An innovative method to increase access to surgery worldwide

One of the major health challenges facing almost two thirds of the world's population is a lack of access to safe life-saving surgery. Picture a scenario where a loved one is involved in a terrifying accident and is in need of emergent surgery to save their life. Once they arrive to the nearest hospital, they find that there are no operating rooms available, or even more frustrating, that they are available but have no personnel to staff them. While almost unheard of in High Income countries, this scenario is all too common in many developing countries around the world.

One common explanation for the lack of surgeries is lack of qualified surgeons. As with any multi-factorial problem, that is not always the case. What is equally contributing to the deficit in surgeries is a shortage of trained anesthesiologists and anesthetists. Anesthesiologists are medical doctors that have completed post-graduate training in anesthesiology, while anesthetists are usually nurses with extra training in administrating anesthesia. Both are vital in making sure patients are unconscious and pain free long enough for surgeons to save their lives. Surgeons and anesthesiologists/anesthetists are in a symbiotic relationship where neither can function adequately without the other. Any attempt to decrease the burden of unperformed surgeries will undoubtedly need to address the deficit in anesthesia.

Traditional thinking for tackling this problem involves increasing the number of anesthetists and anesthesiologists in the field. Unfortunately, such a tactic is too time-consuming to obtain quickly. The average anesthetist and anesthesiologist require between 8 months and 12 years to train, which is too long to solve the problem at an appreciable rate.

One original solution developed by Dr. Thomas Burke and his team at the Massachusetts General Hospital Division of Global Health and Human Rights, involves an anesthetic training package using Ketamine, called Every Second Matters for Mothers and Babies – Ketamine (ESM – Ketamine™). Ketamine is a sedative medication, commonly used in the Emergency room,

particularly for children and painful minor procedures. Research has shown that if given in a higher dose, ketamine can be used as an anesthetic. The research also shows that it is safe, easily administrated with minimal training, and most importantly, preserves breathing function, a characteristic not found in many other traditional anesthetic choices. Combined with the fact that it is inexpensive (around 2$ per patient) and readily available, it becomes an ideal choice in low resource areas without sufficient trained personal, equipment or reliable infrastructure.

Dr. Burke and his team hypothesized that a 5-day ketamine training package can be employed to safely support surgery in the low resource setting, provided additional training on basic airway management was given. To test their hypothesis, the team trained 15 healthcare providers, ranging from midwives to physicians, at Sagam Community hospital in the Nyanza province of Western Kenya. By employing ketamine, the newly trained providers were able to safely support 193 surgeries (and still counting) including minor procedures such as wound debriding, and up to complicated procedures such as cesarean sections and removal of inflamed appendices. The surgeries were successful despite not having any advanced anesthesia equipment or an anesthesiologist at hand. Had the providers not been trained on the use of ketamine, these surgeries would have never taken place, resulting in increased morbidity and mortality for the patients.

Implementing novel ways to solve complicated problems is central to development efforts worldwide. Innovations such as the ESM - Ketamine training package may inform a new and effective way to tackle the deficit of surgery worldwide, saving lives and drastically improving others.

Publication

A Safe-Anesthesia Innovation for Emergency and Life-Improving Surgeries When no Anesthetist is Available: A Descriptive Review of 193 Consecutive Surgeries.
Burke T, Manglani Y, Altawil Z, Dickson A, Clark R, Okelo S, Ahn R.
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