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The state of emergency care in the Republic of Kenya

L'état des soins d'urgence en République du Kenya

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KEYWORDS

Emergency;
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Service

Abstract Approximately 580,000 km² in size, the Republic of Kenya is as big as Botswana but only half the size of countries like South Africa, Mali, and Angola. Kenya is comprised of eight provinces: Central, Coast, Eastern, Nairobi, North Eastern, Nyanza, Rift Valley, and Western. The 2009 census revealed a population of over 38 million people, with a population density of approximately 66 persons per square kilometre. Majority of the population (68%) lives in rural areas, as compared with the sub-Saharan African average of approximately 62%. With a gross domestic product (GDP) per capita of US \$1,600 in 2010, Kenya is considered a low-income country—with 50% of the population living below the poverty line. HIV/AIDS disproportionately affects the country's mortality and morbidity. Although its prevalence is higher than the regional average at 6.3% for people ages 15–49 years, it is much lower than many other sub-Saharan African countries. In addition to HIV/AIDS, tuberculosis, malaria, and diarrheal diseases are major killers. The burden of communicable diseases is high, with malaria as the leading cause of morbidity (30%), followed by respiratory diseases (24.5%). Malaria prevalence is 14%, and HIV prevalence is 7.4%, with a higher rate in women (8.5%) compared to men (5.6%). The non-communicable disease burden is also on the rise with diabetes prevalence at 3.3%, a threefold increase over the last 10 years. Mental health issues and road traffic injuries are also on the rise. Thirteen percent of school-age children aged 13–15 years are active cigarette smokers. These put Kenya in the company of other low-income countries predicted by the World Health Organization (WHO) to face the “double hump” burden of communicable and chronic disease over the next several decades.

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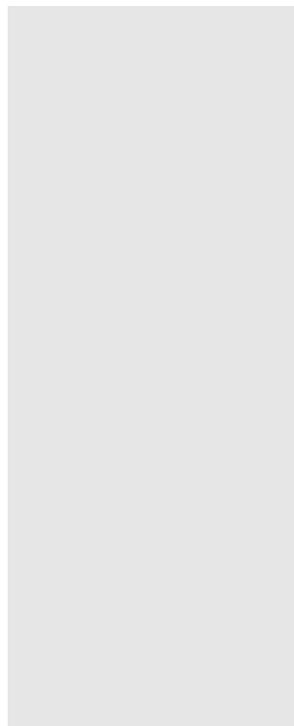
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D'une superficie de 580 000 km² environ, la République du Kenya est aussi étendue que le Botswana mais est environ moitié moins grande que des pays tels que l'Afrique du Sud, le Mali et l'Angola. Le Kenya compte huit provinces: Centre, Côte, Est, district de Nairobi, Nord-est, Nyanza, Rift Valley, et Ouest. Le recensement de 2009 faisait état d'une population de plus de 38 millions d'habitants, et d'une densité d'environ 66 personnes au kilomètre carré. La majorité de la population (68%) vit en milieu rural, la moyenne pour l'Afrique sub-saharienne étant de 62% environ. Avec un produit intérieur brut (PIB) par habitant de 1 600 USD en 2010, le Kenya est classé parmi les pays à faible revenu et 50% de sa population vit au-dessous du seuil de pauvreté. Le VIH/Sida affecte disproportionnellement la mortalité et la morbidité du pays. Bien que le taux de prévalence du VIH/Sida soit supérieur à la moyenne régionale de 6,3% des personnes âgées de 15 à 49 ans, il est bien au-dessous de celui de nombreux autres pays d'Afrique subsaharienne. Outre le VIH/Sida, la tuberculose, le paludisme et les maladies diarrhéiques constituent des tueurs majeurs. Le poids des maladies transmissibles est considérable, le paludisme étant la principale cause de morbidité (30%), suivi par les maladies respiratoires (24,5%). Le taux de prévalence du paludisme est de 14%, et celui du VIH de 7,4%, les femmes étant plus affectées (8,5%) que les hommes (5,6%). Le poids des maladies non transmissibles augmente également, le taux de prévalence du diabète étant de 3,3%, soit une multiplication par trois au cours des dix dernières années. Les problèmes de santé mentale et le nombre d'accidentés de la route sont également en hausse. Treize pour cent des enfants d'âge scolaire, âgés de 13 à 15 ans, sont des fumeurs actifs. Cela place le Kenya parmi les autres pays à faible revenu qui devraient, selon l'Organisation mondiale de la santé (OMS) être confrontés à un « double » fardeau de maladie transmissible et chronique au cours des prochaines décennies.

