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Morgan C. Broccoli
Johns Hopkins University

Emilie J.B Calvello
University of Maryland

Alexander P. Skog
University of Maryland

Benjamin W. Wachira
Aga Khan University, benjamin.wachira@aku.edu

Lee A. Wallis
University of Cape Town

COMMUNITY-BASED PERCEPTIONS OF EMERGENCY CARE IN KENYA

Results of a qualitative research study conducted by the African Federation for Emergency Medicine

Morgan C Broccoli
Emilie JB Calvello
Alexander P Skog
Benjamin W Wachira
Lee A Wallis

In partnership with The Aga Khan University Hospital, Nairobi and The University of Cape Town

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Access to quality emergency services is an essential component of the human right to health, but barriers to emergency care are found throughout Africa and the wider world. Data to support the development of emergency care are essential to improve access to care and further infrastructure development. We undertook this study to understand the community's emergency care needs and the barriers they face when trying to access care, and to engage community members with developing high impact solutions to expand access to essential emergency services.

To accomplish this, we used a qualitative research methodology to conduct 59 focus groups with 528 total Kenyan community member participants. Data were coded, aggregated, and analysed using the content analysis approach. Participants were uniformly selected from all eight of the historical Kenyan provinces (Central, Coast, Eastern, Nairobi, North Eastern, Nyanza, Rift Valley, and Western), with equal rural and urban community representation.

We found that socioeconomic and cultural factors play a major role both in seeking and reaching emergency care. Community members in Kenya experience a wide range of medical emergencies, and seem to understand their time-critical nature. They rely on one another for assistance in the face of substantial barriers to care: a lack of a structured system, resources, transportation, trained healthcare providers, and initial care on scene.

The results of this study indicate the need for specific interventions to reduce barriers to access essential emergency services in Kenya. Access to emergency care can be improved by encouraging recognition and initial treatment of emergent illness in the community, strengthening the pre-hospital care system, improving emergency care delivery at health facilities, and creating new policies at both county and national levels.

INTRODUCTION

Health systems are designed to "ensure the highest attainable standard of health for a community."(1) The emphasis of health systems is on health improvement which can be achieved by effective, prioritised services such as timely response to acute illness and injury.(1–3) Improving acute and emergency care systems is critical for overall health systems strengthening.

In order to be effective, acute and emergency care systems must be integrated within all other health system resources and services to ensure timely service delivery. Delays in treating acute injury and illness results in increased morbidity and mortality.(4–6) Horizontal integration of emergency care strengthens health system capacity by encouraging comprehensive and inclusive care.(1)

Conversely, emergency care is also improved by a highly functional healthcare system. Timely coordinated care, including an effective referral network has been shown to improve survival from acute illness and injury.(1)

Currently, several barriers exist to integrating acute and emergency care into health systems in sub-Saharan Africa. These barriers have been outlined by the African Federation For Emergency Medicine (AFEM), as follows:(7)

- The burden of acute disease in sub-Saharan Africa is severely under-documented.
- Most healthcare facilities in the region lack integrated approach to triage, resuscitation, and stabilisation of acutely ill patients.
- There are limited resources for health care in Africa, including a critical shortage of trained healthcare personnel in all cadres.
- There is a lack of standardised regionally-appropriate clinical guidelines for acute care at the sub-district and community level.
- Essential components of acute and emergency care have not been established, and there is no consensus on how to define the success of initiatives.
- There is no current advocacy plan for placing acute care on the global health agenda.

Before appropriate interventions can be designed for and implemented in a given country, the status of acute and emergency care in the region must be known. AFEM endorses that "robust acute care system development must occur in the context of a national health system and according to national priorities", and that "targeted need assessments should precede interventions."(7)

In order to successfully integrate acute and emergency care into a country's existing health system, national stakeholders must fully understand and support the need for emergency care; to do this, stakeholders need information on:

- The local burden of acute disease
- The current status of emergency care in their country
- Identified priority areas for intervention

Kenya currently faces an increasing burden of acute disease both from communicable and non-communicable causes.(8,9) In addition, the increasing number of major incidents and disasters is placing strain on a healthcare system not well equipped to deal with large numbers of critically ill and injured people.(10) Although several strategic plans reference the need for emergency care systems in Kenya, there has been little progress in actually implementing these interventions. (11,12)

Before implementing any interventions to improve emergency care in Kenya, current information is required on how the community accesses and experiences emergency care within the health care system. At the moment, no comprehensive disease burden data exists for Kenya, and there have been no comprehensive studies investigating how well the current health care system provides emergency care, or how well citizens are able to receive care during emergencies. There is a need for data to support the development of emergency care in Kenya and identify the priority areas which may include emergency first aid response, triage, basic life support or transport to definitive care. Gathering this data serves as an entry point to improve access to emergency care and further infrastructure development.

The goal of this study was to understand the unique emergency care needs within Kenyan communities, and to use gathered information to make recommendations on ways to respond to these needs with interventions at several levels.

AIMS AND OBJECTIVES

This study had two main aims:

- The first aim was to create a community based assessment tool that can be customised for any region looking to assess the emergency care needs of its citizens.
- The second aim was to identify the critical interventions necessary for the development of an emergency care system in Kenya by gathering information about community members' current need for and barriers to emergency care.

The objectives were:

1. Determine the current pattern of out-of-hospital emergency care delivery at the community level in Kenya as experienced by members of the community.
2. Identify the communities' experiences with emergency conditions and the barriers they face when trying to access emergency care.
3. Discover community generated solutions to the paucity of emergency care in urban and rural settings.

DESIGN

This was a prospective descriptive study conducted across Kenya's historical eight administrative provinces (Central, Coast, Eastern, Nairobi, North Eastern, Nyanza, Rift Valley, and Western) in July 2014.

Local facilitators were trained using a focus group guide adapted by AFEM from the WHO and World Bank Manual for the Use of Focus Groups.(13) Each facilitator travelled to two provinces and conducted focus group discussions in both urban and rural districts within each province. The urban districts were identified by selecting the urban centre or historical capital for each province, as listed in table three. According to the Kenyan Urban Areas and Cities Act, urban areas are those that have the status of city, municipality, or town.(14) All other areas are considered rural. The rural districts for this study were selected by the facilitators to be any area that was not listed as a city, municipality, or town. The only exception to this was Nairobi Province which does not technically contain any rural areas. To adequately sample throughout Nairobi, purposeful sampling was used to conduct focus groups in urban upper-middle class areas (Muthaiga), urban middle class areas (University of Nairobi), urban slums (Kangemi, Mathare, Kibera), and more "rural" areas within Nairobi (Ruai) (Table 3).

