Trauma Systems in Kenya: A Qualitative Analysis at the District Level

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Abstract
Injury is a leading cause of death and disability in low- and middle-income countries. Kenya has a particularly high burden of injuries, accounting for 88.4 deaths per 100,000 population. Despite recent attempts to prioritize injury prevention in Kenya, trauma care systems have not been assessed. We assessed perceptions of formal and informal district-level trauma systems through 25 qualitative semi-structured interviews and 16 focus group discussions with Ministry of Health officials, district hospital administrators, health care providers, police, and community members. We used the principles of theoretical analysis to identify common themes ofprehospital and hospital trauma care. We found prehospital care relied primarily on “good Samaritans” and police. We described hospital care in terms of human resources, infrastructure, and definitive care. The interviewers repeatedly emphasized the lack of hospital infrastructure. We showed the need to developprehospital care systems and strengthen hospital trauma care services.

Keywords
trauma; health seeking; health care, access to; Africa, sub-Saharan; research, qualitative

Injury is a leading cause of death and disability worldwide. More than five million people die from injuries each year accounting for 10% of the world’s deaths (World Health Organization [WHO], 2010a). Injuries account for more than 8% of the global burden of disease in terms of disability-adjusted life years (DALYs) lost. Although injuries, and in particular road traffic injuries (RTI), have received increased attention, strategies to strengthen trauma care are lacking. This is especially true in low- and middle-income countries (LMICs), where more than 90% of injury-related deaths occur and where health care facilities are often unable to provide needed services (WHO, 2010a).

In Kenya, 86.3 deaths per 100,000 are attributable to injuries and 3,363 DALYs per 100,000 population are lost each year to injuries (WHO, 2009a). More than 27% of injury-related deaths result from RTIs (WHO, 2009a). Several studies show a dramatic increase in RTIs over the last four decades: Between 1962 and 1998, RTIs increased 300% and RTI-related fatalities increased more than 400% (Agoki, 1992; Odero, 1995; Odero, Khayesi, & Heda, 2003). Given these trends, there is a need to describe formal and informal prehospital and hospital-based trauma systems.

We describe the experience of the injured patient at the district level in Kenya from the time of injury through their hospitalization. We use these findings to inform future trauma care systems. Specifically, we present perceptions and opinions of the systems reportedly used at the district level to triage and transport the injured patient from the scene of the injury, outline existing communication systems that respond to the injured patient, and explore the triage capabilities of district-level health care facilities.

Method
In this qualitative study, we used key informant interviews and focus groups in two districts in Kenya, referred to as District 1 and District 2, over a 3-month period between

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We conducted 16 focus groups in urban and rural settings in the two districts. We chose these settings at random after we mapped each district using urban and rural catchment areas and 2009 Kenya census criteria (Gordon & Womersley, 1997; Kenya National Bureau of Statistics, 2010). We chose three rural sites and three urban sites in each district and assigned each site to one of three groups: men, women, or youths aged 18 to 25 years. We chose two additional urban sites at random in each district and identified specific target populations affected by trauma and injury. In District 1, this included two groups of bus drivers, whereas in District 2, this included one group of bus drivers and one group of community health workers. Five to eight individual focus group participants participated in each focus group recruited at local community meeting places using age, gender, and occupation (for bus drivers and community health workers) as recruitment criteria. Each focus group lasted approximately 1 hour. Two facilitators led the workshops following a 1-day training course.

### Data Collection

At the start of each key informant interview or focus group, participants were informed of the study’s purpose. We developed interview guides to provide structure to the interviews and discussions. We included questions regarding care-seeking behaviors at the time of an injury and the issues of availability and quality of prehospital and hospital care. The interviews and discussions were open-ended and probing, allowing participants to shape the discussion. They were conducted in English, audio-taped, and transcribed. We continued to interview and collect data until the data reached a level of redundancy. At that time, we considered the study categories and theoretical constructs saturated for content (Morse, 1991).

### Data Analysis

We analyzed data from the interviews with NVivo 9 (QSR International, 2010) using the principles of thematic analysis process (Braun & Clarke, 2006; Charmaz, 2001; Glaser & Strauss, 1967). We used a constant comparison analysis with predetermined codes from the conceptual framework and codes that emerged from the data (Leech & Onwuegbuzie, 2007). We based the conceptual framework on previously published literature on trauma care systems in LMICs that described trauma systems in terms of prehospital and hospital capabilities (WHO, 2004). Predetermined codes included prehospital communication, training, and transportation, and hospital care clinical capabilities and trauma team development and training. However, realizing that such systems had not been previously described with regard to Kenya, we...
recognized the framework needed to include both formal and informal trauma systems. In this case, we used an inductive–deductive approach, moving back and forth between the data and the emerging concepts and theories (Leech & Onwuegbuzie, 2007).

