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ANZCA BULLETIN



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Pulse of life

It's one of the most basic tools in an anaesthetist's tool box – a simple oxygen monitor, or pulse oximeter, that checks the level of oxygen in a patient's bloodstream and sounds an alarm as soon as it detects the slightest unsafe change.

Attached to the finger or earlobe, the pulse oximeter can detect changes in oxygen levels as small as 1 per cent and give early warning of clinically relevant decreases, which is critical when brain damage or heart failure can occur after as few as three minutes of oxygen starvation.

Prior to the introduction of these devices, the only way anaesthetists could monitor if a patient was not getting enough oxygen was when their skin began turning blue, which was usually too late.

Since they were introduced in the mid-1980s, pulse oximeters have become the universal standard of care in operating rooms in developed countries and literally have saved thousands of lives.

Yet, there are an estimated 77,000 operating rooms in developing countries around the world that don't have these simple monitoring devices. This means about 35 million patients each year being placed at unnecessary risk.

University of Auckland Professor of Anaesthesiology and quality and safety expert, Professor Alan Merry, says this is indicative of a much bigger problem, with hospitals in these countries also typically lacking adequate anaesthetic resources and training to improve the safety of surgery.

"There is data that show the mortality rate of anaesthesia in those areas is sometimes 100 times higher than in Australia and New Zealand, for example," he says.

Which is where a new project called Lifebox comes in. Stemming from the Global Oximetry Project that began in 2004 at the World Congress of Anaesthesiologists in Paris, Lifebox is a new charity that aims to not only provide low-cost pulse oximeters in developing countries, but also to raise the safety standards of surgery there by providing associated resources and training.



From a donation of \$US250, Lifebox is able to deliver a package to a hospital that includes a robust pulse oximeter and educational material, which includes a "how to" CD ROM on using the oximeter, presentations and scenarios for use in training, and a video by Boston University anaesthesiologist, Dr Rafael Ortega, which won a prize last year at the American Society for Anaesthesiology conference. The material is provided in six languages – English, French, Spanish, Chinese, Russian and Arabic.

"This is not a project to just dump equipment somewhere because that's been done in the past with very little

success," Professor Merry says. "This is about changing practice, sustainably."

The project includes promotion of the World Health Organization's Surgical Safety Checklist, which has been shown to save lives and mandates the use of a pulse oximeter – the only item on the checklist costing money.

The Lifebox project has been able to source a low-cost, high-quality pulse oximeter manufactured by Acare in Taiwan, which has replaceable probes costing US\$25 each, making it cheap to maintain.

"It's one I would be completely happy to use," Professor Merry says.

Professor Merry, who is a councillor on ANZCA's Quality and Safety Committee, has been involved in the project from the beginning, as the chair of the Quality and Safety of Practice Committee of the World Federation of Societies of Anaesthesiologists (WFSA). Other founding directors of Lifebox include legendary American surgeon and writer, Dr Atul Gawande, WFSA President, Dr Angela Enright, Association of Anaesthetists of Great Britain and Ireland (AAGBI) President, Dr Iain Wilson, and founder of the WHO Patient Safety Department, Mrs Pauline Philip.

A quality improvement project has already been carried out at four pilot sites in Uganda, Vietnam, India and the Philippines using 84 donated pulse oximeters, and further training took place in Uganda earlier this year, with the AAGBI donating 80 pulse oximeters to the Uganda Society of Anaesthesia.

By the end of this year, about 2500 oximeters will have been delivered to low and lower-middle income countries, with an aim of 10,000 provided by the end of next year. Lifebox estimates that by closing the oximetry gap and increasing the use of the Surgical Safety Checklist, it can cut death rates in developing countries by half.

Professor Merry says Lifebox is encouraging anaesthesia organisations to partner with countries or regions to "oximeterise" these areas and improve their surgical safety standards.

"There is an opportunity here," he says. "There's real momentum already underway. This is a real chance to get involved, make a difference and save lives through safer surgery."

Chair of ANZCA's Overseas Aid Committee, Dr Wayne Morriss, says the Committee will look at options to partner countries in the Asia-Pacific region.

"We take pulse oximetry for granted in Australia and New Zealand, but a working oximeter is not a given in many neighbouring countries," he says. "The Lifebox package provides a great opportunity for us to work with anaesthetists in these countries to dramatically improve anaesthetic safety."

For more information or to make a donation, go to www.lifebox.org.

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Left from top: A baby at the Mbarara Regional Referral Hospital in Uganda wearing a pulse oximeter; A pulse oximeter being used in training at the Mbarara Regional Referral Hospital in Uganda.



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