The World Health Organization’s Action Plan on the Road Traffic Injury Pandemic: Is There Any Action for Orthopaedic Trauma Surgeons?

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Summary: Road traffic crash–related death, injury, and chronic disability continue to be a major worldwide burden to drivers, pedestrians, and users of mass transit, especially in low- and middle-income countries (LMIC). Projections predict worsening of this burden, and while motorization of LMIC increases exponentially, a corresponding improvement in prehospital and acute in-hospital trauma care has not been seen. The WHO now has 2 programs that address different elements of this challenge, namely, the Violence and Injury Prevention department (prevention) and the Emergency and Essential Surgical Care project (treatment). Activities of Violence and Injury Prevention have included developing guidelines for prehospital and essential trauma care, whereas activities of the Emergency and Essential Surgical Care have included developing the Integrated Management of Emergency and Essential Surgical Care toolkit and a textbook, “Surgical Care at the District Hospital.” Organized surgical institutions in high-income countries—trauma associations, university departments, surgical nongovernmental organizations, etc.—can benefit from the infrastructure and tools the WHO has developed to better address the deficits in surgical services to improve the equitable distribution of surgical care services and resources to LMIC.

Key Words: World Health Organization, road traffic crash, action plan

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INTRODUCTION

Despite almost a decade of existence, many surgeons and surgical institutions [surgical associations, university departments, surgical nongovernmental organizations (NGOs), etc.] may be unaware of the World Health Organization’s (WHO) commitment to addressing the global burden of surgical diseases by creating the Emergency and Essential Surgical Care (EESC) program and establishing a global forum called the WHO Global Initiative for Emergency and Essential Surgical Care (WHO GIEESC).1

This WHO’s surgical initiative largely arose after the recognition of the importance of surgical conditions, most recently demonstrated by the Global Burden of Disease Project (GBDP)2–4 and a number of publications which have followed, in particular surgical problems from road traffic crashes.5–7 The GBDP also introduced the concept of disability-adjusted life years (DALYs), a measure of both mortality and disability, and estimated that surgically treatable conditions represented about 11% of the world’s health DALYs, about the same number of DALYs contributed by HIV/AIDS, malaria, and tuberculosis combined.2–5 Moreover, a number of recent publications have suggested that surgical care can be cost effective when delivered at the primary referral level in low- and middle-income countries (LMIC), being as cost effective in terms of dollars spent per saved DALY as HIV or malaria programs.4,6 Of the world’s LMIC, a corresponding increase in availability of adequate prehospital and in-hospital trauma care has not been seen and projections from the GBDP indicate that road traffic crashes will increase in importance over time in the LMIC, where 90% of road traffic mortality and morbidity exists.3

It is the purpose of this review to outline some of the WHO’s initiatives developed in response to the LMIC road traffic injury pandemic, in particular in the sub-Saharan African region.

THE BURDEN OF SURGICAL DISEASE

Each day on the roads of the world, almost 3500 people die and between 30,000–50,000 are severely injured2,3 with many developing long-term musculoskeletal disabilities that drain already poorly resourced health-care systems and adversely effect return to work in many already impoverished societies.3 The GBDP has clearly shown that the majority of death and disability from road traffic crashes—85% of deaths and 90% of DALYs—occur in the LMIC of the world, with pedestrians, cyclists, and mass transport riders (bus, train) being a significant portion of this.2–4 The GBDP data also suggest that deaths, injuries, and disabilities because of road traffic crashes will almost double, from 1.3 million in 2004 to 2.4 million in 2030, primarily because of increased motor vehicle ownership and use associated with economic growth in LMIC.8 To deal with this massive medical and surgical burden, the LMIC have access to only 3.5% of the surgical operative resources available worldwide.9

Africa faces the highest regional rate of surgical DALYs in the world, led primarily by injuries2,4 which are estimated to worsen over time largely because of road traffic crashes.3,10 Although Africa has one of the lowest rates of registered vehicles per person in the world, the fatality rate from MVC

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in sub-Saharan Africa significantly exceeds the high-income motorized regions of the world. For each fatality, there are dozens severely injured and disabled, and to deal with this carnage, Africa regrettably has among the lowest numbers of trained orthopaedic surgeons in the world. Most long-term disabilities are because of injuries of the extremities or the spine, with complex long bone injuries among the most disabling of injuries even in advanced trauma systems. With few surgeons and surgical capacity and with an average per capita expenditure in most of sub-Saharan Africa being the lowest in the world at $14 per annum, clearly the burden is significant.

**THE HISTORY OF SURGERY WITHIN THE WHO**

Historically, the WHO had expressed a minimalist role for surgical interventions in LMIC largely because of the perception of an excessively high cost for surgery and a limited ability to realistically offer such "sophisticated" services. Even basic surgical services were not considered within the realm of "primary" care, and as a result, LMIC suffered significant mortality, morbidity, and disability. These previously held notions that basic surgeries are cost ineffective are now widely disputed, with many surgical programs having been shown to be as cost effective as programs to combat HIV, tuberculosis, or malaria in LMIC. This has resulted in a shift in thinking by the WHO in the last decade to include surgery in the public health approach.

In 2004, in response to deficiencies to deliver even basic surgical care to most LMIC, the WHO introduced the EESC project. Launched to provide a basic surgical training program to deliver surgical and anesthetic services at the level of primary care facilities, the program consisted of a teaching manual, the "Surgical Care of the District Hospital," and the Integrated Management of Emergency and Essential Surgical Care toolkit. The toolkit was developed to be adaptable to local or regional needs and targeted for training nonspecialist doctors, nurses, and paramedics, recognizing that for the near future there would not be specialist surgeons at most primary health-care facilities.