Our analysis was divided into four phases. In the first phase, we familiarized ourselves with the data, reading verbatim transcripts and noting significant themes. Next, we identified emerging themes and developed coding categories with respect to the views, attitudes, and perceptions of the respondents. In the third phase, we systematically coded each transcript according to the categories intended to describe the issues under study. Finally, we used the data to confirm that the theoretical concepts were appropriate and meaningful. We examined the text for illustrative quotes that reflected these specific findings (Holliday, 2002).

We ensured credibility through constant comparison and member check (Lincoln & Guba, 1985). We used constant comparison by returning to the data multiple times during the analysis to verify and develop categories. In terms of member check, we contacted four participants after our analysis and provided them with a summary of the primary findings. They were able to confirm our findings were in accordance with their experiences. We obtained verbal informed consent from all study participants. We obtained ethical approval for the study from the Johns Hopkins Bloomberg School of Public Health Institutional Review Board in Baltimore, Maryland, and the Ministry of Health and Sanitation and the Ministry of Medical Services in Kenya.

Findings

Of the study participants, approximately 68% of key interviewers were male, with an average age of 30 to 39 years. All respondents had completed secondary school or higher (see Table 2). Among the 102 focus group participants, 56% of the participants were male, with an average age of 30 to 39 years. The majority of participants had completed secondary school ($n = 66/102; 65\%$) and approximately half were self-employed ($n = 52/102; 51\%$). Findings were described in three broad thematic groupings: the burden of injury, the role of prehospital trauma care, and the role of hospital care at the district level (Table 3).

The Burden of Injury

Participants reported injury was a worsening concern. One respondent from District 1 estimated that injury accounted for more than 85% of patients seen at the district hospital’s casualty department. Both key interviewers and focus group participants cited RTIs as the most common cause of injury in the districts due to the hospitals’ close proximity to major highways and an increase in motorcycle usage: “Since the introduction of [motorbikes] on our roads, road accidents have increased tremendously: many deaths, broken limbs, and many other injuries.”

Respondents described alcohol was a common injury-related risk factor, associated with “hopelessness,” “poverty,” and “unemployment.” Alcohol was “the cheapest form of entertainment our people can afford” and linked to high-risk behaviors including pedestrian inhibition and over-speeding. Respondents stated over-crowding in vehicles was a second risk factor and deemed it was the fault of both drivers and community members who accepted over-crowding as a social norm. Some respondents described a third common risk factor to be the low use of safety precautions, such as helmets, seatbelts, and reflective clothing: “A day or two can not end without witnessing a motorbike accident where passengers suffer most as they do not put on their helmet.”

Respondents felt there was a lack of experience among drivers, especially motorcyclists, commenting
Table 3. Key Themes, Sub-Themes, and Concepts Identified in Analysis.

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<th>Themes</th>
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<th>Concepts and Sub-Concepts</th>
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that motorcyclists often drove without qualifications. Respondents reported these risk factors stemmed from “ignorance,” “negligence,” “carelessness,” and drivers’ “lack of self discipline.” Other respondents, especially drivers, cited poor road infrastructure and vehicle maintenance as RTI risk factors. Drivers described a lack of safety information available to the public.

In terms of injury-related legislation, respondents agreed well-established laws were in place, especially regarding safety precautions, drinking alcohol while driving, over-speeding, driver qualifications, and over-crowding of buses and motorcycles. However, respondents stated the laws were not enforced, as described by one key interviewer:

There are many laws enacted to reduce the injuries to the public and I also know that they are inactive (and) not implemented. There are laws on road safety and they are well stipulated. But the government, through the traffic police, is not putting them into full force. An (overloaded bus) will pass the police, who will not take legal action, but a bribe. And such behaviors are all over the country and this had lead to many deaths.
Respondents described that a major problem with road safety enhancement was the acceptance of bribes, particularly by police. As long as the police continued to accept bribes, there was little incentive to enforce road safety laws.