Table 3: Kenyan Urban Centres and Rural Centres

Province	Urban Centre	Rural Centre
Nairobi[a]	Muthaiga, University of Nairobi	Ruai, Kibera, Kangemi, Mathare
Central	Nyeri	Kiamuruga
Eastern	Embu	Kangaru
North Eastern	Garissa	Modogashe
Coast	Mombasa	Ukunda
Rift Valley	Nakuru, Kericho	Sachangwan, Sigowet, Kapkatet
Western	Kakamega	Chavakali, Butali, Khayega
Nyanza	Kisumu	Gem, Kombewa

[a]In Nairobi, focus groups were spread between urban upper-middle class areas (Muthaiga), urban middle class areas (University of Nairobi),urban slums (Kangemi, Mathare, Kibera) and more "rural" areas within Nairobi (Ruai) as Nairobi does not technically contain any rural areas.

Focus group discussions were conducted in either of Kenya's two official languages, English or Kiswahili. The focus group script began by asking participants about their understanding of medical emergencies, and whether they had ever experienced an emergency or three or more emergencies. For the purposes of the focus groups and this report, "medical emergency" refers to any life-threatening condition requiring emergency care, whether obstetric, traumatic, or medical in nature (e.g. myocardial infarction, hypoglycaemia, seizure). This definition was explained to the participants, and was chosen to differentiate from emergencies such as fire or flooding.

The script then had participants describe a medical emergency they had witnessed, and facilitators used probes to determine the type of medical emergency, whether any assistance was provided at the scene, how the patient was transported to the medical facility, and any barriers encountered when seeking emergency care. The next portion of the script asked participants whether they had previously, or if they would help someone who was suffering a medical emergency. The focus groups then explored why people may or may not feel inclined to help, and what might make someone more likely to help during an emergency.

The focus groups were conducted in each province until thematic saturation was reached.

Analysis

All the focus groups audio recordings were transcribed in English. The data was then coded and analysed using NVivo 10 with the support of qualitative research statisticians at the University of Cape Town. Some data was better served by using structural coding, or coding answers based on the questions that were asked. This approach was used for the questions about type and frequency of emergencies witnessed.

The primary investigator went through the coded focus group scripts and aggregated the data by theme or by structural code. The questions identifying exposure to emergencies and the type and frequency of emergencies witnessed were coded in a structural fashion.(15) A thematic analysis identified desire to provide assistance, barriers to emergency care, and ideas for how to improve access to emergency care. A code frequency report was also produced. Code frequency reports identify which themes, ideas, or domains were common, and which rarely occurred. Code frequency can be compared between different sources or subpopulations within the data to explore similarities and differences.(15) A report on the results of the focus groups was written by the primary investigator and distributed to the rest of the study team.

Ethical approval for the study was obtained from the University of Cape Town's Human Research Ethics Committee, The Aga Khan University Hospital, Nairobi, the Kenyan National Commission for Science, Technology, and Innovation, and the University of Maryland.

RESULTS

Fifty-nine focus groups with 528 total participants were conducted in the eight provinces (Table 2).

Table 2: Focus groups

Province	Total Focus Groups	Rural Participants	Urban Participants	Total Participants
Coast	8	30	30	60
Eastern	8	32	35	67
North Eastern	8	37	33	70
Central	8	40	36	76
Nairobia	6	30	17	47
Nyanza	6	20	22	42
Rift Valley	8	42	40	82
Western	7	44	40	84
	59	275	253	528

[a]A more detailed breakdown of the Nairobi participants:
Rural: 8 participants from Ruai; Slum: 7 participants from Kangemi, 7 participants from Mathari, 8 participants from Kibera; Urban: 9 upper-middle class participants from Muthaiga and 8 middle class participants from the University of Nairobi

Community Exposure to Medical Emergencies

Understanding of medical emergencies

Most focus group participants had a solid understanding of what constitutes a medical emergency. The most common response to the question "What is a medical emergency?" was that a medical emergency requires rapid or urgent treatment, either pre-hospital or in a hospital, and this treatment is in order to save a life or to prevent the patient from getting worse. The second most common response was that a medical emergency is the initial treatment or services offered to an ill or injured person, such as first aid. The third most common response was to use a specific disease as an example (such as being bitten by a snake).

Additional words or phrases used to describe medical emergencies include: accident, unexpected, sudden, sick, requires assistance, disease, large-scale catastrophe or disaster, requires an ambulance, when free care is provided, happening at night, risk of death, and injured.

Exposure to medical emergencies

Medical emergencies are quite common in these communities, with 70% of focus group participants having personally witnessed one or more.

Table 3: Exposure to medical emergencies

	Rural	Urban	Total
Have witnessed at least one emergency	66%	73%	70%
Have witnessed three or more emergencies	36%	31%	34%

Types of emergencies experienced

Participants were asked about their experience with specific types of emergencies on two occasions, when they were asked to describe an emergency they had witnessed, and when they were asked about other types of emergencies commonly experienced in their community.

The types of emergencies were mentioned by focus group participants, and are categorised into trauma, medical emergencies, and obstetric emergencies and listed in order of how often they were referenced.

Table 4: Type of emergencies referenced

	Type of emergency	Rural	Urban	Combined
Trauma (56%)	Road traffic accidents	16%	16%	16%
	Assault/Mob justice	7%	7%	7%
	Burns	6%	7%	6%
	Blunt trauma	5%	5%	5%
	Bleeding (traumatic)	4%	4%	4%
	Fractures	3%	4%	3%
	Other trauma [a]	3%	4%	3%
	Penetrating trauma (stabbing, GSW)	3%	3%	3%
	Snakebites	1%	3%	2%
	Riots/Mass casualty incidents	2%	2%	2%
	Sexual assault/Rape	2%	1%	1%
	Electrocution	1%	2%	1%
	Suicide	<1%	1%	1%
	Bites (dog, spider, crocodile)	<1%	1%	1%
Medical (31%)	Loss of consciousness	8%	6%	6%
	Difficulty breathing/Asthma	4%	6%	5%
	Overdose/Poisoning (alcohol, drugs, poisons, pesticides)	4%	4%	4%
	Drowning	4%	2%	3%
	Seizures/epilepsy	1%	4%	3%
	Hypertension	1%	1%	1%
	Infection	<1%	2%	1%
	Infectious disease exposure	2%	1%	1%
	Pneumonia	1%	1%	1%
	Non-traumatic bleeding (nose, ulcers, varicose veins)	1%	1%	1%
	Malaria (cerebral)	<1%	1%	1%
	Chest pain/Heart attack	1%	1%	1%
	Foreign body (in airway)	1%	1%	1%
	"Sick" (nonspecific)	1%	<1%	1%
	Abdominal pain	1%	1%	1%
Obstetrics(10%)	Labour	7%	5%	6%
	Birth complications, ectopic pregnancy, abortion complications	5%	3%	4%
Not a medical condition [b] (3%)	Not a medical condition [b]	3%	3%	3%

