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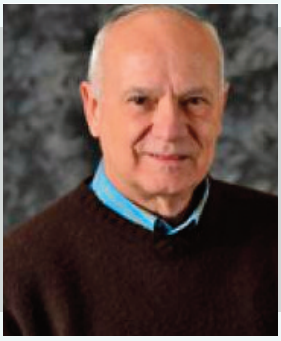
SURGICAL LEADERSHIP AND NATIONAL HEALTH EQUITY



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In this era of increasing inequity in many countries – wealth inequity, but also inequity in social support systems – surgeons are needed more than ever to assume leadership for healthcare, both nationally and internationally. The Lancet Commission on Global Surgery 2030 has documented not only the tragic loss of life due to lack of surgical care— i.e. 1/3 of all global deaths are due to lack of quality surgical care – but also the devastating economic consequences of failing to treat surgical conditions (notably trauma and cancer), i.e. the loss in GDP (Gross Domestic Product) globally will exceed US $1T (trillion) annually before 2030. [1] In this editorial, I will discuss some of the elements that are required for surgical leadership to understand and address national health inequity.

How can surgeons address the need to improve healthcare, both in their own country and around the world? The key is not more financial resources (although that would help in the short run); the economic savings from providing quality surgical care for the entire population (of Kosova, for example) will more than pay for the initial investment. It has been estimated that every dollar invested in surgical care has a greater than 20-fold return: the savings in terms of reduced death and disability that affects not only the citizen whose health and life is affected, but also that citizen's family and the community as a whole.

The key is not gold (money) but rather "ICE" – **I**nnovation, **C**ollaboration, **E**quity.

ICE has four pillars:

1. Temporal ICE: The healthcare system needs to "ICE" all stages of the healthcare continuum - from preventive programs to rapid prehospital transport (for those who need hospital care) to efficient state-of-the-art hospital care (notably surgical and ICU care) to rehabilitation and re-integration into the workforce and society.

2. Interdisciplinary ICE: Everyone involved in healthcare needs to "ICE" – from healthcare professionals (doctors and nurses) to support staff to the information technology team to hospital administration to ministries of health and related government agencies.

3. Technological ICE: Technology is the "ICEing" on the healthcare cake. Smartphones are ubiquitous now; telemedicine brings everyone together at any hour; drones and robots can defy obstacles both natural and man-made; resilient battery-powered mobile equipment makes interruptions in healthcare (from power outages to disasters) virtually nonexistent.

4. Sociopolitical ICE: All healthcare stakeholders – national and international – join hands and minds to put healthcare challenges "on ICE." Public, private, military, faith-based healthcare resources in the country work hand-in-hand as a seamless team. International resources such as the United Nations (UN), World Health Organization (WHO), and Red Cross train with national healthcare resources to prepare for disasters that might overwhelm even the "ICE'd" national healthcare resources.

How do we create "ICE?" Fortunately, we have a starting point in the trauma/stroke center (T/S C) model that has proven extremely effective at reducing morbidity and mortality in developed countries for decades now. [2] Expanding the T/S C model using the four pillars noted above allows us to realize dramatic improvements not only in trauma and stroke care, but care for all conditions that require the advanced resources of a tertiary center. Not only are surgery and ICU care available 24/7/365, but also radiology, blood bank, laboratory, pathology, etc.

A nationwide study in India determined that at least 50,000 lives are lost in India each year due to acute abdomen alone simply because a large percentage of the population is not close enough to a hospital with surgical capabilities. What about difficult childbirth? What about neonatal and infant emergencies (e.g. acute hydrocephalus)? What about acute cardiopulmonary compromise (e.g. heart attack, embolus)?

For this concept of an enhanced T/S C, we have chosen the term "Mass Casualty Center" (MCC). [2] To capitalize on the humanitarian goodwill that overcomes national boundaries evoked by disasters, the initial term was "Disaster Response Center" (DRC); the term "disaster" elicits, almost universally, the idea of rescuers arriving from outside the affected region or country to "save the day." [2-3] It would be of some benefit if such outside help - the UN, WHO, Red Cross, etc - actually arrived within a day. Sadly, it is typically several days to a week or more before such outside help arrives – much too late for those with emergency (or even urgent) surgical conditions.