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Introduction

Approximately 580,000 km² in size, the Republic of Kenya is as big as Botswana but only half the size of countries like South Africa, Mali, and Angola.¹ Kenya is comprised of eight provinces as shown in Fig. 1: Central, Coast, Eastern, Nairobi, North Eastern, Nyanza, Rift Valley, and Western.

The 2009 census revealed a population of over 38 million people, with a population density of approximately 66 persons

per square kilometre.³ Majority of the population (68%) lives in rural areas,³ as compared with the sub-Saharan African average of approximately 62%.⁴ With a gross domestic product (GDP) per capita of US \$1,600 in 2010,⁵ Kenya is considered a low-income country⁶—with 50% of the population living below the poverty line.⁵

HIV/AIDS disproportionately affects the country's mortality and morbidity. Although its prevalence is higher than the regional average at 6.3% for people ages 15–49 years,⁷ it is much lower than many other sub-Saharan African countries. In addition to HIV/AIDS, tuberculosis, malaria, and diarrheal diseases are major killers as shown in Table 1.

The burden of communicable diseases is high, with malaria as the leading cause of morbidity (30%), followed by respiratory diseases (24.5%).⁹ Malaria prevalence is 14%, and HIV prevalence is 7.4%, with a higher rate in women (8.5%) compared to men (5.6%).⁷

The non-communicable disease burden is also on the rise with diabetes prevalence at 3.3%, a threefold increase over the last 10 years.⁹ Mental health issues and road traffic injuries are also on the rise. Thirteen percent of school-age children aged 13–15 years are active cigarette smokers. These put Kenya in the company of other low-income countries predicted by the World Health Organization (WHO) to face the “double hump” burden of communicable and chronic disease over the next several decades.¹⁰ Persistent poverty and low water and sanitation standards have contributed to the endemicity of diseases like cholera. There are also still pockets of neglected tropical diseases, such as lymphatic filariasis.⁹

Health care provision

Health services in Kenya are provided through a network of over 6,600 health facilities countrywide.¹¹ Individual house-



Fig. 1 Map of Kenya.²

Table 1 Ten major causes of death and years of life lost due to disease in Kenya in 2002.⁸

Causes	Deaths (%)	Years of life lost
HIV/AIDS	38	40
Lower respiratory infections	10	11
Diarrheal diseases	7	8
Tuberculosis	5	5
Malaria	5	6
Cerebrovascular disease	4	1
Ischemic heart disease	4	1
Perinatal conditions	4	5
Road traffic accidents	2	2
Chronic obstructive pulmonary disease	2	1

holds remain the largest contributors of health funds, at 35.9%, followed by the government, and then private donors, who contribute approximately 30%.¹² The public sector system accounts for about 51% of these facilities, with the Ministry of Health and parastatal organisations being the major players. The private sector delivers approximately one-third of the outpatient care and 14% of inpatient care in the country,¹³ through private, for-profit organizations, non-governmental organizations (NGOs), and faith-based groups.

The Kenya Essential Package for Health (KEPH)¹⁴ is designed as an integrated collection of cost-effective interventions to satisfy the demand for prevention and treatment of common diseases and injuries. The KEPH system delivers comprehensive healthcare across six levels of care as shown in Fig. 2:

Community health units organize activities focused on disease prevention and control. These efforts serve to reduce dis-

ability, morbidity, and mortality as well as to expand family health services, such as family planning, maternal, child, and youth services.

Dispensaries and clinics comprise approximately 80% of the health care system¹¹ and are staffed by registered nurses who work under the supervision of a nursing officer at the respective health centre. These facilities provide outpatient services for patients with simple ailments, such as influenza, uncomplicated malaria, and skin infections.

