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A model for humanitarian outreach in today's world☆

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ABSTRACT

The traditional model for humanitarian work for surgeons has been a few long-term people and a larger number of volunteers on short-term missions to needy places for one or two weeks with limited opportunity for follow-up. While a great deal of good has resulted from these efforts, in the long term not much has changed. Recent studies like the U.N. Millennium Development Goals and the Lancet Commission Report, Surgery 2030, have pointed out that the burden of surgical disease is the major public health issue in the world, such that an estimated five billion people worldwide do not have access to safe surgery and anesthesia, with the largest number being in Africa where almost half of the population is less than age 18 years. These and other reports related to essential surgery conclude that the key element in this problem is an extreme shortage of a capable, well-trained physician workforce, without which none of the Millennium Goals can be accomplished. For these reasons, we have directed our efforts to the development of a humanitarian model that meets the modern day need to expand the surgeon and anesthesia workforces using a Western university model adapted to locoregional African needs. The goal is to train the trainers in order to magnify the physician output rapidly over wide geographical areas and to train teams of surgeons and anesthesiologists who will work together. Although we have worked primarily in East Africa, particularly in Kenya, we feel that this model is widely applicable. While this effort is in its early stages, resident trainees from the home program in Kenya are now in Uganda, Rwanda, Ethiopia, Sierra Leone, Cameroon, and Madagascar, and they are in the process of developing their own residency training programs. It is our vision that with the expansion of the surgeon-anesthesiologist workforce, more people will have access to safe surgery and anesthesia, including obstetrical care, a humanitarian model in today's context.

I deeply appreciate the privilege of delivering this lecture honoring my dear friend, Jay Grosfeld, whom we lost this year, as well as his partner in every phase of his life, Marge. Therefore, I would like to start with a brief personal reflection on the life of a good man who contributed so much to this organization and American Surgery.

I first met Dr. G, as he was called, in Columbus, Ohio, in July of 1968, almost 49 years ago, a fortunate event for my wife Susan and me, because it led to a life-long professional collaboration and family friendship. All I knew was that he was a guy from Brooklyn and NYU who, like me, was just out of the Army and wanted to learn something about Pediatric Surgery. Jay and I were Dr. H. William Clatworthy's two Pediatric Surgery residents sharing call on alternate nights except when a newborn was admitted, and then we would both come in. Since we both had our Surgery Boards at the time, we were allowed a good bit of freedom to scrub together independently, sharing everything as partners. We taught each other. He introduced my Presidential Address to this organization and I did the same for him. We used to sit together in the front row at every meeting and comment to one another about each presentation. It is probably a good thing that no one knew what we were saying then! I will sadly miss those times.

Most of us recognize Jay as one of the most distinguished academic surgical leaders of our time, as he led every significant surgical organization in America and received every known distinction from organizations here as well as abroad. He was a builder of departments, careers, hospitals, and scientific publications, and he built a wonderful family and friendships based on loyalty. However, even though I was aware

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of all these things, it was his human characteristics that I will remember and appreciate the most about my friend. The driving forces in Jay's life were family, friends, fun, and a drive to contribute. Somehow he had the ability to handle all these things.

I will never forget the wonderful times we had at meetings and at their home in Sanibel, which they called their quiet place, even though their many grandchildren visited regularly. Figure that one out if you can. Jay was the perfect mixture of intellect and heart. It is appropriate that we honor the Grosfelds in this way and at this time. It pleases me to know that he was aware of my overseas work, some of which I would like to share with you today.

1. Humanitarian efforts in a modern context

The traditional approach to humanitarian medical efforts over the years has involved a handful of long-term missionary doctors working in faith-based hospital facilities and clinics in various parts of the world, supplemented by a large number of voluntary short-term doctors who would spend one to two weeks providing care. In the case of surgery, such short-term doctors would do a number of cases, usually with limited continuity of care, and then leave, which brings into question the ultimate value of this model which we have questioned in today's context. Numerous recent studies have uncovered information that indicate that as many as five billion people worldwide do not have access to safe surgery and anesthesia [1]. Eighty percent of these are in Africa, where we work, and the predominant burden is surgical, including obstetric care [2]. Forty to 45% of the population in African countries is in the 0–15 year age group, unlike the situation in North America, where children constitute 30% of the population. Recent studies examining the main causes of death in all age groups in Sub-Saharan Africa, show that almost 100% required surgical services, which are in precariously short supply and which lack coordinated systems of transportation and care [1,2]. Furthermore, this new information has altered Public Health models that traditionally have focused solely on various aspects of infectious disease to the recognition that the world-wide burden of surgical disease is now the predominant consideration. Current data indicate that as many as 16.9 million lives lost worldwide in 2010 were because of surgical issues that were potentially preventable [3]. Burns and trauma related to road accidents are the leading causes of mortality in Sub-Saharan Africa, and up to a third of these deaths are in children and young adults [4,5]. Although not widely recognized until recently, there is a direct link of this concerning deficiency of health services, especially in children and young people and in surgical availability, to the restriction of economic growth in low- and middle-income countries [6]. Because of these factors and the change in Public Health priorities, several international bodies have set goals to address health equity for all peoples in documents like the United Nations (UN) Millennium Development Goals on safe universal health care by 2030 [7], the Lancet Commission's Global Surgery 2030 [1], and the Amsterdam Declaration on Essential Surgical Care [8]. We contend that the key to achieving these ambitious goals is the development of a capable surgical and anesthesia workforce, without which conditions cannot be improved. For example, many of us have participated in teaching the American College of Surgeons' Advanced Trauma Life Support Course in Africa over the course of years only to find that little was implemented over time because of a severe lack of providers.