Respondents cited burns, work-related injuries, and violence as common types of injuries in both districts. Burns were often attributed to house fires; in an effort to prevent house fires, respondents observed that families often taught children about fire safety and kept matches and other fire-related items out of reach of children. Many participants described injuries sustained during work, such as quarrying, farming, and cattle herding. Respondents stated these vocations were high-risk, but because of poverty, laborers have little choice for alternative, less-risky jobs. Respondents linked unemployment, especially among youth, to violence. Violence included organized crime, armed robbery, tribal clashes, and rape. Respondents suggested improving unemployment could decrease violence. One respondent said, “The government should provide jobs to our youths to reduce their involvement in crimes.”

Prehospital Care

Focus group participants in both districts described similarities in which prehospital trauma care was provided: Once an injury occurred, community members, often referred to as “bystanders,” “good Samaritans,” or “well-wishers,” were the first to arrive on the scene; police were often not present initially. One respondent described, “In most cases, we [the community members] are the ones involved in the rescue.” Community members assumed one of three roles at the scene of an injury: those who tried to help the injured, those who were on-lookers, and those who took advantage of the scene. Although many community members might be well intentioned, respondents agreed few community members had the knowledge regarding first aid or safe patient transport.

“Invariably, people who are not trained at all are the ones who are going to scoop the victims and take them to hospital.” “Any first aid—any care—is a foreign thing as far as the community is concerned.”

Respondents felt patients were at risk of secondary injuries sustained during extrication and transport. In addition, the injured cannot be triaged appropriately in order of injury severity:

When [patient triage is] being handled by the community, [the community members] leave the very critical cases and bring the non-critical cases [to the hospital]. By the time . . . the very critical cases [arrive at] the hospital, they are actually gasping and have to be resuscitated. And you are not sure if that patient is going to make it.

Respondents described a second group of community members as on-lookers, curious about the injury, who “want to see what is happening, with or without helping . . . [This] crowd actually becomes a threat to the life of the victims.” Respondents described this group as large and obstructive. The third group of community members was those who viewed the injury an opportunity “to steal” and “to rob.” Respondents described that amid the congestion and chaos of a large crowd and in an environment that lends itself to theft, police had to redirect their attention to secure the scene and ensure the safety of not only the injured but community members as well.

Respondents observed that paramedics were generally absent from the scene of the injury: “We do not have a system of emergency trained medical technicians. It’s not in Kenya yet.” In the absence of paramedics, respondents described how police assumed the role of the medical provider. In Kenya, police received basic first aid knowledge during their training as police officers. However, trauma-specific training, such as how to safely extricate an injured person, was not provided to the police. “[The police] have the basic first aid training in management of casualties . . . but when it comes to actual casualty handling or management, [they] may not have grounded training.”

In terms of seeking care at a health care facility, many participants reported that the decision to seek care at a hospital depended on the severity of the injury. “I would [go to the hospital] immediately if it is a matter of life and death.” “If the injury is small, then I would not go to the hospital since I need to continue working.” Respondents cited a common reason to not seek medical care was the inability to pay hospital fees and transport. Other reasons included lack of transport to the health care facility. Only drivers and rural elders in District 1 reported the distance to a facility as a barrier to accessing health care for an injury. Less often, participants cited traditional medicine and religion as alternatives to seeking facility-based care.

Prior to arriving at a health care facility, most participants reported they did not contact an emergency response system for medical assistance, although such a system exists in Kenya. Key interviewers described that the police oversaw a national 999 emergency phone number: Once an emergency call was placed, it was directed to the local district police department. After the call was answered, it became the police’s responsibility to respond to the call and inform other emergency care providers, such as hospitals and fire departments. Respondents felt this dispatch system was not well established and often described it as unreliable. “Sometimes you dial [999] and there is no response.” “[The community member might call 999; then [the police might] tell you they have no transport.”
Among key interviewers, there was discrepancy regarding community awareness of the emergency phone number: Some thought the community was generally aware that a national emergency number was available; others thought that the majority of community members did not have knowledge of this number. Among participants, very few respondents reported an awareness of an emergency phone number. Of those who were aware, the emergency phone number was described as “inefficient,” “never in use,” and “does not go through.” Key interviewers reported that non-government emergency telephone numbers existed often operated by private first response organizations. However, none of the participants were aware of or had used these resources.

