Making it zero in the real world

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If you need surgery in Australia or New Zealand or indeed in any other high-income country, then the oxygen saturation in your blood will be measured with a pulse oximeter. A pulse oximeter is a small device that clips onto your finger and measures the oxygen level in blood with an audible alarm if the levels fall too low.

During your journey through the operating suite you will have your pulse and oxygen levels measured multiple times by multiple, well maintained pulse oximetry machines. You will be fortunate enough to have a trained anaesthesia provider look after you while you have your surgery and a qualified nurse keep you safe while you recover from the anaesthetic. The use of a pulse oximeter has become a non-negotiable minimum safety standard in anaesthetic practice, much like the seatbelt has become similarly mandatory in motor vehicles.

These trained people, using this simple pulse oximeter play a major role in you staying alive during and after an operation. In fact, your chance of dying as a direct result of anaesthesia in a high-income country is somewhere in the order of one in two hundred thousand, which is comparable to the risk of you being killed by an asteroid striking the earth.

In contrast, there are 77, 000 operating theatres worldwide that do not have access to a single pulse oximeter. That means that there are roughly 35 million people who have an operation without having their oxygen saturation levels measured. Ever.

For a person, just like you, having a surgical procedure in a low income country in Sub-Saharan Africa or in the South Pacific, their risk of dying as a result of anaesthesia is as high as one in *one-hundred and thirty-three.* That is roughly fifteen hundred times higher than your risk. Like most things in medicine, the reasons for this are complex and pulse oximeters play only one part in that complex picture. They are, however, one of the most useful, non-invasive and affordable pieces of medical equipment and they have revolutionised the safe practice of anaesthesia.

Dr. Rob McDougall is an anaesthetist at the Royal Children's Hospital in Melbourne and the Chair of the Overseas Development and Education Committee of the Australian Society of Anaesthetists. I recently had the opportunity to speak with him about the Lifebox initiative.

Lifebox is a registered charity based in the UK that was founded with the aim of providing low cost, fully featured oximeters to the less affluent world. It is a joint project between the World Federation of Societies of Anaesthesiologists, the Harvard School of Public Health and the Association of Anaesthetists of Great Britain and Ireland.

Integral to the Lifebox program of providing pulse oximeters is the provision of training and continuing education for health workers responsible for their use.

Rob has been involved with Lifebox since its inception. He is part of the team that oversees the development of this education package. Lifebox certainly has their work cut out for them but they are making significant inroads to their goal of bringing to zero the number of operating theatres worldwide without access to pulse oximetry. Their aim is to deliver 5000 of the 77 000 total in the first two years.
The process of organizing how, and to whom, these Lifebox oximeters are delivered is necessarily stringent.

“Usually, Lifebox oximeters are distributed following a formal request from either a country’s anaesthetic society or ministry of health. In special cases deliveries have been made to individual anaesthesia providers.” Says Dr. McDougall.

Each request must be accompanied by a written undertaking that delivery will be accepted and customs clearances arranged. If applicable, there is also an agreement reached with the hospital’s biomedical department.

The Lifebox oximeters themselves are made in Taiwan by Acare Technology Co. Ltd. This company was selected to produce these devices following a tender process overseen by the World Health Organisation. The Lifebox oximeter has been specifically designed and manufactured to be robust and user friendly but also with all the essential safety features necessary to save lives, such as an audible alarm.

These are exciting times to be involved in reducing the global burden of surgical disease. Lifebox is starting to make a significant impact for patient safety in low and middle-income countries as part of a renewed emphasis on access to essential surgery. Dr McDougall has been involved in anaesthesia in the “real world” since 1999 and has been heavily involved in education programs throughout the Pacific.

“I have been fortunate enough to meet and work with some very talented doctors from the Pacific, Indonesia, Vietnam, Mongolia and many other places. I am continually amazed at their capabilities and especially how they make do with very little! They are inspiring.” Says Rob.

Where there is hope, there are also significant challenges. Rob identifies two main challenges in improving surgical access in low and middle-income countries. The first is the so-called ‘brain-drain’ of skilled doctors and nurses from their home countries to wealthier countries like Australia.

“I have no problems with doctors from less affluent countries seeking a better life for themselves and their families, but question the behaviour of governments of wealthier nations who encourage these doctors to emigrate and do not compensate the home country for the loss of a highly trained health professional.”

The second challenge he identifies is the generally low level of awareness that

access to surgical care is actually a problem.

“Safe surgery is often perceived as an expensive luxury,” he says, “especially when compared with health programs such as immunisation.”

While the population health benefits of immunisation are clear, so too are the benefits of access to essential and safe surgery. Simple, relatively low cost interventions such as the WHO Surgical Safety Checklist have the capacity to save many lives and significantly reduce the burden of surgical mortality on many low and middle-income countries. In fact, pulse oximeters, like the ones being distributed by Lifebox have been associated with a decrease in the number of surgical deaths by up to thirty percent!

For anyone interested in working in the real world, Rob has some practical and wise advice –

“The important thing is to find the right organisation and carefully consider what your role will be. Are you qualified to perform the volunteer role? Are the aims of the organisation ethical and is the organisation reputable and well run?”

Then, having answered those questions,

“Go for it! Be prepared to be challenged, listen and be flexible.” He says.

For organisations like Lifebox to succeed, they rely on donations from similarly minded people who want to see safer surgery in the developing world. So, for more information, or to make a donation, go to www.lifebox.org, watch the video *Make it Zero,* and together, we can actually, make it zero.

Dr. Simon Hendel

Simon is an anaesthetics registrar based in Melbourne. His main interest is in improving the safety of anaesthesia in low-income countries, and the interaction of global public health and clinical perioperative services. He has worked in East Timor, Papua New Guinea and Afghanistan.

Dr. Rob McDougall

Rob is a clinical associate professor at the University of Melbourne and the Deputy Director of the Department of Anaesthesia and Pain Management at the Royal Children’s Hospital in Melbourne. As well as being a senior paediatric anaesthetist, his main interests are in teaching and improving the safety of anaesthesia and access to essential surgery in developing countries. He has taught Primary Trauma Care and anaesthesia throughout the Asia-Pacific region, including but not limited to, Indonesia, Vietnam, Mongolia and Fiji.