[a] *Sports injuries, eye injuries, self-circumcision, accidents, buried alive, children hurt while playing, hanging, overeating*
[b] *Fires, capsized boats, floods, drought, famine, rescue from building collapse*

Location of emergencies

Medical emergencies are common occurrences in these communities, and they occur in all types of locations: at home, at schools, at work, on the sports field, and on roads.

Transportation

Community members suffering medical emergencies reach healthcare facilities by:

Table 5: Transportation

	Combined	Rural	Urban
Private cars	31%	30%	31%
Motorcycles	17%	14%	20%
Ambulances	15%	17%	14%
Taxis	14%	20%	9%
Walking or being carried	8%	8%	9%
Minibuses	6%	6%	7%
Police vehicles	4%	1%	7%
Tuk-tuks [a]	2%	1%	2%
Aircraft (planes and helicopters)	1%	1%	1%
School buses	1%	1%	0
Lorries [b]	1%	0	1%

[a] *A three-wheeled rickshaw, often used to transport passengers*
[b] *A truck, often used for transporting goods*

Where participants seek care

More participants said they sought care at government healthcare facilities than at private healthcare facilities, but participants also said that there were significant delays at government facilities, and that you were able to receive care more quickly at a private facility. Participants also said that many government healthcare facilities did not provide emergency care, while private facilities usually did.

Assistance

Most of the emergencies witnessed by the participants included help being provided to the patient. The persons providing this help are listed in table 6 (in order of frequency):

Table 6: Assistance provided by

Help provided by:	Response Rate
Bystanders (Good Samaritans)	32%
Family members of the patient	24%
Community members (neighbours)	17%
Classmates, colleagues, and friends	15%
Healthcare professionals (outside of the healthcare facility)	6%
Soldiers or police officers	5%

Only the overall rates of responses are reported, as there was no difference in the order of those providing assistance between the rural and urban focus groups.

Most commonly, the victims were assisted with transportation to a healthcare facility. Other forms of assistance are listed in table 7 (in order of frequency).

Table 7: Assistance provided

Help provided by:	Response Rate
Assist with getting to healthcare facility	49%
Provide first aid [a]	17%
Provide other remedies [b]	9%
Call for help	7%
Move or position patient, extricate from danger	5%
No help provided	3%
Give medication (either the patient's own or provided by the helper)	1%
Distract or calm the patient	1%
Provide financial assistance (such as paying for cab, paying hospital fees)	1%
Provide information (to police officers, family members of the patient)	<1%
Donate blood	<1%

[a]Types of first aid mentioned included; stopping active bleeding, splinting a broken extremity, reduction of dislocations, removing the clothes of someone who has lost consciousness, covering a patient with a blanket, giving sugar solutions to diabetics, rescue breathing, and fanning the patient or placing a cool cloth on their forehead and delivering an infant.

[b]Other remedies mentioned included pouring battery acid on a bleeding wound, herbs for snakebite, cutting snakebite and tying proximally, pouring water on patient, compressing stomach of someone who has drowned to induce vomiting, placing a spoon in the mouth of seizing patient, giving soapy water or ashes for poisoning, shaking unconscious patients, and giving raw eggs to induce vomiting.

The type of assistance did not differ between rural and urban groups.

When asked if they would help someone, or if they had previously helped in the past, the participants demonstrated great willingness to help during medical emergencies. A majority (67%) of participants had helped another person suffering a medical emergency in the past, and 84% said they would help in the future.

Table 8: Willingness to assist

	Rural	Urban	Total
Have helped	63%	71%	67%
Would help	81%	86%	84%

Willingness to Help

People choose to help others in medical emergencies for many different reasons. When asked why they would help, the participants' responses fell into four categories:

a) Moral obligation (42%)

Participants most frequently answered that they would help another person due to a moral imperative to help someone who is suffering, or due to feelings of compassion, love, respect, empathy, pity, or mercy for the patient. Other responses in this category were; that they may need help one day and would want another person to help them, it is human nature to help one another, helping makes you feel good, life is valuable, religious imperatives, and being brave.

> "I can help even if you are my enemy because I am human; the next day it could be me."- Coast, Rural

> "It's a good thing to do, and once you've helped someone am sure that person will take it upon themselves to also pass that goodness."- Nairobi, Urban

b) Relief of suffering (34%)

Another common theme was that participants would not want to see another person suffer. They would provide assistance to save a life, to help the patient feel better, and because the situation is critical, the victim needs help, or is in pain.

c) Specific to the incident (13%)

Some participants gave reasons to help that would only be applicable to certain instances. Participants said that they would help if they were the only one available, if they had an occupational responsibility (such as being a teacher, healthcare provider, or in the military), if the incident was similar to an emergency they had experienced in the past, or if they caused the emergency.

d) Having the necessary resources (11%)

Participants also indicated that they would help if they had the necessary knowledge or skills, the money, or other resources such as a car.

Focus group participants also provided thoughtful reasons why they might not help someone who was suffering a medical emergency. These major themes that these reasons fell into were:

a) Inconvenience or harm to the helper (44%)

The most prevalent concern was that helping someone might be inconvenient or cause harm to the person who was helping. Specific concerns were; helping a patient might put the helper in a dangerous situation, the helper might be blamed for the accident or involved in legal proceedings, fear of helping, they could need to answer many questions from police and doctors or be a witness in court, helping might be very costly, or the person simply may not feel morally obligated to help.

> "You can be afraid to help because in the example of road accidents, our government can arrest you on trumped up charges. You may be helping someone who is injured and when you take them to hospital only to realise that he was the thief which can get you in trouble. Such scenarios can make you not want to help someone."- Western, Rural

b) Lack of knowledge or equipment (36%)

Another major concern was that a person might not have the knowledge, ability, confidence, or equipment necessary to help. In fact, a lack of knowledge on how to help and a lack of personal protective equipment were the two single most prevalent concerns that would stop a person from helping during a medical emergency.