Respondents reported a publicly available ambulance system did not exist. Instead, key interviewers stated that each district hospital had an ambulance, which was often used to transport patients between hospitals, rather than from the scene of the injury to the hospital. The ambulances were described as “old,” “unreliable,” “not good,” and “not functional.” Key interviewers reported that although private hospitals had ambulances, they were available only at significant out-of-pocket costs. They also described some private non-profit organizations that provided ambulance services for free to injured patients; none of participants were aware of these services. Participants stated they transported the injured themselves in personal vehicles, motorcycles, or taxis:

Once [the injured] are extracted from the wreck, there is no good means of transportation to the facility. They stop any vehicle passing by and victims are just thrown in any form of transport and rushed to the nearest hospital. And this is a big challenge for us.

Respondents articulated the need for a paramedic system: “We need a more modern ambulance with people that are actually trained on ambulance services.” Some respondents were skeptical that one ambulance per hospital could have a significant impact because often there is more than one injured patient at a time. Others were concerned that developing a paramedic system was not realistic: “We must train the emergency medical technicians. But this is not one we’ll get to because the human resource for health is very constrained.”

Respondents emphasized the importance of establishing an emergency communication system through initiatives such as a toll-free emergency phone number. The police would then be in direct communication with health care providers and could alert hospitals of arriving injuries to prepare the trauma patients. Some respondents suggested enhancing private first responder organizations’ dedicated toll-free number: “You do not need to reinvent the system; it’s just a matter of partnering with the organizations.”

Respondents thought one of the most important aspects of improving prehospital care was to provide first aid and triage trauma training to community members and the police: “We need to train people on first aid . . . We [need to] teach all police officers the basic tenets of first aid.” Another respondent said,

Let’s have lots of seminars through radios, through the television, through even pamphlets. [We have] organized societies of matatus [buses] . . . We can teach matatus leaders how to transport patients in a safer mode. Then they will disseminate the same information to the drivers.

Several respondents asserted the community must have ownership of this training, emphasizing themes of “enlightenment” and “empowerment.” Community members additionally voiced the need to have not only first aid skills but equipment as well: “Is it possible that we get gloves? Because at times, we cannot perform first aid with our bare hands because of the risks involved.” In describing these improvements, respondents emphasized that this could only be achieved through enhanced communication and coordination between community members, the police, and health care providers.

**Hospital Care**

Respondents in both districts described similar systems regarding how injured patients were triaged at the respective hospitals: Once they arrived in the hospital, the injured were given first priority and immediately seen at the casualty/out-patient department. The District 1 hospital did not have a casualty department; if many injured patients arrived at the same time, it would divert its staff to care for the injured, converting the out-patient department into a triage area:

The moment that we get the report [of a mass casualty], we are able to mobilize the staff from all the departments so that we are able to prepare the out-patient [department] to tend to the victims. Number one, we notify all the departments through [the nursing] office: x-ray, theater, all the inpatient wards . . . so that they can also send their staff to come and assist us. We coordinate from here.

Often however there was no advanced notification of casualties, leaving the hospitals with little time to prepare for the trauma. “If there is a massive bus [crash] and 10, maybe 11, people are involved, it throws the hospital into a confusion. They are not prepared for that, and the equipment is not set. People are not ready.”

While the triage departments were staffed full-time by clinical officers in both hospitals, a surgical medical
officer and surgeon were on call from home. If a medical officer was required to come to the hospital at night, the hospital ambulance, staffed by a driver and a watchman, would transport the medical officer to the hospital. One respondent stated, “It is not safe. This place is not safe at night . . . [The medical officers] can be hijacked; they can be shot . . . People are not good.”

Key interviewers described hospital care in terms of physical and human resources. The hospitals lacked basic trauma equipment.

Our biggest problem is human resource, the infrastructure, and basic resuscitation equipment: you know, oxygen, cervical collars, just to retard somebody bleeding. Just basic things like suction tubes, a chest tube . . . We are not talking about complicated things.

Key interviewers stated the lack of equipment, reported by because of budgetary constraints, compromised the quality of trauma care services. Respondents felt resources were lacking in all hospital departments including radiology, the operating rooms, in-patient wards, and laboratories. As a result, participants described dissatisfaction with the care provided in terms of lack of equipment, beds, and medications, long wait times, and reluctance of health care providers to attend to injured patients. “To get treatment at the district hospital, it depends on who you know in order to receive care. You cannot get immediate care, even when you are injured.”

