

Policy brief 6

Building a strong health system in a fragile setting: importance of integrated service delivery to provide emergency and critical care in Somalia

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Integrated service delivery: essential for universal health coverage

The concept of integrated service delivery is an evolving subject in contemporary health science. It is an approach that combines services for multiple interrelated diseases to increase overall efficiency of the health system and patient convenience. The concept does not contradict the idea of building a health system based on a primary health care approach. On the contrary, it places primary level care at the core of integrated health services and ensures that systems are responsive to everyone's need, values and preferences [1]. One of the most important lessons of the current coronavirus disease 2019 (COVID-19) pandemic has been that safe access to health care that is close to home for early recognition of disease and provision of interventions, including targeted referral to higher levels of care for severe illness, is as important as specialized care at higher levels of the health services. Through this approach, an integrated health service delivery system optimizes the health care resources of both the primary and secondary levels in a continuum of care.

The World Health Organization (WHO) defines integrated service delivery as “the management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system” [2, 3], which remains at the heart of universal health coverage (UHC) in any country. The fundamental principle of UHC is that no one should be left behind while accessing health care whenever they need without suffering financial hardship. An equitable health system also means that there is no barrier to accessing

- Integrated service delivery is essential for universal health coverage as it promotes a continuum of preventive and curative services across all levels of the healthcare system
- Emergency, critical care and operative care services are part of integrated service delivery which can be implemented in any country, even in a fragile setting without a substantial increase in resources
- The burden of critical illness is disproportionately high in low-income countries with 90% of trauma deaths occurring in low or middle-income countries alone
- The burden of emergency health conditions is not known for Somalia due to the lack of data
- All leading causes of death and disability in Somalia are the conditions with potential “emergent manifestations”, which, if not addressed or treated early, can often lead to serious disability and death
- The focus of building emergency, critical care and operative care services in Somalia should be at the community and primary health care level with a functioning referral system with secondary level care. The involvement of primary health care centres in the provision of emergency medical care should ensure that the greatest possible good is done for the largest possible number of people and should reduce the risk of district and regional hospitals becoming overwhelmed by non-emergency cases

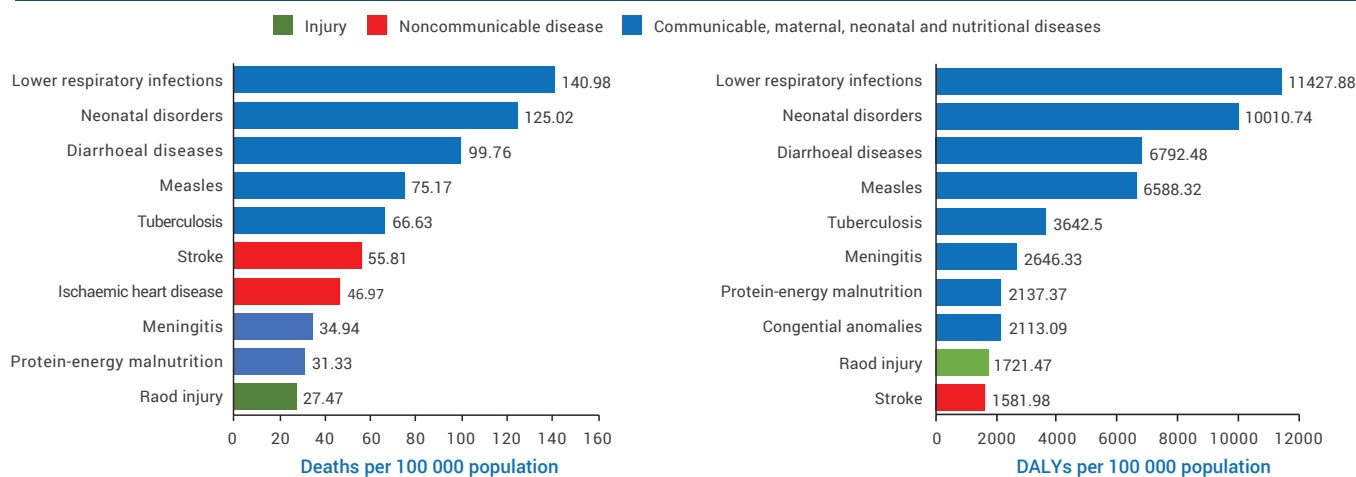
health services for anyone in the population. While a range of health services are offered at the primary health care level which meet most of the health care needs of all the population of a country and which contribute to achieving UHC, other higher-level services, such as emergency care, critical care and operative care services (including surgical care), are not necessarily available at the primary health care level. The non-availability of these services, even at a basic level at secondary- and tertiary-level hospitals, or the lack of understanding of the need to invest in emergency, critical and operative care services in many countries have led to unnecessary deaths and disabilities, many of which are preventable. Evidence has clearly shown that emergency health conditions contribute to a substantial proportion of the disease burden and that emergency care interventions can be implemented in any country without a substantial increase in resources [4]. Evidence also shows that 54% of deaths (24.3 million deaths) in low- and middle-income countries that are attributed to emergency and life-threatening health conditions are amenable to emergency care systems [5].

