RevoCap: a revolution in global capnography

M.M. Nourian[1], C. Osborn[2], A. Poursaid[3], S. Ermer[4], M.J. Harris[4]; [1]University of Utah School of Medicine, Salt Lake City, UT, USA, [2]University of Utah Division of Public Health, Salt Lake City, UT, USA, [3]University of Utah David Eccles School of Business, Salt Lake City, UT, USA, [4]University of Utah, Department of Anesthesiology

Program/Project Purpose: Worldwide, over five billion people have minimal access to essential surgical and anesthetic care. One significant hindrance is the lack of reliable anesthesia technology. Currently, there is an unmet yearly need of 143 million surgical procedures (Lancet 2015; 386: 569). Functional operating theaters that include proper anesthesia services are not available in many developing countries. (Bharati et al., 2014) Consequently, anesthesia-associated mortality in low and middle income countries (LMICs) is estimated up to 1000 times the rate reported in high income countries (Gawande et al., 2009). Capnography has been adopted universally in the developed world, with most of these countries mandating its use (Gawande et al. 2009). The RevoCap will improve monitoring, enable safer anesthesia and thereby reduce mortality.

Structure/Method/Design: The RevoCap is a small, cheap, and durable capnograph that does not rely on the electrical grid. RevoCap enables anesthesiologists to monitor carbon dioxide output of patients under anesthesia to assess cardiovascular and pulmonary status. The RevoCap will cost less than $350 and will use standard AA batteries, thereby overcoming the issue of unreliable electricity. Its simple replaceable components make this device affordable, robust and reliable. RevoCap's path to market is through licensing to local manufacturers to reduce supply chains. Monitoring of surgical outcomes will be conducted at regional and general hospitals.

Outcome & Evaluation: The RevoCap technology has been in development for 2 years, and is currently in the prototyping phase.

Going Forward: Our primary challenge and goal is to obtain funding for development. In addition we seek connections with medical facilities and/or health ministries interested in using the product.

Funding: Prototyping funds of $500 awarded through University of Utah Bench to Bedside program. We are currently looking for funding through medical device, engineering and business competitions.

Abstract #: *2.018_TEC*

Seeking to make global health an integral part of the medical school training: an initiative of the Medical Students' Association of Kenya

D.K. Nyariki[1], D. Baraka[2], M.C. Chebet[2]; [1]Moi University, Eldoret, Kenya, [2]Kenyatta University

Program/Project Purpose: Global health is an area of study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide (Koplan et al [10]). Despite this, it is a discipline rarely emphasized in our Medical schools' curriculum in Kenya. It is for this reason that we, through the Medical Students' Association of Kenya (MSAKE), a member of the International Federation of Medical Students' Association (IFMSA), initiated annual joint short course training in Global Health for medical students around the country.

Structure/Method/Design: The first training was a two-day event held on the 14th and 15th of August 2015. It involved 44 medical students representing all the medical schools in the country. The training was open to all who were willing to participate by paying a subsidized amount of registration fee. The programme comprised of 12 intensive sessions on key global health topics, interspersed between tea and lunch breaks. Sessions were facilitated by Don Eliseo-Prison, MD a professor of Global health and Public health, Jiaotong- Liverpool University, China; Dr. Adragbemi, a member of the board of trustees at Liverpool School of Topical Medicine, UK and Kennedy Opondo, an MSc Global Health student at Duke university.

Outcome & Evaluation: The trainees were enlightened on the basics of Global health including perspectives to global health, global health architecture and instruments, disaster and humanitarian emergencies and economic evaluation in global health among others. They were then encouraged to disseminate the knowledge to those who were willing but unable to attend. Certificates were awarded, courtesy of the hosting university.

Going Forward: We have an aim of making the global health training an annual event on the MSAKE calendar, develop a curriculum and with time have over 80% of medical students trained. Limited availability of funds was a major challenge. We are however working towards forming collaborations with various health sector stakeholders to make this a reality.

Funding: The project was partially funded by the facilitators and the remaining amount was covered by the delegates' registration fees.

Abstract #: *2.019_TEC*

3D-printed, $20 video laryngoscope designed for resource-constrained settings

Eve Nyrhinen, Aki Nyrhinen; University of California, San Francisco, CA, USA

Background: Video laryngoscopy has become an important tool for teaching laryngoscopy and managing difficult airways. Access to commercially-available video laryngoscopes is limited in low and middle-income countries due to costs that can exceed US$20,000 per unit. Even practice settings that have video laryngoscopes may restrict access for educational and clinical purposes due to the high value. We hypothesized that a low-cost video laryngoscope could be made and used to teach video laryngoscopy under simulated conditions and eventually be developed into a universally-affordable clinical tool.

Methods: Video laryngoscope handles were created using free software from Tinkercad (tinkercad.com), and 3D-printed with polylactic acid (PLA) plastic. A flexible, waterproof, 5.5mm diameter, 640x480 charge-coupled device (CCD) camera with six LED lights was used for the camera. Video input is compatible with Android