Health centers, maternities, and nursing homes comprise about 15% of health services in Kenya.¹¹ Generally, clinical officers staff and administer these facilities. At this level of care, additional outpatient services (including minor surgery and limited dental services), limited inpatient services (including uncomplicated deliveries), health education, and laboratory services (including HIV testing) are provided to patients.

Primary hospitals are managed by medical superintendents, who are physicians with or without postgraduate training. These hospitals provide quality clinical care by a staff more skilled than that of the health centres and dispensaries. Primary hospitals offer twenty-four hour services and provide more comprehensive services, such as major surgery and inpatient care not available at the health centres.

At the fifth level of the KEPH sit secondary hospitals. These facilities provide clinical services in all disciplines, including emergency services as well as intensive care and high-dependency care units. Secondary hospitals also serve as clinical sites for training health care personnel, such as nurses and medical interns.

Tertiary hospitals are at the apex of the health care system, providing sophisticated diagnostic, therapeutic, and rehabilitative services. The two tertiary hospitals are Kenyatta National Hospital in Nairobi and Moi Referral and Teaching Hospital

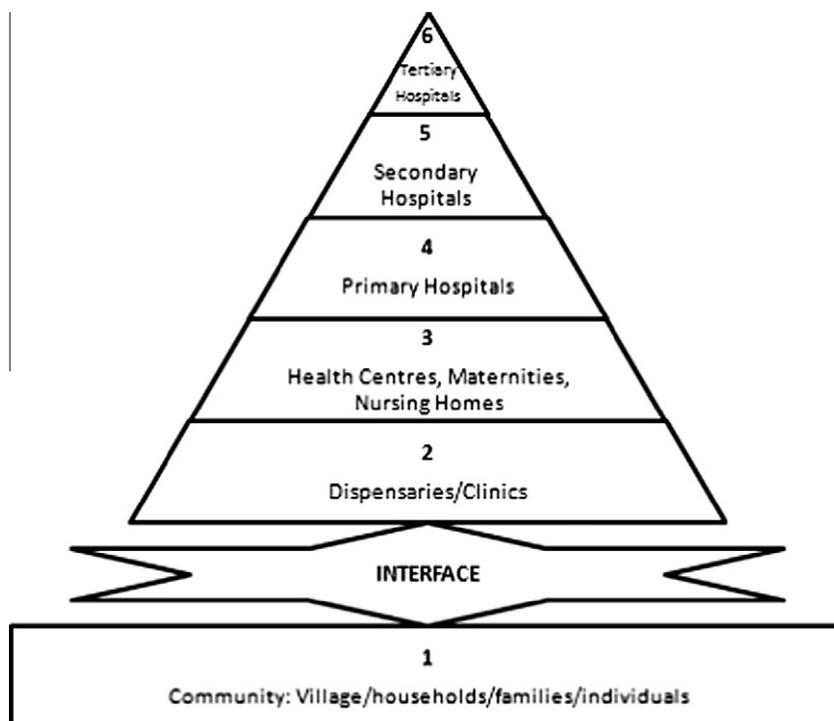


Fig. 2 KEPH levels of care.¹⁴

in Eldoret in western Kenya. The equivalent private referral hospitals are Nairobi Hospital and Aga Khan University Hospital both located in Nairobi. In addition to, providing training to health professionals, public tertiary hospitals serve as research centres.

Mechanisms do exist in Kenya to facilitate transition of patients from one level of care to another; however, implementation varies widely across the country. According to the 2004 Service Provision Assessment (SPA), about 9 out of 10 primary hospitals, 6 out of 10 health centres, and very few dispensaries under government management had on-site transport available for emergencies.¹⁵ On the other hand, districts reported that close to 86% of the NGO and private health facilities had on-site transport available for emergencies.

Inter-facility referrals can be difficult in more remote areas of the country. Several districts in Kenya are not connected to the cellular network, and others have nearly impassible roads, particularly during the rainy season. To compound the problem, only 16% of health facilities across the country have and use referral forms essential to the communication of vital patient information¹⁵; half of facilities in Nairobi province have referral forms, in contrast to only 1% of in North Eastern province.