A few examples for each of the four pillars of ICE:

Community education programs to reduce the need for formal healthcare resources include Think First and Pense Bem. Think First focuses on trauma prevention (primarily but not exclusively for children and adolescents); it began in the USA in 1986, and has since spread both nationally (with more than 160 USA chapters) and internationally (with approximately 40 chapters from Algeria to Taiwan). Pense Bem is a similar program in school systems throughout Brazil. Closer to Kosova – and much broader in scope – is the European Association for Predictive, Preventive, and Personalized Medicine (EPMA), an international organization of academic, industry, and government personnel who are addressing healthcare, particularly non-communicable diseases such as diabetes and cancer, proactively from a "big data," genomics perspective. The combination of detailed personal and family history, imaging data, laboratory data, and genetic information with artificial intelligence (AI) methods will produce personalized diagnostic and therapeutic programs that will dramatically improve individual outcomes.

Interdisciplinary ICE has examples from several quarters. Chile has an Emergency Response Ministry that has integrated, to a considerable extent, the civilian and military emergency response resources. Australia and Israel are other countries where civilian and military resources have been integrated significantly. A vertically integrated healthcare delivery system like the National Health Service (NHS) in the United Kingdom (UK) exemplifies aspects of interdisciplinary ICE. Not only is the NHS likely the most cost-effective healthcare system among developed countries, it is clearly the healthcare system most favorably viewed by the country's population (according to a Commonwealth Fund study of 11 developed countries).

For examples of technological ICE, one need look no further than the telemedicine programs developed by Rifat Latifi and colleagues for several developing countries as well as for the North Atlantic Treaty Organization (NATO). [4] The cost of such systems is more than offset by the savings in reduced number of patient transfers for a higher level of care and improvement in morbidity and mortality. Drones can

not only deliver blood products, medications, etc., to remote locations in minutes rather than hours, but also deliver a defibrillator to a cardiac arrest victim (with instructions a bystander can follow to administer the defibrillator) much faster than an emergency response team dispatched from a central location. Smartphones – thanks to their accelerometer and Global Positioning System (GPS) capabilities – are especially useful for emergencies such as trauma, falls, and seizures. In Kenya, smartphones are being used to improve the rate of pre- and post-natal care visits by mothers, as well as to reduce the time for taxis to transport a woman to hospital when a difficult childbirth is anticipated.

Sociopolitical ICE may be best exemplified by the WHO National Surgical, Obstetric, and Anesthesia Program (NSOAP). [5] Undertaken by a number of sub-Saharan Africa countries and Pakistan to date, the NSOAP sets targets to be achieved by 2030: 80% of the country's population within 2 hours of surgical care, 20 SOA providers per 100,000 of the population, 5,000 operating room procedures per 100,000 of the population, quality assurance, and affordability measures.

A good example of a program incorporating much of the four pillars of ICE is in Peshawar, Pakistan. Thanks largely to the sustained efforts of Tariq Khan, a neurosurgeon there, a community education program for trauma prevention was begun over two decades ago. The prevention program has expanded, and was awarded the Think First International Chapter of the Year Award in 2019. A rehabilitation center started later; gunshot and bomb blast trauma were especially prevalent in the region. Since Tariq Khan opened his first hospital in Peshawar in 2009, he has opened a second hospital, started both Nursing and Medical Schools (with 50 and 100 graduates per year, respectively), begun an ambulance service with trained Emergency Technicians (EMTs), and outlined a Trauma Registry for the entire country of Pakistan. Having another neurosurgeon who was previously the Director-General for Health Services for Pakistan, Rashid Jooma, was a helpful bridge. Most importantly, Pakistan has begun a NSOAP as part of their National Vision for Surgical Care 2025 project.

Surgeons have a reputation for being the "Captain of the Ship." It is time for surgeons to innovate as the "Captain of the Fleet." Surgeons can lead the country in cost-effective, equitable healthcare reform. With the ICE as their guide, surgeons can – unlike the Captain of the Titanic – avoid icebergs on their voyage to healthcare equity for all.

SUGGESTED READINGS:

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