Burden of emergency health conditions in Somalia: evidence for and value of emergency care

Although recent evidence has shown that the burden of critical illness is disproportionately high in low-income countries [6, 7], with 90% of trauma deaths occurring in low or middle-income countries alone [8], the burden of emergency health conditions is not known for Somalia due to the lack of data. The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019 [8] has published a range of estimates on the leading causes of deaths and disabilities in Somalia and other low-income countries which has allowed us to better understand the situation in Somalia.

Analysis of estimates of burden of disease data for Somalia available from the GBD 2019 shows that all leading causes of death and disability in the country are the conditions with potential “emergent manifestations”. These manifestations are conditions which, if not addressed or treated early (i.e. within hours to days of onset), can often lead to serious disability and death [9]. In fact, amongst the top ten causes of death in Somalia (Figure 1) – ischaemic heart disease, lower respiratory infection, diarrhoeal diseases, stroke and road injuries – all can present as life-threatening emergencies. If these conditions cannot be treated quickly enough using appropriate critical and emergency care interventions, the probability of dying from these conditions is high. Similarly, amongst the 10 leading causes of disability in Somalia, at least six medical conditions (Figure 1) can present as an emergency.

Figure 1. Top 10 causes of death and disability-adjusted life years (DALYs) per 100 000 population, all ages and both sexes, Somalia, 2019



Source: Global health estimates 2020: deaths by cause, age, sex, by country and by region, 2000–2019. Geneva, World Health Organization; 2020 (<https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghle-leading-causes-of-death>).

In addition, Somalia has very high rates of maternal¹ and child deaths². However, to tackle high maternal and neonatal mortality rates, good quality emergency obstetric and neonatal care is needed. More than 80% of newborn deaths are due to prematurity, asphyxia, complications during birth, or infections such as pneumonia, diarrhoea, measles and neonatal disorders. The deaths from all these conditions can be prevented with access to health facilities where emergency and critical care services for maternal and child health exist. A review in 2005 asserted that firm evidence exists for promoting emergency obstetric care as a key strategy for reducing maternal mortality [10].

Both emergency obstetric and neonatal care are based on the principle of triage, quick interventional treatments and critical care, and could form part of and strengthen a combined service for emergency obstetric and paediatric conditions. In general, reductions in infant and maternal deaths due to noncommunicable diseases, road traffic injuries and violence-related trauma are not achievable without a functioning emergency care system.

Given the fact that demographically Somalia has a young population, the majority of critically ill patients in Somalia are children and young adults. As such, the potential for recovery is good if the health system's performance to deal with emergency and life-threatening medical conditions can be improved in the country, which has also been proven elsewhere [7]. The current evidence also suggests that over half the deaths that occur from emergency conditions in low-resource settings could be prevented by improvements in emergency care [11]. Therefore, there is a compelling argument that improving the capacity and performance of the health system as quickly as possible could save the lives of thousands of young people in Somalia, who will have another opportunity to serve their country.

The case for investing in emergency care in Somalia is based on available evidence which shows that: (i) emergency health conditions contribute to a substantial proportion of the disease burden; (ii) emergency care interventions have a substantial beneficial effect on outcomes; and (iii) these interventions can be implemented without a substantial increase in resources as has been seen elsewhere [5].



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¹ The lifetime risk of maternal death in Somalia is 1 in 22, higher than in any other country (source: Women and children in Somalia: a situation analysis. Geneva: United Nations Children's Fund; 2016).