Emergency care

The American College of Emergency Physicians in a 2008 statement defined Emergency Medicine (EM) as: Emergency medicine is the medical specialty dedicated to the diagnosis and treatment of unforeseen illness or injury. It encompasses a unique body of knowledge as set forth in the "Model of the Clinical Practice of Emergency Medicine." The practice of emergency medicine includes the initial evaluation, diagnosis, treatment, and disposition of any patient requiring expeditious medical, surgical, or psychiatric care. Emergency medicine may be practiced in a hospital-based or freestanding emergency department (ED), in an urgent care clinic, in an emergency medical response vehicle, or at a disaster site.

The delivery of emergency care in Kenya is quite different from, and in most instances, less sophisticated than that of countries with a well-developed specialty of Emergency Medicine. Arnold describes three stages of national Emergency Medicine development: mature; developing; and underdeveloped.¹⁶ Countries like the United States (US), Australia, and the United Kingdom (UK) have "mature" systems of emergency care and as such can serve as "mentors" to other countries with burgeoning emergency care systems. Much of Europe and the Middle East are considered to have a "developing" system of emergency care. Most of Africa, with the exception of South Africa, falls into the "underdeveloped" category in terms of national EM development.

Arnold also outlines a country's maturation of Emergency Medicine along four schemes: patient care systems; management systems; specialty systems; and academic EM.¹⁶ As per these descriptions, Kenya's system for emergency care delivery clearly falls into the "underdeveloped" category. As an example, Kenya offers no training opportunities in the specialty of Emergency Medicine in contrast to "developing" and "mature" countries which typically do. Similarly, Kenya has no organized national system for trauma care, while countries in the "mature" stage do.

Emergency Medical Services (EMS)-based

Most patients are transferred to hospitals by private means, for instance by car, truck, or taxi, among others. Few present to emergency centers (ECs) by ambulance (whether truck or aircraft) given their scarcity and the lack of a well-connected, reliable central dispatch system. A study done in an emergency centre in South Africa demonstrated that most patients (60%) used their own means to reach the emergency centre.¹⁷ By Arnold's description, this again places Kenya's national EM development in the "underdeveloped" column. Nations with "mature" and "developing" patient care systems, usually rely heavily on ambulance services for transport.¹⁶

Established in 1928, St. John Ambulance is the only public provider of emergency medical services in Kenya.¹⁸ With only ten ambulances across all of Kenya (with five in Nairobi at headquarters), they respond to patients in need at no cost.¹⁹ Private EMS plays a limited role, too, as they are mostly located in Nairobi and only serve patients who can afford to pay.

The Kenya Council for Emergency Medical Technicians (KCEMT) was established in 2008 and is now the sole professional body setting national standards, regulating EMS training, and lobbying for formal recognition of EMTs in Kenya. According to its secretary, KCEMT has trained and certified approximately 1800 managers of first responders, including ambulance, military, police, and fire services, as well as district and provincial administrative and government officials since June 2008.

Hospital-based

Most Emergency Centres, or ECs, are staffed by clinical officers who work independently or alongside medical officers (physicians without postgraduate training) to provide urgent and emergent care to largely rural populations. Clinical officers are not physicians but health care providers with three years of rigorous training following the medical model. And like medical officers, they lack specific training in the specialty of Emergency Medicine.

Clinical officers are trained in basic sciences, nursing care, and have clinical rotations in most inpatient hospital departments.²⁰ On graduation, they receive a diploma in clinical medicine, surgery, and community health and work as full-time interns for one year before getting a license to practice medicine independently. Internship involves three-month supervised rotations in the major clinical departments, including EC. The Kenya Medical Training College offers post-basic courses to clinical officers, leading to a specialized qualification in several areas, but EM is not one of them.

Kenyan ECs are often poorly equipped and overcrowded. Patients with different types of complaints are evaluated in different parts of the unit by healthcare providers of different medical specialties. For instance, a patient presenting to EC with a complaint of abdominal pain will be cared for by a surgeon, while a woman with vaginal bleeding might be evaluated by a gynecologist. In contrast, emergency physicians in the US care for all patients, without regard to complaint, who present to the emergency department. US emergency physicians will involve consultant specialists as needed.

