Safe Anesthesia for All Children:
What Are We Doing About the 'All'?

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When a community receives a Tsunami early warning message, they may have a few hours or only a few minutes to act in an effort to avoid the overwhelming loss of family, friends and anyone in the community who does not have the capacity to escape. We feel like a buoy floating out in the ocean sending an urgent message to those on the shore that a massive wave is coming and we must act now. An enlarging, destructive wave of pediatric surgical morbidity and mortality is coming toward a "continent." However, if the wave is not headed toward us (or "where we live"), we conclude that this does not require rapid action on our part. Please consider that our response time may perhaps be based upon a limited interpretation of the definition of the words "all" and "community." When our views become more inclusive and intently cross socio-economic and geographic borders, so that our "all" includes a 2-year-old Tanzanian girl or a 6-month-old Liberian boy who is forced to enter a potentially unsafe surgical ecosystem, we will react with the urgency required.

In 2017 UNICEF reported that the pediatric population in Africa was 580 million, which is four times the number of children in Europe. By 2050, it is expected that over 40 percent of the world's children under the age of 18 will live in Africa. As our global population doubles in the next 30 years from 1.2 to 2.5 billion, the population which currently has the fewest number of health care providers per 100,000 populations will see the greatest impact from this explosion. There are countries in Africa that have fewer than five anesthesiologists for millions of people, and rural areas of most countries are without any anesthesiologists.

As leaders in our specialty, ASA and the Society for Pediatric Anesthesia (SPA) need to accept that the "all" includes these 40 percent of the world's children. Without intervention now, we will see the current high perioperative mortality rates in these areas of the world impact even larger numbers of children. The reality is that the large pediatric population in Africa and other areas of the world is increasing at a faster rate than we can improve anesthesia care and education.

> **As a specialty, we have developed a profession focused on safety, leadership and education – all of which are desperately needed in all resource settings. We must work as partners, whether we are high-, medium- or low-resourced anesthesia professionals, to address this situation.**

There are small groups of globally focused pediatric anesthesiologists, surgeons, institutions and societies who are taking on this challenge and working to improve the surgical care of children in these areas. Real collaboration among all the stakeholders is critical. Appropriate bridges must be built with bidirectional partnerships that focus on the

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children, and not merely high-resource-based research and educational priorities. We all have much to learn from one another. As a specialty, we have developed a profession focused on safety, leadership and education – all of which are desperately needed in all resource settings. We must work as partners, whether we are high-, medium- or low-resourced anesthesia professionals, to address this situation. The following interventions highlight some of the efforts currently being made.

East Africa Pediatric Anesthesia Fellowship Program

Fellowship-trained pediatric anesthesiologists are only found in small numbers in a few low- and middle-income countries (LMICs). Most countries have none. In 2013, the World Federation of Societies of Anaesthesiologists (WFSA) East Africa Pediatric Anesthesia Fellowship (EAPAF) program was started under the academic structure of the University of Nairobi (Kenya) with international partnerships assisting in the curriculum development, educational program, ongoing monitoring and evaluation, external examinations and funding. The fellowship, one of the WFSA global fellowships, has been supported financially by SPA, Smile Train and the Association of Pediatric Anaesthetists of Great Britain and Ireland for a number of years. In addition, each of the fellows experience an external pediatric anesthesia observership (Boston Children's Hospital, Vanderbilt Children's Hospital, Seattle Children's Hospital) prior to attending the SPA and ASA annual meetings as a global scholar in celebration of their accomplishments. This year's fellows are from Zimbabwe, Democratic Republic of Congo and Rwanda. As of 2018, the fellowship has graduated 15 pediatric anesthesiologists from seven African countries who annually provide safe anesthesia for thousands of children. Additionally, the graduates are amplifying the fellowship's impact by sharing new knowledge and skills to residents and nurse anesthetists in their home countries.

Safe Pediatric Anesthesia Network (SPAN)

SPAN is a network of pediatric anesthesia institutions lead by Boston Children's (Faye Evans) and Vanderbilt Children's (Jenna Sobey) who meet once per month via video-conferencing for one hour. During these case-based discussion sessions, pediatric anesthesiologists, pediatric anesthesia fellows and anesthesia residents from eight institutions representing both well-resourced and low resourced settings (Africa, United Kingdom, North America, South America) discuss cases from both perspectives of the resource continuum. This growing community of informed providers is beginning to understand their colleagues' difficulties in working without resources, such as an end-tidal CO_2 monitor. Provider density

statistics become more relevant when the sole pediatric anesthesiologist for a country of 10 million is sitting in front of these new colleagues from London, Baltimore or Bogota describing his/her hardships. This deeper understanding merged with relationship building among our future pediatric anesthesiology leaders, based in high- and low-resourced environments, will provide the platform for future pediatric anesthesia collaborative efforts. Our hope is that this community will be able to formulate practical interventions in the delivery and education of pediatric anesthesia where the needs are the greatest.

Short Educational Programs

The Managing Emergencies Pediatric Anesthesia (MEPA) simulation training course is a high-fidelity simulation, pediatric- focused, train-the-trainer (TTT) program that has been successfully run in both the U.S. and U.K. This past January, a faculty team from Great Ormond Street (U.K.), Red Cross Children's Hospital (South Africa) and Vanderbilt/Kijabe (U.S.) brought the MEPA training program to Kenya to train recent pediatric anesthesia fellowship graduates and current fellows in the basics of simulation.

The SAFE (Safer Anaesthesia from Education) Paediatric course (SAFE Paeds) is a short refresher course developed as an international educational initiative led by the Association of Anaesthetists of Great Britain and Ireland (AAGBI), in partnership with the WFSA and endorsed by the SPA, to

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provide quality pediatric anesthesia for current anesthesia providers in LMICs. With a TTT model, 19 courses have been run in nine African countries with 677 providers and 88 trainers of the course trained. The short-course model provides an opportunity for improving the understanding, for both physician and non-physician anesthesia providers, of anesthesia care for children. Both of these training courses will give educators more tools to strengthen and grow their current programs while potentially building simulation capacity for all health care providers.

The Global Initiative for Children's Surgery (GICS)

GICS is an international community of health care professionals with a focus on the LMIC surgical pediatric patient. This focused network is an assortment of surgeons, anesthesiologists, nurses, policy specialists and technicians, among others, from both HICS and LMICS, working together to tackle this well-documented imbalance in care. Anesthesia is well represented in the GICS leadership, which includes the WFSA-Pediatric Committee chair and two colleagues from LMIC. This emerging safe pediatric surgery global focus has provided an excellent opportunity for the American Pediatric Surgical Association (APSA) and the SPA-Global Committee to begin collaboration. These two national societies will begin regular exchanges, annual meeting panel discussions and research projects in an effort to approach this issue from a more holistic vantage point.

On a personal level, we have seen many children arrive for surgery after traveling for days, passing many hospitals, even countries' borders, to obtain surgical care. If you are reading this article, we want to implore you that these children are not merely a data point. Now that the warning signal has been sent and you have received it, and now as ASA and SPA leadership, society members and corporate sponsors, we have no time to wait. The time for delay has passed and we must see children who are in Southeast Asia, Sub-Saharan Africa and lower-resourced regions in the Western Hemisphere as our community, and certainly part of the "all." By anyone's definition, 40 percent of the world's children are a significant component of the "all." Let us keep moving forward with more effort, energy and resources as we seek to be more inclusive with a global perspective, both personally and corporately empowering.

On a personal note, we both want to acknowledge and thank the global support from the SPA as well as our leaders and colleagues at Boston Children's Hospital and Vanderbilt Children's Hospital.