In terms of human resources, respondents described training in the field of trauma as predominately on-the-job: “The personnel here are quite well acclimatize to handle [the injured] because they have been handling [this for a long time]. Many of us do not need to be told what to do.” The training was neither formal nor trauma specific. Respondents commented that it is difficult to ensure appropriate hospital-based triage if a health care provider was not trained, observing that very few physicians and nurses were trained in Basic and Advanced Trauma Life Support: “(These courses) are very important. Nobody here has been trained with that, I’m sorry to say.”

Hospital-based respondents outlined ways to improve hospital care by enhancing infrastructure, equipment, training, and the trauma data system. Community members cited hospital care could be improved through facility enhancement. Key interviewers in both districts described the need to focus attention on the hospitals’ casualty/out-patient departments. In District 1, respondents repeatedly articulated the need for a casualty department at the hospital: “My prayer and my wishes are . . . to have a modern casualty [department]. We really need that and a trauma center. It is very important for this place. Very important.” Respondents in District 2 highlighted limitations of their casualty department, including how the small space limited the ability to adequately identify and treat the most critical patients: “We need to expand our casualty [department]. It is so small. Sometimes it is not possible to handle many accident victims.”

Respondents thought enhanced trauma care training was necessary for all health care providers, regardless of the extent of their prior experience. One hospital developed an emergency preparedness team in an effort to enhance the coordination of the hospital’s response to trauma patients. Such training programs could be implemented under the direction of the emergency preparedness team. Some respondents commented on the need to improve trauma data systems and described their perceptions of data systems:

Our data systems are so weak that trauma is not well recorded in our records. We want to ensure that data is well captured by trying to develop and strengthen our national data system, not only for road traffic injuries, but also for all manner of injuries. This will help us . . . have the evidence to request [and] advocate for support of trauma care.

Respondents suggested a trauma surveillance system could be a means to explore health care providers’ performance in response to trauma training, improved triage, and providing definitive care.

Discussion

We have provided a qualitative evaluation of existing district-level trauma systems in Kenya as described by individuals integral in the prehospital and hospital settings and community members. Findings allow for several important observations to be made regarding the current district trauma systems and improvements. We break these observations in terms of the burden of injury, prehospital care, and hospital care.

Burden of Injury

Most respondents perceived an increase in the burden of injury in the Kenyan districts, much of which resulted from RTIs. Respondents focused on how injuries might be prevented through effective legislation and enforcement, paralleling prevention interventions described in the global literature (Peden, 2004; WHO, 2009b). Legislation regarding alcohol use, over-speeding, and gun control exists in Kenya such as the Firearms Act of 1954 and the Traffic Act of 2009. The Traffic Act of 2009 mandates motorcyclists must have a valid license; motorcyclists and their passengers must wear helmets and reflective clothing; every mini-bus that travels outside its
municipality must carry a first aid kit; over-speeding is prohibited; and any driver under the influence of alcohol such that they are incapable of proper vehicle control will be found guilty of the offense. Respondents in our study stated that such regulations were not enforced, especially with regard to motorcyclists’ licensing, helmet usage, over-speeding, and alcohol use.

Although care seeking for traumatic injuries in LMICs has not been widely described in the literature, our study found urban and rural respondents based their decision to seek care at a health care facility in terms of injury severity and costs, including transportation costs and the availability of money at the time of the injury. This is similar to findings from Nigeria where costs were a fundamental determinant as to whether injured individuals sought care (Juillard, Labinjo, Kobusingye, & Hyder, 2010). In our study, very few respondents cited distance to a health care facility as a deterrent to seeking care for injuries. This differs from other care seeking studies where researchers found physical access to health care to be a barrier to seeking care for injuries. This might be because of the inherent nature of injury: Injuries can be often physically apparent and sudden in onset compared with a non-traumatic medical problem that maybe more subtle in onset.

**Prehospital Care**

We found formal prehospital care systems limited in capacity, particularly in terms of triage, transport, and communication. We found injured victims rely heavily on the “good Samaritan” to provide not only care but also transport to a health care facility. Community members cited they lacked the first aid skills to appropriately provide this care, which could result in worsening or additional injuries. Community members described transporting the injured in their personal vehicle and did not report using or relying on ambulances for transport. A national emergency number exists, but community members were either unaware of the number or reported it as unreliable. We found the need to develop prehospital trauma training for community members and police and explore ways to strengthen the national emergency communication system.