We recognize that to achieve universal access to safe surgery and anesthesia, the entire care system in Sub-Saharan Africa requires attention, but nothing can be achieved without adequate numbers of capable providers. Rural geography, absence of emergency transport systems, and lack of government financial support are barriers to timely access for most emergent surgical conditions [9]. Also, there are not enough modern hospital facilities, including modern operating rooms and equipment, that can be serviced and repaired regularly. For example, in Kenya where we work, the majority of the population is cared for in government district hospitals with limited capability, and the two large provincial hospitals are unable to handle all those who require that level of care. Only the two Provincial hospitals are capable of housing high level training programs. As a result, up to 45% of the care provided in Kenya and all of Sub-Saharan Africa is in faith-based mission hospitals, which can generally provide a high level of care, and some private hospitals in a few large population centers [10]. Poverty limits access as everyone is required to pay at least a portion of their care, which may be prohibitive in surgical cases. The cost of even a minor operation requiring hospitalization may be as much as a family earns in a month, so many must forego necessary operations that would otherwise permit them to work, and so they become even more impoverished [6]. Only a small minority have medical insurance to supplement their personal resources. The governments in these countries do not seem to have the wherewithal or initiative to manage their health care systems without the contributions of the faith-based facilities.

However, even if all these various system deficiencies were solved, nothing could be achieved without a capable, well-trained physician workforce, so we have focused on this primarily. The details of our plan have been described in detail in a recent publication, but I will summarize it briefly here as well as the background underlying it [11].

In Sub-Saharan Africa, the number of qualified surgeons, and particularly specialty surgeons like pediatric surgical specialists, is critically lacking. The same is true of anesthesiologists. Up to this point, task sharing and task shifting to general surgeons and allied health personnel like nurse anesthetists have been used to alleviate the situation, but these providers lack broad training, and they are incapable of training specialty physician providers. The Kenyan surgical workforce density is approximately 1.93/100,000 population compared to 64/100,000 in the United States [12]. The density of pediatric surgeons in Kenya is approximately 0.1/100,000 as compared with 3/100,000 in the U.S. [13,14]. In Nigeria in West Africa, there is 1.0 pediatric surgeon per 2.2 million children, compared with 1.0/67,000 in the U.S., and in East Africa there is 1.0 pediatric surgeon per 4.46 million children [15]. These figures vary some from study to study, but they are within range of one another. Similar statistics or worse exist for pediatric anesthesiologists and surgical specialists throughout Sub-Saharan Africa. From the standpoint of workload, Africa has 25% of the global surgical burden but only 0.4% of the global physician workforce [14]. By comparison, the Americas have 10% of the global burden of surgical disease and 37% of the global physician workforce, an extreme disparity. The same is true of health expenditures. The Lancet Commission study recommended a minimum density of 40/100,000 surgeons/population with an interim 2030 goal of 20/100,000 [1]. No estimates of the appropriate ratio for pediatric surgeons have been made. At present there are only 14–16 pediatric surgeons for 43 million people in Kenya, of which close to one half are 0–18 years of age. Currently, there are only four centers accredited for pediatric surgical training in Kenya by the College of Surgeons of Eastern, Central, and Southern Africa (COSECSA), the official recognized certifying and accrediting organization for trainees and training programs, respectively, and the rest of the East African countries have only one or no training centers. It is clear that more high-level training centers for Pediatric Surgery and Anesthesia producing more qualified physicians are an imperative which has led us to tackle this problem.

We work in Kenya at the faith-based AIC Kijabe Hospital and Bethany Kids at Kijabe Childrens' Hospital, a tertiary care facility by African standards, which has a 15 or more year history of training surgeons prior to the establishment of COSECSA and the Pan-African Academy of Christian Surgeons (PAACS), which funds trainees and also approves training sites. Approximately 10 years ago, we decided to expand on what Drs. Richard Bransford and Dan Poenaru started at Kijabe to train young surgeons in all surgical specialties, including those focusing on children. A parallel program in Pediatric Anesthesia has also been launched recently. Our goal has been to train the trainers for all the COSECSA countries in order to magnify our efforts to expedite the expansion of the surgeon workforce. Furthermore, we do not ascribe to providing full training for foreign trainees in high-income countries

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