The GIEESC was developed in 2005 to promote the EESC project and to encourage widespread collaboration throughout the global surgery community. This is primarily concerned with surgical training and education and toward strengthening emergency, surgery, and anesthesia services to manage injuries, disasters, pregnancy-related surgical complications, congenital anomalies, and other surgical conditions at first referral-level health facilities, where 90% of LMIC patients go for their care. More specifically, GIEESC developed a "situational analysis tool" to survey surgical infrastructure and physician and man power resources at the primary care hospital level.

**THE RESPONSE OF WHO TO THE ROAD TRAFFIC BURDEN**

The WHO Violence and Injury Prevention (WHO VIP) program works to prevent injuries and to mitigate disabilities from injury by supporting national, regional, and global efforts to research and improve data collection and to disseminate proven and promising interventions. WHO VIP has also developed "guidelines for essential trauma care," seeking to set achievable standards for trauma services which could realistically be made available to almost every injured person in the world. A companion document, prehospital trauma care systems, attempts to address prehospital trauma care, a significant deficiency in much of the LMIC, and virtually nonexistent in sub-Saharan Africa. The Integrated Management for Emergency and Essential Surgical Care toolkit WHO provides guidance on policies to improve surgical services, research, best practices, and Emergency and Trauma Care Training Course modules for frontline health providers.

**THE GLOBAL PLAN FOR THE DECADE OF ACTION FOR ROAD SAFETY 2011–2020**

With the publication of the World Report on Road Traffic Injury Prevention in April 2004, the WHO and the World Bank encouraged governments and other stakeholders to address and research the problem of road crashes in their regions. The first WHO Global Status Report on Road Safety, published in 2009, summarized data collected from 178 countries documenting efforts to improve road safety records and to provide benchmarks to guide improvements over time. These various initiatives culminated in the March 2010 UN General Assembly’s resolution A/64/255, proclaiming 2011–2020 as the Decade of Action for Road Safety, a resolution cosponsored by more than 90 countries. It is meant to help governments, civil society, NGOs, private companies, Ministries of Health, academic institutions, and other stakeholders to accelerate the adoption in LMIC of effective and cost-effective road safety programs that have proven useful in HIC over the last 50 years. The resolution asked member states to implement road safety management, road infrastructure, vehicle safety, road user behavior, road safety education, and efforts in the postcrash response.

Although adopting developed standards for road, highway infrastructure, and vehicular standards are reasonable goals for Africa on a short-term basis, the development of a surgical service capacity to the level of developed countries is not realistic on a short-term basis. As a result, the WHO’s mandate for GIEESC is to focus their surgical capacity building at the level of the first referral care, the district hospital. For cultural and other reasons, the majority of the vulnerable population in sub-Saharan Africa use the district hospital as opposed to costly large hospitals.

The Decade of Action for Road Safety 2011–2020, developed specifically for the African region, the African Road Safety Action Plan 2011–2020, is organized under 5 “pillars” of development, including (1) road safety management; (2) safer roads and mobility; (3) safer vehicles; (4) safer drivers and other road users; and (5) postcrash response—concerning crash-site care, transport, and trauma care of injured, including treatment of disabilities and rehabilitation. It is the fifth pillar of the action plan that pertains most to surgeons and where the WHO GIEESC can have an impact in guiding development of an effective prehospital, paramedic, and emergency medical services in LMIC. Transport of the
injured and first responder care continues to be a major burden in sub-Saharan Africa and will improve with road development but will require surgical input for development, training (ATLS-type programming adapted to local LMIC country needs), and support of first responders as occurred in HIC over the last 4 decades. Safer cars and roads, speed bumps, better lighting, guardrails, etc. will evolve faster in Africa if the political will and policing are galvanized.

THE INPUT OF SURGEONS AND ORGANIZED INSTITUTIONAL SURGERY TO WHO’S INITIATIVES

Although the response to the global injury burden has been one major impetus for WHO GIEESC to develop surgical capacity, the needs for perinatal and obstetrical surgical needs and rehabilitative reconstructive surgery are also important. For many decades, NGOs, surgical associations, university departments of surgery, faith-based surgical associations in HIC have helped to provide many surgical services to LMIC. Surgery has been recently described as “the neglected stepchild of global health,” with equitable distribution of surgical care in LMIC requiring a greater public health approach, and as such, the WHO can use its infrastructure, governance capacity, and brand-name influence to partner with the global surgical community in appropriate collaborations to respond to a world where there are inequitably distributed surgical resources.

Worldwide surveillance and ongoing benchmarking of the surgical burden are essential to monitor the population health benefits gained with improvements in surgical services. Although there is some concern about methodological issues with data collection from LMIC on surgical conditions, improvements in this area are ongoing and self-sustaining trauma registries have been shown to be effective in low-resourced environments.

Most trauma surgeons in HIC work in highly resourced tertiary-level or even quaternary-level “trauma centers” with technical resources that are staggering compared with their colleagues in LMIC. It must be recognized that for the foreseeable future, the WHO’s surgical program will focus on promoting “population-based” surgical care, centered on the district hospital or equivalent. Tertiary-level hospitals, moreover, will almost certainly be better off when their referring district hospitals become more proficient in essential surgical skills, such as a well-done and definitive first washout of an open fracture, and other “damage control” procedures.

The WHO, through its GIEESC and VIP secretariats, is developing tools, resources, and protocols to help evaluate the surgical capacities of district hospitals and clinics in the LMIC. The global surgery community from HIC can use these tools to focus their assistance efforts and expertise in LMIC, and by collaborative partnering, they can benefit from the WHO’s global influence to help better address the unmet surgical burdens.

REFERENCES


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