> "If you do not understand you wouldn't know where to start." - Eastern, Urban
>
> "There are some that require medical attention, so you may not know how to help, you might do something wrong or make the situation worse" - Nyanza, Urban

c) Negative patient attributes (15%)

Participants also reported that specific attributes of the patient might dissuade people from helping. One common concern was that the patient might be a thief, or might be your personal enemy, and then you would not want to help them. Other concerns were that the patient might be a drunk or a terrorist, might not speak your language, and might not want to be helped. A few male participants said they would be hesitant to help if the patient was a woman. Additionally, some people mentioned that they might be prejudiced against the patient due to tribe or class differences, the way the patient is dressed, or if the patient had attempted abortion.

d) Circumstances (4%)

Participants noted that in some circumstance, helping a patient might be too difficult, such as if you were unable to access the patient, if there were too few others to assist you, or if there were too many other people already trying to help.

Several participants emphasized that there is no reason not to help, and they would help no matter what.

When asked how they would hypothetically provide help to someone suffering a medical emergency, many participants responded that they would help in any way they could. More specifically, participants answered that they would (in order of frequency mentioned):

- Provide medical care [a]
- Provide transport
- Get help (call police, call ambulance)
- Give patient money (for transport or medical expenses)
- Provide encouragement and support to the patient
- Assist with communication, provide information to family members and police
- Remove patient from immediate danger
- Refer the patient to proper care
- Provide medication
- Pray
- Provide space for patient to recover
- Pity the patient

[a] Such as: stop bleeding, tie snake bite, chest compressions for drowning, sugar/salt in bleeding wound, splint, put person in shade, give ORS, pour water or oil on burn, herbal remedies, rescue breaths, wash wound, fan patient, deliver baby, put blanket on burn, Heimlich manoeuvre.

When asked what would make them more likely to help someone suffering a medical emergency, most participants said that they would be more likely to help if they had the knowledge and skills required to help in the given situation, and if they had the necessary protective equipment (42%). The second most common response was that stronger community relationships would also encourage helping (36%).

Another theme was that participants would be encouraged to help if the emergency care system was improved (18%). Participants wanted to know that they could call for help, an ambulance would come, that the patient would receive appropriate care in the healthcare facility, and that they would not be held legally or financially responsible for helping another person.
Two percent of responses indicated people would be more likely to help if they personally had a car or had more money.

Barriers to Emergency Care

Individual Barriers

The single most commonly referenced barrier to care was the high cost of medical treatment (15%). This was particularly evident when participants spoke of private facilities, which were regarded to provide higher quality emergency care, as referenced above, but cost substantially more than government facilities.

> "In private hospitals they are very good and quick with emergencies but they want money which we don't have. In public hospitals people die in the queue waiting and nobody consider you."- Nyanza, Rural

Long queues at healthcare facilities and a lack of triage or prioritization protocols, causing critically ill patients to wait a long time before being seen was the second most common individual barrier to emergency care referenced (12%).

The third most common individual barrier was difficulty with obtaining transportation to get the victim to a healthcare facility (10%).

System Barriers

Poor emergency care system

The most common theme was that structural elements of the current emergency care system made it difficult to access emergency care (34%).Two other important barriers in this category are a lack of sufficient healthcare providers at facilities to adequately care for patients and a lack of material resources at facilities, including critical medications. Additional barriers referenced include difficulties with communication such as non-functional emergency phone lines, prolonged admitting time due to paperwork before emergency care is provided, a poor medical records system, and an overall lack of leadership in managing the country's healthcare system.

> "You may have a patient you took from home as an emergency then when you get to the hospital you find a long line and nobody is willing to assist you. So they can even die in line waiting to see the doctor and nobody cares."- Nairobi, Slum

Transportation

Apart from difficulty with obtaining transportation to get the victim to a healthcare facility, other transportation barriers included insufficient healthcare facilities leading to long distances required for travel. A lack of emergency care after business hours and poor road infrastructure were also cited as barriers. This was the second most common theme (20%) referenced as a barrier to care.

Healthcare providers

Healthcare providers themselves were seen as a substantial barrier to care (16%). Participants felt that many healthcare providers were unfriendly towards patients or unmotivated to provide timely, appropriate care. Participants were also concerned about corruption; many felt that they were sent by doctors to doctor-owned pharmacies to buy medications that were unfairly priced. They also referenced doctors leaving the hospital during their working hours to work at private clinics Participants felt that in general, healthcare providers are untrained in the basics of emergency care and that in many emergency situations they would actually be receiving care primarily from students. In general, they felt that healthcare facilities are usually unable to provide care at the level required by the patient.

Initial care on scene

Nine per cent of the barriers referenced pertained to initial care at the scene of an accident or illness. Participants felt that police were a barrier to care when they were required to bring accident victims to the police before bringing them to the hospital. They also felt that the individuals assisting during an emergency were often untrained and did not know how to properly care for the patient. Participants thought that communities as a whole do not have sufficient knowledge about medical emergencies and what to do when one occurs. Additional barriers included fear of helping or of police, the presence of looters at the scene of an accident, difficulty extricating a patient from an accident, and general chaos at an accident.

> "I realized that not many people know how to handle injured people, because the way they were being handled added more injury to them."
> – Coast, Urban

> "Community is not aware of emergencies and how to deal with them so at times people just stand and stare."
> – Coast, Rural

Factors That Make It Easier to Access Emergency Care

Patient factors

The most common response was that specific qualities of the patient make accessing emergency care easier (38%). Participants related that they had an easier time accessing emergency care when they were dressed nicely, had a good attitude and were patient, had personal financial resources or insurance, and personally knew healthcare providers at the facility or were in the healthcare profession and were given professional courtesy.

> "My brother told me that if you want to be treated well and survive in Kenya, you need to shave neatly and wear a suit, you will be attended to very fast if you have an emergency." – Western, Rural

> "Once you give them a bribe they are very quick to help emergency or not. They can even stop taking their tea to assist you."- Nyanza, Rural

Ease of transportation

The second most common factor that participants felt improved their access to emergency care was ease of transportation (27%). They said that if transportation was available when they needed it, they were close to a healthcare facility, they had a phone for communication, and the roads were clear and the weather was favourable, it was much easier to access care.

Choice of facility

Twenty-three percent of the responses referred to choosing the best healthcare facility. Participants felt that their care was better if they went to a private facility. They also related that having a good provider available to help and the necessary drugs and equipment stocked at the facility significantly improved their emergency care. Additionally, participants felt that it was best to arrive at the healthcare facility early in the day.