² Any child who is born today in Somalia is about 16.5 times more likely to die before the age of 5 than any other child elsewhere (Source: <https://www.unicef.org/somalia/health>)

Emergency, critical and operative care in Somalia: current status

During the first half of 2021, WHO conducted a rapid assessment of critical care services in Somalia covering 138 hospitals across 18 regions in the country using an online tool called the WHO emergency critical care assessment tool (Research Electronic Data Application-REDCap) [12]. This tool was also used in some other countries in Africa. The purpose has been to identify existing gaps in critical care services and to develop emergency, critical and operative care services as part of an integrated service delivery system in Somalia. From the data analysed so far, it was evident that the country does not have even basic services for emergency care interventions. Of all the hospitals assessed, only 28% had some basic emergency and critical care services. Only 20.0% of the hospitals assessed had designated areas for emergency care and only 2.9% had units for emergency care which were open 24 hours a day (Table 1). Many hospitals also lacked important services and equipment that are essential for service delivery; for example, none of the hospitals had blood transfusion services and few (25%) had medical oxygen.

Table 1: Findings of the hospital assessment, Somalia 2021

Item	Value
Hospitals assessed, no.	142
Operation theatres, no.	97
Outpatient departments, no.	54
Emergency departments, no.	112
Intensive care units, no.	23
Inpatient departments, no.	128
Inpatient beds, no.	5822
Full time doctors working in the hospital, no.	710
Full time nurses working in the hospital, no.	1988
Emergency critical care readiness, % of hospitals	28.0
Availability of handwashing facilities, % of hospitals	66.0
Availability of designated areas for emergency care, % of hospitals	20.0
Availability of emergency unit, open 24 hours a day, % of hospital	2.9
Availability of X-rays, open 24 hours a day, % of hospitals	13.6
Availability of laboratories, open 24 hours a day, % of hospitals	13.6
Availability of pharmacies, open 24 hours a day, % of hospitals	16.4
Availability of medical oxygen, % of hospitals	25
Availability of electricity, % of hospitals	62
Blood transfusion services, % of hospitals	0.0
Availability of running tap water, % of hospitals	37

Source: Towards establishing emergency, critical and operative care services in a fragile setting capitalizing on the COVID-19 response. Report on the activities conducted under the Pandemic Emergency Financing Facility to improve access to health services in Somalia. Cairo: WHO Regional Office for the Eastern Mediterranean, 2021.

Almost all of the hospitals lack a formal triage system, there is often no emergency department and patients are seen either on the wards or in outpatient clinics when they arrive. This results in potentially deadly delays for critically ill patients. The lack of triage and emergency treatment and non-availability of intensive care support are among the weakest parts of the health system, a situation that has also been reported elsewhere [13].

Owing to the protracted nature of the conflict in Somalia, little investment has been made in the country's health system, especially in emergency, critical and operative care services. In the absence of any long-term sustainable strategy for establishing and strengthening emergency medical care services as part of the continuum of care linking primary and secondary health care services, access for patients who require timely access to acute and advanced treatment has been suboptimal and led to an overreliance on emergency and critical care services in the private sector. The lack of critical care services at all levels of care is particularly problematic for access to care and coverage because of poor roads and unreliable transport from one part of the country to another. The insecurity in many places of the country also makes the referral system very rudimentary and challenging.

Emergency care in Somalia: using evidence of what can work in fragile settings to succeed

Decades of conflict, political instability and underinvestment have weakened and fragmented the health system in Somalia and led to migration of skilled health workers. Today, fewer than 1 doctor/nurse/midwife per 1000 people is available in Somalia [14], which indicates that the current health system struggles to deliver both basic and comprehensive life-saving health interventions. Because of the acute shortage of qualified health care workers in the country, and instead of overburdening the health system by introducing new and sophisticated equipment and building high-end emergency units in secondary or tertiary level hospitals, focus should be placed on emergency medical care at the community and primary health care level with a functioning referral system with secondary level care. This would form part of an integrated health services delivery system offering a continuum of care between different levels providing maximum health benefit.

Owing to long distances between hospitals in Somalia, late presentation and very basic and informal care that critically ill patients receive in hospitals (as evident from the findings of a rapid hospital assessment), design of successful emergency, critical care and operative care services in the country should be carefully planned with the focus more on care at the community and primary health care level than at the hospital level. The established primary care centres should serve as the entry point for building emergency care system in Somalia. In addition to their traditional missions of providing preventive and primary care, these facilities could serve as casualty collection points for the initial evaluation and management of paediatric, maternal, trauma and medical patients with urgent problems. With proper training in the principles of triage and emergency stabilization, and a simple kit of essential equipment and supplies, the staff should be able to handle most problems on site. When condition of a patient requires resources not available at a primary care centre, then the patient could be transferred to the nearest hospital. The involvement of primary health care centres in the provision of emergency medical care should ensure that the greatest possible good is done for the largest possible number of people and should reduce the risk of district and regional hospitals becoming overwhelmed by non-emergency cases.