With no EM-trained physicians or EC directors, no national system for trauma care or transfers, Kenya is certainly

considered “underdeveloped” in terms of its national EM development as per Arnold’s classifications. Said another way, Kenyan patients presenting to ECs with acute, time-sensitive illness and injury are cared for largely by undertrained, non-physician healthcare providers with no specific preparation in Emergency Medicine.

The need for development of Emergency Medicine in Kenya

Emergency medicine as a specialty has developed rapidly in certain parts of the world (e.g., Australia, Canada, UK, and US), but it remains largely immature in developing nations like Kenya. With more trauma and chronic illness, as well as high levels of communicable diseases and maternal/child mortality, Kenyan EC units sit at the intersection of these challenges. That is, like in countries with “mature” systems of emergency care, Kenyan EC units are well positioned to manage a rapidly growing population of patients and to provide immediate and time-sensitive care. Given this unique positioning, the overall healthcare system in Kenya, and more importantly Kenyan patients, would benefit from additional resources to aid in the development of EM as a specialty there.

Despite patient demand for EM services²¹ and clear evidence that well-established systems of emergency care can reduce mortality and morbidity from many common conditions in the developing world²², government officials currently have no plans to develop EM as a specialty in Kenya. Although there are well-formulated guidelines for specific disease states which span many aspects of clinical emergency care (for example, malaria, AIDS, head injury, etc.), they do not attempt to prioritize the care or to guide the overall structure and management of the EC.^{23–25}

None of the medical universities or colleges has EM training programs, though one private academic hospital is currently developing faculty to help initiate EM as a specialty in Kenya. The Kenya Medical and Dentists Board (KMDB) does not recognize Emergency Medicine as a specialty, and therefore, even foreign-trained emergency physicians cannot be registered by the KMDB as such.

One of the possible first steps to developing EM in Kenya would be to lobby for the recognition of the speciality by the KMDB to allow for the registration of foreign-trained emergency physicians who would form local faculty to commence training of health care providers in resource-appropriate aspects of emergency medicine.

Although training Kenyan physicians to practice as emergency physicians is the ultimate goal, EM residency programs take long and are expensive to develop and only allow for the training of a handful of specialists at a time. On the other hand, training the current EC providers, including registered nurses and clinical officers in targeted, resource-appropriate emergency care through short didactic and practical courses should be an important early step in developing EM in Kenya. In an observational study conducted in Kenya’s emergency centres, most critically ill patients were left to the admitting teams to initiate resuscitative care, and only minor conditions were handled in the emergency centre.²⁶ These didactic and practical courses would not only potentially improve care in these Kenyan facilities but would also serve to generate the necessary interest in and support for the speciality.

As an intermediate step, interested medical and clinical officers could be awarded diplomas in emergency medicine after an abbreviated training. A diploma in EM would take a shorter time to complete, and this strategy has the advantage of employing a successful model of education already established here sub-Saharan Africa. As training of medical and clinical officers has served as an important stop-gap measure in other understaffed specialties, it could do the same in a burgeoning speciality of emergency medicine.

Conclusion

Kenya, a country of nearly 40 million people, provides healthcare to its citizens through a tiered system called the Kenya Essential Package for Health. This network is comprised of public and private health facilities with increased services at each subsequent tier.

Like other low-income countries, Kenya is plagued by communicable diseases, like respiratory infections, HIV, and malaria. And with growing influence from occidental countries, smoking and obesity rates are on the rise. This means countries already burdened with infectious diseases have an ever increasing burden of chronic diseases, like hypertension and diabetes. In a country with few financial resources, addressing the public health needs for both communicable and chronic diseases can be overwhelming.

Despite KEPH, there is little sophistication in the delivery of emergency care in Kenya, and this is true of most African nations. The ECs (often poorly equipped) that do exist are largely staffed by non-physician personnel with no specific training in Emergency Medicine. Kenya stands ready to improve its delivery of emergency care with mentorship from healthcare professionals/organizations from countries in which Emergency Medicine is mature as a specialty. This is certainly worth the investment of resources, as the development of a more advanced system of emergency care has been shown to reduce morbidity and mortality.

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