First aid

Other responses referred to having first aid knowledge, having a first aid kit, and being part of a strong community that would immediately respond to an emergency as improving access to emergency care (11%).

Community-Identified Solutions

The final segment of the focus group involved asking participants what they felt should be changed in order to improve their access to emergency care.

Improve structure of emergency care system

Most of the recommendations that the participants had on how to improve the emergency care system involved improving the emergency care system structure at a national level (26%). Specific responses included increasing material resource availability at all levels, from the community level to large hospitals (8%). Participants wanted gloves so they would feel more comfortable caring for others, and they wanted first aid kits in their communities in central locations such as schools. They also wanted their hospitals to be equipped for emergency care, and to stock the medications that healthcare providers prescribed for them.

Participants also felt that there should be improved leadership. They wanted the healthcare providers to be better paid, corruption reduced at health care facilities, and steps taken to improve the care and equipment at healthcare facilities. They also felt there was a need to place more emphasis on emergency care.

> "There should be communication between the county and the government concerning the salaries of the doctors. Because you may find a hospital having every equipment needed but there are no doctors to handle the emergency. Sometimes when the doctors go on strike, that is when you find the many emergencies and doctors are not there."
> – Rift Valley, Urban

In the healthcare facilities themselves, participants thought there should be improvements in the patient flow. They would like to see a separate emergency care area in facilities where emergent patients would be prioritized and wouldn't have to wait in line for care.

> "If there was a separate emergency section it'd help as opposed to being made to queue with everyone else."
> – Coast, Rural

They wanted care for emergent patients to occur before reporting the incident to police, before filling out paperwork, and before collecting payment from the family. They also wanted to be treated by licensed providers instead of students. Additionally, participants felt like the referral system should be improved so that they did not need to go to multiple hospitals, and wait at each one, before arriving at a facility that could treat them. One participant felt that there should be benches in all waiting areas so patients could sit down.

Communication was another area of concern. Participants felt that there should be one emergency line for all of Kenya that they could call when having a medical emergency, and they thought the line should always work and should assist them to get transportation and to get to the correct medical facility. In addition, participants wanted to see faster ambulance responses to emergencies, and faster treatment of emergent patients at healthcare facilities. They also felt that police should assist more with medical emergencies.

Participants felt that there should be regulations that prohibited healthcare providers from accepting bribes from their patients, and from ignoring critical patients. Participants wanted to feel that healthcare providers are held accountable for their level of care. This would also decrease the corruption that participants felt was occurring at healthcare facilities. Participants also wanted legislation requiring emergency medical care to be provided before other concerns (such as accident reports or payments) and legislation requiring equal treatment for all people.

Improve healthcare providers

Another significant theme was that access to emergency care could be improved by improving healthcare providers (25%). The most common individual response was related to healthcare providers. Participants felt that the numbers of healthcare providers should be increased, and that healthcare providers should be specifically trained in emergency care (13%). Some even specified that healthcare facilities should have dedicated doctors to provide emergency care. Others felt that healthcare providers should improve their attitudes towards patients, and this could be accomplished by paying providers more or by having stricter regulations on their work duties. Specific areas where participants felt there should be more regulations included not allowing doctors to accept bribes or to treat patients differently based on their ability to pay, and to not allow doctors to work at private clinics when they should be working at the hospital. Finally, some participants wanted to see healthcare providers from different tribes working at healthcare facilities.

> "In hospitals, we should have people who are specialists and are only there to respond to emergencies so that we do not have cases where upon arriving with a patient you find that the doctor has gone to theatre. Because emergencies are unpredictable, at least if we had those specialists for immediate response it would help."
> – Rift Valley, Urban

Improve transportation

Transportation and physical access to healthcare facilities was another area where participants felt there should be improvement (25%). Participants wanted to see increased access to healthcare facilities by either increasing the number of healthcare facilities, having mobile clinics or outposts in the more remote areas, or increasing the hours that healthcare facilities are open to allow for emergency care at all hours of the day.

Participants also felt that transportation should be improved, and thought that increasing the number of ambulances could be a way to address this. Other suggestions for improving transportation included mending impassable roads and numbering houses for easier ambulance dispatch.

Community capacity building

As an individual response, community capacity building was the second most commonly referenced (16%). Participants wanted to see emergency care capacity building at the community level. They predominately wanted community first responder training, so that many community members would be appropriately trained and feel comfortable caring for their neighbours when emergencies occurred. Participants also felt that apart from dedicated first aid training, communities should also have general "emergency awareness" classes that taught everyone how to recognize medical emergencies, who they could call, and how they could be helpful (even if they didn't know first aid). Another common idea was to revive or restore the role of community health worker, so people would have a healthcare professional located in their own community where they could seek medical advice and acute stabilization in the event of an emergency. One participant wanted to see community education related to beach and water safety. Participants felt that if their communities were stronger, they would be more likely to help one another during medical emergencies.

> "Sensitisation should be done. Very few people are aware of how to act in case of emergency." – Coast, Urban

> "I think first aid should be taught to people in the community. Learning basic first aid skills would help because sometimes people fail to help due to lack of knowhow."– North Eastern, Rural

Decrease cost of care

Many participants also wanted to see decreased costs of healthcare treatment (6%). This included cheaper medications, cheaper options at private hospitals, assistance with mortuary fees, and increased insurance coverage. Participants thought that there should be subsidized healthcare.

> "The government needs to have a system so that if you have an emergency and you go to any hospital public or private it's free and they shouldn't have a money first approach."– Nairobi, Urban

DISCUSSION

There were no major differences found between the individual provinces, or between the rural and urban focus groups. Thus, all of the results will be discussed collectively.

Community Exposure to Medical Emergencies

Understanding of medical emergencies

Based on participants' responses, community members have a relatively good understanding of what a medical emergency is. This lends validity to their responses to the other focus group questions.

Exposure to medical emergencies

The results clearly highlight a high rate (70%) of community exposure to emergencies. While there may have been some selection bias due to the nature of convenience sampling for focus groups, the results clearly highlight the need for emergency care at the community level to mitigate the burden of medical emergencies at this level.

Location of emergencies

Emergencies were reported to occur in similar locations: at home, at schools, at work, on the sports field, and on roads. The very nature of emergencies is that they can occur in any place, and at any time. Community members must therefore be prepared to deal with emergencies occurring in any location. While many emergencies occur in the privacy of the home, any emergency care intervention in a community should take into consideration unique public locations where emergencies might occur more frequently, such as busy roads, large schools, or popular playing fields.