At the beginning of the COVID-19 pandemic, all countries of the world assessed their level of preparedness in terms of number of ventilators and number of intensive care beds they had. In reality, when countries were hit by wave after wave of COVID-19, these numbers meant nothing. Even the richest countries suffered and struggled to keep deaths down. What was also seen in some fragile settings, including in a hospital setting in Mogadishu, during the earlier part of the pandemic, was that patients receiving oxygen only were more likely to survive than those ventilated [15]. These data, coming from Somalia, also show that critical care support and services that are affordable, sustainable and rapidly implementable can be cost-effective and reduce avoidable deaths and suffering in all settings, including in fragile settings.

The rapid hospital assessment in Somalia showed that the country does not have the basic infrastructure for emergency and critical care services. Therefore, a phased approach should be adopted. Based on successful approaches to save lives in similar settings, the emergency care system in Somalia can be built around the design and infrastructure outlined in Table 2.

Table 2: Suggested design for building emergency, critical and operative care services in Somalia based on evidence of effectiveness

Level of care	Intervention	Evidence supporting such interventions: examples from similar settings	Settings/countries
Community level	Development of capacity and a system for early recognition of emergency health condition, community first-aid, triage, effective resuscitation and care during referral/transportation to higher level	Building and strengthening this component of emergency medical care can improve access, which could prevent deaths.	Developing countries [16]
		Prompt referral of severely ill children with respiratory infections and diarrhoeal disease has been shown to reduce mortality by 43% and 39%, respectively, in children under 1 year of age and by 36% and 34%, respectively, in children under 5 years.	Mexico [17]
		Improved survival has been seen when pregnant women are referred to health services from the community.	Developing countries [18]
Pre-hospital emergency care	Training of community health workers on vital interventions such as establishing and maintaining a patient pathway, controlling external bleeding and immobilizing fractures	Training community health workers to support pre-hospital care can improve chances of survival.	Developed and developing countries [19]
Emergency transport services	Introduction of transport services for referral of patients, either through ambulance services or private partnerships	Providing emergency transport can save lives.	Developing countries [16]
		Investment in emergency transportation and improved communication systems can lead to doubling the use of emergency obstetric services and a 50% reduction in case fatalities.	Sierra Leone [20]
		Considerable savings could be made by recruiting citizens as volunteers to help provide their own emergency care. The obstetric transportation system in some African countries reported a start-up costs of US\$ 268 and a recurring cost of US\$ 5.89 per transport.	Nepal and African countries [20]
		Basic emergency care training can produce substantial gains at little cost; for example, lay responders cost US\$ 170 per death averted, and US\$ 7 per life year gained for a population of 1 million.	Developing countries [21]

Table 2: Suggested design for building emergency, critical and operative care services in Somalia based on evidence of effectiveness

Level of care	Intervention	Evidence supporting such interventions: examples from similar settings	Settings/countries
Primary health care level	Basic critical care services such as triage system to quickly recognize critically ill patients, administration of simple emergency treatments in designated areas, transfer of critically ill patients to higher level of care	Availability of simple and affordable interventions such as pulse oximetry and oxygen at the primary health care level can decrease mortality from childhood pneumonia by 35%.	Papua New Guinea [22]
		People used their primary health care centre for medical emergencies rather than for preventive services. The population perceived a strong need for accessible emergency medical and surgical services throughout the district.	Nepal [23]
		People are expected to receive emergency care from the primary care system. They turn to primary care medical facilities for acute complaints or when a child seems seriously ill.	Sri Lanka [24]
		Introduction of early warning score based on simple physiological parameters such as pulse rate and respiratory rate can identify patients at higher risk of death who can be referred to a higher level; this system can be effectively introduced even at a primary care level.	United Republic of Tanzania [25]
		Introduction of emergency triage and treatment guidelines and algorithms reduced paediatric inpatient mortality by 50%.	Malawi [26]
		Evidence shows that triage, trained lay first responders, paramedic responders with basic life support training, better referral, and supervision of junior providers reduce mortality in low resource settings.	Developing countries [11]
		In low-income countries, at least 20% of children treated in primary health care centres will need referral to hospital because of critical illness.	Low-income countries [27]
Secondary/ tertiary level care	Basic critical care services that include availability of medical oxygen, triage system, designated emergency area, basis diagnostic and blood bank services operating 24 hours a day every day, improvement in quality of care for inpatient management, availability of acute surgical and anaesthesia services and a functioning referral system	Patients receiving oxygen only for severe symptoms of COVID-19 were 5.43 times more likely to survive than patients who received non-invasive ventilation.	Somalia [15]
		Five hospitals showed that implementation of an oxygen system including pulse oximetry and oxygen concentrators decreased child pneumonia deaths at a cost of US\$ 50 per disability-adjusted life year (DALY).	New Guinea [28]
		Use of appropriate routines and protocols for treatment can result in better management of patients and more efficient use of resources.	South Africa [29]

