer of responsibility and day-to-day running of the training programme to the growing Zambian faculty, and therefore represents a big step on the path to self-sustainability.

Additionally, there are plans to expand on the achievements this year within the field of medical education, quality improvement and patient safety, with increased projects partnering Zambian Anaesthetists, and training opportunities including an expansion of fellowship opportunities and courses.

This strongly aligns with the planned directions of ZADP for 2019, specifically our work focusing on advanced subspecialty training, leadership and advocacy including developing opportunities for training through the leadership fellowship, patient safety, medical education and continuing to use quality improvement activity to develop systems for safe, high quality patient care in Zambia.

For ZADP to do its best work, it needs to be an organisation that meets with and listens to stakeholders regularly including Zambian Physician Anaesthetists, other healthcare providers, and the Zambian Ministry of Health, and which is adaptable and able to adjust its activities to emerging needs, as it has shown this year in supporting the expansion of training outside of Lusaka.

The ever-closer ties with Zambian Physician Anaesthetists, building of stronger links with the Zambian Ministry of Health, and the expansion of training outside of Lusaka, can only leave ZADP in a better position to be able to respond to these needs in future.



## **Zambia Anaesthesia Development Program**

The Zambia Anaesthesia Development Program would like to thank the following organisations for their support in the organisation's work during 2018

Society of Anaesthetists of Zambia

Department of Anaesthesia, University Teaching Hospital

Tropical Health and Education Trust

UK aid

World Federation of Societies of Anaesthesiologists

International Relations Committee, including the Association of Anaesthetists of Great Britain and Ireland

Royal College of Anaesthetists, Global Partnerships Committee

UK Defence Medical Services

Western Sussex Hospitals NHS Foundation Trust

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