Transportation

The frequent use of private cars, motor cycles and taxis to transport patients during a medical emergency confirm similar findings reported in previous research.(16,17)

Ambulance use (15%) is interesting, as they are neither one of the more frequently used methods of transportation, nor are they entirely absent from communities. Previous studies reported this at 3%.(16) We can hope that ambulance usage will be increased by implementing measures to strengthen the formal pre-hospital system, as outlined below in the "community-identified solutions" section.

Where participants seek care

Focus group participants were very eager to point out that while they often sought care at government facilities due to cost, private healthcare facilities were more likely to provide emergency care, and you would be seen faster at a private facility. More than 60% of Kenya's healthcare is provided by private facilities, so creating public-private partnerships may be a way to improve access to emergency care.(18) The National Health Insurance Fund has recently introduced out-patient cover, which includes both public and private facilities and may allow the public to access emergency care in private facilities without worrying about the cost.(19)

Assistance and Willingness to Help

Initial assistance during a medical emergency is mostly (89%) provided by community members who are laypersons rather than a first responder or a healthcare provider. The willingness of the community members to help someone suffering an emergency has also been demonstrated in other studies. In one study, the extrication of the injured from road traffic accidents was performed by members of the public (bystanders) the majority of the time (65%). Other patients were extricated by ambulance (2.8%) and military medical personnel (6.2%). Yet this assistance was only with extrication from the vehicle or transport from the scene, 92% of surviving patients had no medical interventions instituted before arrival at the hospital.(17) These findings are consistent with other similar studies on RTI patients in Kenya.(20)

When participants were asked reasons why they might not help in an emergency, the most common theme was a concern that they the helper would be inconvenienced or harmed. It is important to understand why community members may not feel comfortable helping in an emergency, as bystander non-intervention is a common occurrence in emergencies.(21) Lack of knowledge or a lack of personal protective equipment was highlighted by the participants as a common reason that would prevent someone from helping. This is consistent with other studies that have shown a lack of knowledge and fear of hurting the patient more discourages community members from helping.(22)

This highlights a need to train more community members on how to safely handle medical emergencies as they are already attempting to manage them on their own. It is important that community members feel comfortable assisting others, and that they can do so while keeping themselves safe. Knowledge on what to do in an emergency and how to properly care for a patient can undoubtedly also be addressed through training.(22) Additionally, community members would also learn how to provide emergency care without endangering themselves or the patient and how best to protect themselves when providing emergency care. Knowledge on the available resources within a community that would be available in the event of an emergency is also important. Community members would also need to be educated on how to obtain help in an emergency, and how to activate emergency resources.

Legislation is also necessary to address legal concerns; the current laws and practice need to be modified so that people can feel comfortable helping others in need. This may be accomplished through the introduction of 'Good Samaritan' laws, discussed below under 'policy interventions'.

Barriers to Emergency Care

In the field of emergency obstetric care, a conceptual framework was developed to describe the three phases of delays influencing maternal mortality. This "three delays" model identifies barriers to the provision and utilisation of effective, timely obstetric care.(23) Emergency care can also be conceptualised in relation to delays, as effective emergency care relies on timely recognition and stabilisation of life threatening conditions. The first delay the "three delays" model is a delay in the decision to seek care.(23,24)

> "The outcome of acute illness or injury is strongly influenced by early recognition of its severity and the need for medical intervention. Since most emergencies start at home, any system to promote the early recognition of emergency conditions should be based in the community."
> – Razzak and Kellermann(25)

Community knowledge, or a lack thereof, is a major barrier to the decision to seek care. A lack of knowledge on the part of the community as a whole can cause emergencies to go unrecognised for too long, and when they are recognised, can prevent community members from making the best use of their resources to assist the patient in receiving lifesaving care. In the participant communities, neither professional first responders such as the police nor general community members are trained in the initial stabilisation and transport of emergent patients. This can cause anxiety and trepidation, and is a large barrier to providing assistance.

In the "three delays" model, transportation barriers are best described as the second delay, a delay in reaching care.(23) It is difficult for community members to reach emergency care for multiple reasons. There are not many healthcare facilities, especially in rural areas, so patients have to travel long distances to reach care. This is compounded by the fact that transportation is often simply not available. It can take a long time to secure a means of transportation, which usually costs money that the patient may not have. All of these factors combined with poor road quality contribute to long delays between the decision to seek care and arriving at care.

Another contributing factor to the delay in reaching care is the absence of a pre-hospital system. Although the country has some ambulances, they are not part of a unified system, most do not provide any pre-hospital care, and there are not available in sufficient numbers to adequately provide for the population. There are many aspects missing from the pre-hospital EMS system such as ambulances, trained personnel, and equipment. But the lack of a communication system is also detrimental, even to the rudimentary ambulance transportation that is occurring at present. The country does not have a universal emergency number, one that is known by all citizens and is always functional. Without this, community members are not able to request emergency help when needed.

Healthcare facilities without a triage system, dedicated space and equipment for emergency resuscitation, properly trained healthcare providers, and a timely, effective referral system all contribute to a delay in receiving adequate emergency care. This is the third delay in the "three delays" model.(23) When emergent patients finally arrive at a healthcare facility, they are further hindered by inadequate or non-existent emergency care. Upon arrival, there is often no triage or prioritisation system, and acutely ill and injured patients are made to wait in the queue with other, less urgent patients. These queues are often long due to few providers and many patients, and participants recounted several stories of patients suffering negative events in queues from lack of appropriate attention. Additionally, few facilities have a dedicated room to resuscitate and stabilise emergent patients, and they lack the basic equipment necessary to do so.

Throughout many different communities, community members often made reference to the 'poor attitudes' of healthcare providers. It is interesting to note, however, that most participants attributed the negative attitudes to a greater failing in the healthcare system as a whole, and not to the individual providers. Participants described a shortage of providers at healthcare facilities leading to a critical lack of manpower, and the poor compensation that providers receive, causing them to seek additional employment elsewhere. Additionally, many community members voiced concerns that healthcare providers have not been specifically trained in emergency care.