These recommendations are not unique to Kenya; in fact, this need has prompted initiatives in other LMICs to develop prehospital trauma care systems. For example, prehospital care was improved in Mexico by increasing the number of ambulance dispatch sites and providing training through a prehospital trauma life support course. Following this intervention, prehospital care, including cervical spine immobilization and provision of oropharyngeal airway for respiratory distress, increased while prehospital deaths and mean response time decreased (Arreola-Risa et al., 2000). Other studies reported improvements in prehospital care with training provided to community members: In Cambodia and Iraq, paramedics provided basic first aid training to community members, which resulted in a reduction in injury-related mortality from 24% to 9% (Husum, Gilbert, Wisborg, Van Heng, & Murad, 2003). In Ghana, first aid training to commercial drivers resulted in improved crash scene management and medical management (Mock, Tiska, Adu-Ampofo, & Boakye, 2002).

In both districts, few private organizations provided prehospital care at the district level. These services provided their own emergency contact telephone number and ambulance services free of charge for the injured patient. However, community members who participated in our study were unaware of the services. There is a need to build on existing private ambulance systems and encourage more community members to use these services.

Researchers have described these recommendations in other LMIC settings. For example, in Ghana, more than 80% of injury-related deaths occurred in the prehospital setting. This motivated Ghana’s Ministry of Health to collaborate with other government sectors, such as the National Fire Service, to implement the Nationwide Ambulance Service, which in turn trained paramedics, increased the number of ambulances, developed control rooms, established a dedicated emergency telephone line, and promoted sustainability through a three-tier national-, regional-, and district-level administrative structure (Forjuoh, Mock, Freidman, & Quansah, 1999). In addition, Pakistan established an emergency medicine system to include training and ambulance stations (Waseem, Naseer, & Razzak, 2011).

Prehospital care sustainability can be enhanced through effective legislation. Examples of effective prehospital legislation include Pakistan’s Punjab Emergency Service Act 2006 mandating the establishment of emergency services, and Columbia’s Resolution 1043 to standardize prehospital training and establish ambulance services (Waseem et al., 2011; WHO, 2010b). The success of these interventions lay in the ability to approach prehospital care as a system; lessons learned from these interventions could be applied to promoting a prehospital trauma care system in Kenya.

**Hospital Care**

In many LMICs, advanced trauma management is rarely available (Joshipura, Mock, Goosen, & Peden, 2004). Kenya is without exception: District-level hospitals lack intensive care units and the ability to provide definitive care for hypotensive or intubated patients. Although general surgical facilities are available at these hospitals,
there is an absence of specialized trauma units and axillary services, such as orthopedics and neurosurgery. Strengthening the care of the injured patient thus becomes even more important, as shown in our study. By highlighting the views of community members and key informants directly involved in the care of the injured, we suggest ways to enhance the current trauma system.

We present key recommendations regarding prehospital and hospital care in Table 4. Recommendations to improve hospital-based trauma care should include the development of quality improvement (QI) programs and trauma registries. QI is a systematic examination of processes used in service delivery, operations research, teamwork assessment, use of data to measure outcomes, and managerial practices, even within weak health systems facing austere resource constraint (Heiby, 1998; Leatherman, Ferris, Berwick, Omaswa, & Crisp, 2010). District- and provincial-level hospitals can develop trauma registry systems to provide data to describe the epidemiology of injury, evaluate the quality of care administered to the injured patient, identify deficits in patient care, and inform QI programming. Such a trauma registry was implemented in a regional hospital in Thailand with impressive results (Chadbunchachai et al., 2001).

A team approach to trauma care can enhance measurement capacity, accountability, and sustainability. Staff at District 1’s hospital, for example, developed a trauma response team that could be strengthened through QI. The team could identify specific health care providers to receive trauma-specific training. Under the leadership of the hospital-based team, the team could ensure training is ongoing and sustainable. Guidelines to implement QI in the setting of trauma care in LMICs have been developed by the WHO and can be served as a valuable resource (Mock, Juillard, Brundage, Goosen, & Joshipura, 2009).

At the district level in Kenya, there are private sector prehospital systems that operate independently and could be strengthened through coordination between themselves and the public sector. The public sector’s prehospital care system must be enhanced. At the district hospital level, trauma care lacks a well-coordinated, systematic approach and needs to be strengthened through a targeted approach. These recommendations will only be effective if they are turned into action points through stakeholder collaboration and if trauma care is made a public health priority.

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