Table 2: Suggested design for building emergency, critical and operative care services in Somalia based on evidence of effectiveness

Level of care	Intervention	Evidence supporting such interventions: examples from similar settings	Settings/countries
Secondary/ tertiary level care	Basic critical care services that include availability of medical oxygen, triage system, designated emergency area, basis diagnostic and blood bank services operating 24 hours a day every day, improvement in quality of care for inpatient management, availability of acute surgical and anaesthesia services and a functioning referral system	Assessment of the relative contribution of hospital versus community care on overall mortality found that almost 15% of infants and 45% of children under 5 years had been hospitalized with 24% of all deaths for the community occurring in a hospital. Even minor improvements in acute case management of sick children attending the hospital would be expected to result in a substantial reduction in overall childhood mortality.	Guinea Bissau [30]
		Even using WHO's integrated management of childhood illness strategy, 12–34% of sick children still need referral to a hospital, and almost 90% of these children have one of the five common paediatric conditions that are amenable to successful treatment if appropriate hospital care is not delayed.	Less developed countries [31]
		The introduction of a nationwide triage system has reduced waiting times and mortality rates.	South Africa [32]

At the same time, intensive care units (ICUs) will need to be set up in selected hospitals where trained personnel, such as intensivists, are available to manage these units. The ICUs can provide a vital service with basic functions such as a better standard of nursing care than on the wards, 24-hour monitoring, and provision of oxygen. There is no standard on the size of ICUs in hospital in low-income countries. Some African countries have applied a figure of 2% of total beds for an ICU [33] However, the exact make-up of an ICU should depend on disease patterns, the hospital's financial and human resources, and the community's needs. In Uganda for an example, an eight-bed ICU unit, has a ratio of one nurse to four patients, one full time anaesthetist and one clinical officer. The focus of an ICU unit in countries such as Somalia should be on simple therapies including close monitoring, accurate intravenous fluid management, rational use of oxygen, adequate pain management, blood transfusion and renal output monitoring. Ventilator support can be introduced later for postoperative respiratory failure [34].

The ICUs that can provide basic critical care without consuming many health care resources will be sustainable in the long run. Priority should be given to the development and acquisition of simple and inexpensive tools rather than complicated equipment. The hospital systems should be equipped in a way that ensures the greatest



Because of the acute shortage of qualified health care workers in the country, and instead of overburdening the health system by introducing new and sophisticated equipment and building high-end emergency units in secondary or tertiary level hospitals, focus should be placed on emergency medical care at the community and primary health care level with a functioning referral system with secondary level care



benefit and prevents critical care from becoming expensive and diverting resources away from other important parts of the health system. In the ICU, a higher nurse:patient ratio than on the general wards may allow regular monitoring of the patients and good record-keeping with appropriate observation and treatment. Specialist nurse or anaesthetic medical assistants trained in critical care are vital when physicians are scarce [34]. All these measures can be undertaken effectively in low-resourced settings. Data have shown that delays in resuscitation and treatment and keeping the patient waiting for long periods before being given proper treatment may result in avoidable deaths and disability [27].

One treatment particular to critical care that deserves special mention is oxygen. Acute respiratory infections are the main cause of death of children in developing countries [35]. Many of these deaths, as well as deaths from other causes, are associated with hypoxia; in such cases, oxygen therapy can be life-saving [36]. Unfortunately, oxygen is not always available. Inadequate oxygen administration was a major factor in the quality of paediatric care in seven developing countries [31]. A WHO survey found that the capital costs of treating a patient with oxygen were between 0.42 and 1.97 US cents per hour [37]

Emergency, critical care and operative care services in Somalia: developing the vision

Against the backdrop of an environment of insecurity and conflict in some areas, limited health care capacity across the country, and the changing disease burden and need to limit preventable deaths, a long-term vision for emergency, critical and operative care services in Somalia is urgently needed.