The current referral system is also a major barrier to care. There is a disconnect between where emergency care is commonly provided and where acutely ill and injured patients first present to the healthcare system. Patients generally present to their closest healthcare facility due to difficulties with distance and transportation, and in some cases due to a fear of penalties and fines for skipping their primary clinic in favour of a higher-level facility. Yet the large referral hospitals are usually the only ones equipped to provide any sort of emergency care. Critically ill and injured patients are referred immediately from the peripheral facilities to the referral hospitals, but they are often referred without any initial stabilisation. And when they are referred, they are usually not provided

with any sort of transportation, placing an increased transportation burden on the patient and family. Furthermore, the receiving hospital may be unprepared to receive the emergent patient, as there is often no communication between healthcare facilities when referring a patient to a higher level of care. A lack of initial emergency care at clinics and district hospitals combined with an absence of a pre-hospital system to provide care during transportation and poor communication causes significant additional delays to receiving emergency care.

Interestingly, the most referenced barrier to care was cost of care. Participants feel that private facilities are much more expensive than government facilities, and may associate emergency care with a high cost because in order to receive emergency care that they feel is appropriate they seek care at a private facility.

Overall, community members were concerned by the general absence of an emergency care system. There are few regulations on providers, especially relating to training and proficiency in emergency care, and there are no 'standard operating procedures' (SOPs), or detailed protocols designed to achieve optimal care for a variety of emergent conditions. Community members want to see healthcare providers trained in emergency care, and feel that emergency care should be available in some capacity at all facilities, from the smallest clinics to the tertiary referral centres.

Community-Identified Solutions

When asked for ideas that would increase their access to emergency care, community members identified many practical, perceptive interventions to reduce the barriers they had previously identified. These interventions range from local, community-based programs to policy changes at the national level.

Community Training

Participants in all focus groups thought that community training in emergency awareness and response would alleviate many of the barriers faced in the initial pre-hospital setting. This training could be designed in two modules: one general module on emergency awareness for the entire community, and a second, more intensive module on basic first aid for those community members interested in receiving the training. The module on emergency awareness would serve to educate the community on how to recognise medical emergencies, and thus improve the initial time to seek care. It could also include a section on local resources, such as what phone number to call in an emergency, and who in the community has first aid training and how to reach them. The second portion of the community training would be a more intensive community first responder course for interested volunteers. This course would cover emergency recognition, stabilisation, and transportation. It would also include education on safety, including scene safety and proper infection control techniques. It has been proposed that many of the benefits of a formal pre-hospital emergency care system could be realised by teaching community members basic interventions such as establishing and maintaining a patent airway, controlling external bleeding, and immobilising fractures using available resources.(25)

Community first responder programs have previously been shown to be successful in increasing the emergency care knowledge of community members in African countries.(26–31) As discussed previously, community members already assist one another during emergencies, and are motivated to help others in the future. The specific first aid training would alleviate community concerns regarding a lack of knowledge on proper emergency medical care, and would also ease concerns about personal safety. With training, community members can be taught scene management and scene safety, as well as how to take infection control precautions. Community first responder training would encourage an individual's propensity to help by making them more confident in their skills and knowledge.(22,31–33)

It would also be beneficial to hold community meetings on emergency preparedness, with particular emphasis on transportation. If members of the community brainstormed transportation options in their area, they could identify the resources that would be available in an emergency, and come up with solutions to make sure these transportation resources would be functional when needed. Community first responders would then know how to rapidly find transportation in an emergency. They could even be taught to recognise specific signs that would indicate they should transport the patient to a specific healthcare facility over another.

Another important aspect of community first responder training would be the inclusion of a module on basic equipment necessary for first aid, and how to find this equipment in their community. Many focus group participants wanted first aid kits in their communities, however this may not be immediately feasible for both logistical and financial reasons. Instead, a better option would be to teach community first responders how to easily locate everything they would need in an emergency, such as using clean cloth instead of gauze.

The community first responder course could also be modified for police officers and other public servants. Both of these groups see acutely ill and injured people as part of their daily jobs, and should know how to appropriately assess and stabilise these patients. Basic first aid training would help police officers who are called to the scene of an RTI or other accident to prioritise patient care and make sure the patient is appropriately extricated and transported to a healthcare facility as rapidly as possible. It would also discourage police officers from delaying an assault victim's access to life-saving medical care in favour of prioritising the criminal investigation.
Strengthening formal pre-hospital care system

Barriers to care in the pre-hospital setting would also be diminished by developing a formal pre-hospital care system. This requires a greater input of resources, but would be the next step after community education towards improving emergency care. Specific interventions in the formal pre-hospital setting could include creating a national emergency phone number, training providers to provide pre-hospital care on ambulances, increasing the number of ambulances in the country and optimising their distribution, using ambulances to transfer patients to a higher level of care, and implementing a transfer protocol that requires communication between facilities about the patient.

Creating a national emergency number could be the first step towards strengthening the formal pre-hospital system, as a functional call system would improve access to resources that already exist. If there was one emergency number for the entire country, citizens could call the number whenever a large accident occurs, and dispatchers could send available resources, either an ambulance, or police if an ambulance was not available. Dispatchers could also advise callers when ambulances are not available, and when it would be better for the patient to take them to a healthcare facility immediately and not to wait for an ambulance. With a communication system, dispatchers could alert healthcare facilities that they will be receiving an acutely ill or injured patient, and facilities would have time to prepare, which might include calling in providers from home. A study in Sierra Leone demonstrated that equipping remote health facilities and traditional birth attendants with radios linked to referral hospitals can shorten response times and reduce maternal deaths.(34) A similar initiative would definitely benefit emergency care delivery in Kenya.

Focus should then be placed on increasing the availability of emergency transportation, as there is empirical evidence that providing emergency transportation saves lives.(25,34,35) This does not have to be limited to conventional ambulances; programs using motorcycle ambulances and bicycle ambulances have also been successful in areas such as Malawi and Eastern Zambia.(36)

Re-structuring healthcare facilities

At the healthcare facility level, many barriers to emergency care could be diminished by re-structuring healthcare facilities to optimise the provision of emergency care. First, triage systems should be implemented at all facilities. Triage categorises a patient's need for medical care, prioritising treatment for those with life-threatening conditions ahead of those who are stable and safe to wait. As there are insufficient providers for the number of patients needing to be seen, a triage system would prevent emergent patients from deteriorating while waiting in a queue. Triage systems are designed to maximise the efficient use of resources, particularly in setting where they are limited, while minimising morbidity and mortality of all patients.(37) There are many existing triage systems that have been designed for both pre-hospital and facility-based settings. One triage system has even been specifically designed for use in the sub-Saharan African setting, taking into account the extensive burden of disease and need for rapid triage times.(37) Studies of this triage system have found that it dramatically reduces the waiting times of critically ill patients at healthcare facilities.(38)

Another important intervention would be the creation of space for acutely ill and injured patients in each healthcare facility. This space could be a designated 'emergency room' in larger hospitals, or could be an individual resuscitation bay or bed in smaller clinics. Having a designated space would help emergent patients get the care they need by placing them in an area designed for emergency resuscitation and stabilisation. This emergency room or resuscitation bay should also be equipped with the basic supplies needed for resuscitation. The necessary supplies would be expected to vary depending on the size of the facility, but all facilities from small clinics to large hospitals should have a core set. At the moment, there are no good guidelines that outline what emergency care supplies should be available at each level of healthcare facility, beginning with small community clinics and progressing to tertiary referral centres. However, a country looking to implement equipment requirements could consult with experts to create their own protocols that are optimally suited to their environment. Proper training in triage and emergency stabilisation combined with a basic set of essential equipment should allow the staff of even the smallest healthcare facilities to manage emergent patients. Patients requiring further resources can then be transferred to a higher level of care after stabilisation.(25)

The hours of smaller healthcare facilities were also referenced as a barrier to care, as emergencies are unpredictable and can easily occur in the middle of the night. If community members only have one local healthcare facility and it closes at night, they have nowhere to seek care if an emergency occurs. If staffing allows, access to emergency care could be improved by having a nurse at the facility at all hours, with a provider that could be called in to assist with emergent patients. Having at least one nurse at the clinic 24 hours a day would be especially important in rural areas where community members cannot easily get to a larger facility. This intervention may initially be too expensive, so another solution could be to facilitate access to a local healthcare provider at all hours. If these providers are 'on call', they would be accessible by the members of the community, and could open the healthcare facility if an emergency occurs.

Policy interventions

On a national level, perhaps the most important intervention would be to provide training in emergency care for healthcare providers. This training should be aimed at the providers working in small clinics and district hospitals, as they are often the first to receive acutely ill and injured patients. The training should also include providers working in the emergency intake areas of larger regional and tertiary hospitals, as they will be receiving emergent patients as well. Other studies on emergency care have drawn similar conclusions about the need to train healthcare providers in the basics of emergency care. Recommended topics include basic assessment and intervention of airway, breathing, and circulation; taking and interpreting vital signs; methodical total body assessment; haemorrhage control; immobilisation and splinting of potential injuries; and a pre-established reliable and rapid referral notification plan.(39) This training would prepare healthcare providers at all levels of the system to appropriately recognise and treat acutely ill

and injured patients. As time is critical in an emergency, having providers trained in emergency care would allow patients to get the necessary care more quickly, thereby reducing morbidity and mortality.(4–6,25)

Once healthcare providers are trained in emergency care, SOPs for how different levels of facilities should be caring for specific types of patients can be developed. These SOPs would need to be created by stakeholders in emergency care throughout the country with expert consultation to make sure that they are context appropriate. Having SOPs at each healthcare facility would be an additional tool to ensure that emergent patients receive the care that they require in a timely fashion.

A review of the legislation would also serve to reduce barriers to emergency care. Community members are concerned about helping one another during emergencies because they fear getting involved in a legal case, or being blamed for the incident. Many countries have 'Good Samaritan' laws that protect bystanders who provide assistance to others in emergency situations.(40) If community members felt as though they would be protected from legal harm if they were to assist someone suffering an emergency, they would probably be more likely to do so.
The requirement of payment before provision of care is an enormous barrier during an emergency, and this barrier could easily be eliminated by mandating that all emergent patients be stabilised before any payment is required. This legislation could be linked to the triage system as well, requiring that patients triaged into a specific category be cared for before they are asked for money. This would prevent patients suffering increased morbidity and mortality due to an inability to pay.
Several community members also suggested that healthcare providers are paid better, as it would encourage them to do their jobs. Focus group participants were concerned that providers were often unavailable because they were working a second job to make more money. The participants felt that if the providers were paid more, they would not need to work a second job and would be present at the facility to care for patients. Additionally, the motivation and commitment of healthcare workers could be enhanced by improving their funding and support.(41) Hospitals could also be more strict at accounting for the whereabouts of their providers, and implement penalties for providers who leave the facility during their shift.

In general, the healthcare system could be strengthened by increasing the overall number of healthcare providers and creating additional healthcare facilities. However these interventions require a tremendous input of resources, and are already on the national agenda.(11,42,43) There are several specific interventions that can be implemented in the existing healthcare systems that will have a tremendous impact on access to emergency care while the government works on the larger goal of increasing the healthcare workforce.

CONCLUSIONS AND RECOMMENDATIONS

The aim of this study was to identify the critical interventions necessary for the development of an emergency care system in Kenya by gathering information about community members' current need for and barriers to emergency care.

Community members in this study perceptively identified barriers to emergency care related to each of these components: a lack of community education, absent or non-functional communication systems, insufficient transportation, no triage system, a lack of healthcare providers trained in emergency care, and inadequate equipment and supplies. After identifying these significant barriers, community members gave insightful recommendations for ways in which their access to emergency care could be improved.

The following recommendations have been drawn primarily from the focus group participants themselves rather than from the investigators.

1. Create community training courses and facilitate community empowerment
    - Community training in emergency awareness
    - Community first responder training
    - Community-driven emergency transportation plans
    - First responder training for police officers and military personnel

2. Strengthen the formal pre-hospital care system
    - Create a national emergency phone number
    - Increase emergency transportation options, including ambulances
    - Train ambulance staff to provide pre-hospital care

3. Structure all healthcare facilities to provide emergency care
    - Create a national triage protocol for all healthcare facilities
    - Create emergency rooms and emergency bays specifically dedicated for emergency resuscitation and stabilisation
    - Increase emergency hours of rural clinics when possible

4. Train all healthcare providers in the basics of emergency care

5. Change national policies to improve emergency care
    - Create Standard Operating Procedures (SOPs) for emergency care at different healthcare facility levels
    - Create legislation to protect community members involved in providing emergency care
    - Mandate the provision of emergency stabilisation before any payments

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African Federation for Emergency Medicine
Fédération Africaine de Médecine d'Urgence

Location of the AFEM Head Office:
Western Cape EMS Head Office Karl Bremer Hospital
cnr Mike Pienaar Blvd & Frans Conradie Avenue
Bellville, South Africa 7530

Postal Address of the AFEM Head Office:
Private bag X24 Bellville 7535 South Africa

Email Information:
programs@afem.info