As part of the work done by the WHO country office in Somalia with funding from the Pandemic Emergency Financing Facility of the World Bank, emergency, critical care and operative care have been a focus of attention in recent times in the country. The following work will be needed to develop a long-term vision and plan for building and strengthening emergency, critical and operative care services in Somalia.

- Based on the findings of the rapid hospital assessment, develop a comprehensive plan, vision and strategy for delivery of emergency, critical and operative care services for efficient and effective community, primary, secondary and tertiary level services in the country as part of the continuum of care strategy to achieve UHC. The vision should consider inclusion of effective triage, emergency care and critical care services at all levels of care. The focus should be on the development and acquisition of simple and inexpensive tools rather than complicated equipment.
- Make additional investments in quality-assured, internationally recognized training for clinicians, nurses and paramedics who are working at the front-line of critical care and ICUs in hospitals.
- Designate a high-quality facility as a training/learning hub for long-term, competency-based skill development and continued professional education of emergency and critical health care workers, including a well-equipped simulation centre.
- Use telemedicine and technology to enhance critical care services and allow transfer of knowledge and skills. Liaise with local institutions to expand training outreach to encourage the introduction of certification of courses in association with the African Federation for Emergency Medicine.
- Develop further the plan for trauma care and mass casualty management, increase the capacity of trauma care, from the point of injury through to rehabilitation, to save lives and reduce the risk of disability.
- Conduct regular tabletop exercises or full simulation exercises to test hospital readiness for a large-scale mass casualty event.
- Establish a knowledge platform for peer-to-peer continued learning on emergency, critical and operative care services. Maintain networks of trainees and trainers/mentors to allow sharing of knowledge and experience on best practices and encourage life-long learning and collaboration.
- Include training at different levels of management personnel to improve health facilities and the overall working environment in the integrated service delivery, such as infection prevention and control at mid- and lower-management levels. In addition, engage hospital directors to increase their interest in implementing WHO toolkits for emergency care systems (e.g. WHO triage system, checklists and registry).
- Conduct research into effective methods for caring for critically ill patients and the cost-effectiveness of each intervention to generate evidence on reduction in mortality and morbidity.

Emergency and critical care services: a valuable investment

The system of emergency, critical and operative care services is a unique component for achieving UHC, as it serves as a safety net and last resort for people who are unable, unwilling or unlikely to access preventive or primary care services and require emergency care interventions for their health condition. In the public sector of many countries, emergency care is the only medical care that is provided regardless of ability to pay. For these reasons, a functioning emergency, critical and operative care system is an essential component of health systems to achieve the UHC goals of access and financial protection

The need to build an emergency and critical care system as part of an integrated service delivery system in Somalia and other fragile, conflict-affected and vulnerable settings has grown more pressing. The COVID-19 pandemic has demonstrated that safe access to health care that meets the need of patients with severe illness can reduce unnecessary and untimely deaths. Therefore, a strong and responsive primary health care system alone, without the support of a network of hospitals that can provide a continuum of care for emergency and life-threatening medical conditions, cannot truly achieve UHC that meets everyone's needs in normal times as well as in any outbreak where critical care can be as important as primary care.

As the Somalia's health system gradually recovers from the pandemic and the country prepares to roll out the essential package of health services (EPHS 2020), the time has come now for action to prioritize the development of emergency, critical and operative care services as part of the effort to build a resilient health care system that meets the need of everyone. The case for emergency, critical and operative care is convincing: the evidence clearly shows that emergency health conditions contribute to a substantial portion of the disease burden and emergency care interventions have a high impact, are time-sensitive and can be implemented without a substantial increase in resources. However, basic critical care need not be resource demanding. The package of emergency triage and treatment for children implemented in Blantyre in Malawi costs US\$ 1.75 per patient, and the triage and resulting rational treatments may even have reduced overall costs [26].

To take emergency care to the next level, it is important to capitalize on the growing understanding of the disease burden of emerging conditions and on the increasing evidence of the substantial beneficial effect and low cost of emergency care interventions. Linking these messages to widely accepted policy priorities such as the Sustainable Development Goals and UHC will increase attention on the development of emergency care systems, which will save lives. As evidence from other low-income countries has shown, emergency care system can be built with better use of existing resources rather than major financial or technological investment [22]. The best way to improve the quality of emergency care would be to build such services across all hospital disciplines and not restrict them within vertical or limited programmes [38].

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