Ambulatory Services for the Last Mile

Emergency and medical transportation service delivery for the underserved

HIGHLIGHTS
- Ambulatory enterprises have innovated in product and service design, ensuring that the social aspect of the business does not take away from its sustainability.
- They can operate in difficult terrains, yet manage to provide value for consumers at the last mile.
- These enterprises are changing the healthcare landscape in developing countries by training health workers, making consumers aware of their health care options, and pushing for legislation regulation in uncharted territories.

Summary

Ambulatory social enterprises have found ingenious ways of providing service to the underserved in rural and remote areas by making sure that their services are affordable and accessible. They have adopted innovative business models that focus on the design of the product and are scaling up through strategic partnerships.

Development Challenge

Providing primary and quality healthcare to its citizens is a priority of all countries and it is especially significant in developing countries where healthcare is considered a strong metric of its progress. Many developing countries are increasingly looking to address and implement strong emergency medical care systems to improve the overall health of its citizens. In India, emergency transport service was limited until 2005. Andhra Pradesh began supporting the operations of Emergency Management and Research Institute (EMRI), which operates the emergency number 108 receiving more than 12,000 calls every day. The most common emergencies are pregnancies followed by vehicular trauma incidents, which cluster in the late afternoon and evening. 108 is now operational in 15 Indian states and 2 Union Territories, it operates 7,116 108 EMS Ambulances, with 45,000+ employees.

Ambulatory services are fragmented in developing countries and face significant challenges of funding, inadequate infrastructure, technological barriers, lack of government support, and access to medical supplies, etc. In spite of the risks of sustaining this type of a business model, many social entrepreneurs are venturing to provide these services due to the sheer demand and value of emergency medical care.

Business Model

Social enterprises and entrepreneurs have dedicated years of research to understand how effective ambulatory services can be best organized and implemented in developing countries, in a manner that is cost effective and is able to address the challenges of the local ecosystems. Ambulatory services in different developing countries represent the diversity of their socio-economic realities in the solutions they provide to the local communities.
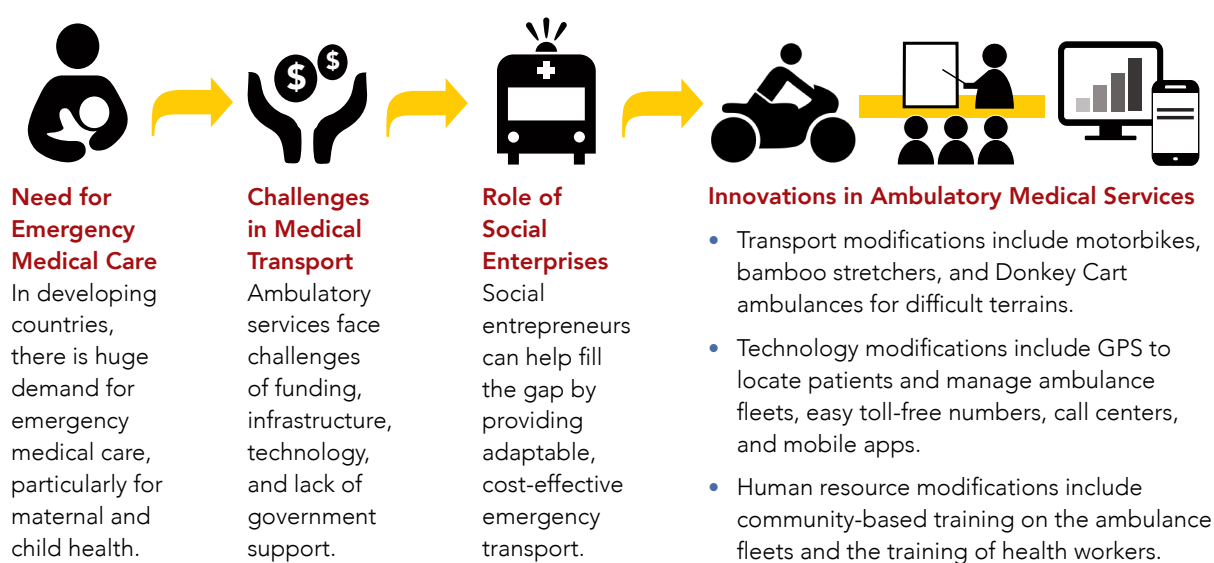
Components of the Model

Social enterprises vary in their interventions (Figure 1) and use cross-subsidization of services across different demographics or through the help of donors and investors.

Some ambulatory services focus on product design that allows ambulances to transport patients in far-flung places or certain geographic terrains—these are low-cost innovative interventions, such as motorbikes as ambulances or a Bambulance that is a lightweight bamboo stretcher, which can be easily attached to a bike.

Information technology and mobile technologies play an important role in patient-centered care coordination with regards to ambulatory service delivery. Some enterprises use technologically savvy, high-impact interventions that use state-of-the-art call center facilities and mobile apps for easy access by patients, or they use an easy-to-remember emergency call number. More than 4.7 billion people are expected to have mobile phones by 2017. Mobile phones provide direct access to patients, especially in low-income developing countries. GPS technology can locate patients and manage large fleets of ambulances. For example, Dial 1298 ambulances are controlled by a state-of-the-art call center that is available 24 hours a day, 7 days a week that identifies the ambulance closest to an emergency and directs the ambulance team.

Some enterprises have created partnerships to allow for larger impact, while some others focus on the training and deployment of health workers to enhance health outcomes.

Figure 1. Features of the ambulatory services model that can aid health outcomes at the last mile

Need for Emergency Medical Care
In developing countries, there is huge demand for emergency medical care, particularly for maternal and child health.

Challenges in Medical Transport
Ambulatory services face challenges of funding, infrastructure, technology, and lack of government support.

Role of Social Enterprises
Social entrepreneurs can help fill the gap by providing adaptable, cost-effective emergency transport.

Innovations in Ambulatory Medical Services
- Transport modifications include motorbikes, bamboo stretchers, and Donkey Cart ambulances for difficult terrains.
- Technology modifications include GPS to locate patients and manage ambulance fleets, easy toll-free numbers, call centers, and mobile apps.
- Human resource modifications include community-based training on the ambulance fleets and the training of health workers.

Cost Factors

Ambulatory services incur most of their capital costs in setting up the infrastructure, designing the service delivery model, developing the product (ambulance), training health workers, managing information services, integrating technologies, and managing supply chains, risks, and operational costs. As a result of all these factors, setting up an ambulatory social enterprise can prove a costly endeavor.

Revenue Streams

Ziqitza's innovative business model has a range of revenue streams that has contributed to its growth and financial success. It is able to operate at scale yet remain inclusive for underserved populations. In Mumbai, 1298 uses a sliding price scale that depends on a customer's ability to pay—the hospital

type selected by the patient determines the fee. All accident victims, disaster victims, and unaccompanied victims are transported for free. In other locations, the government subsidizes calls, and in some cases patients also pay a small fee.

Ambulatory services often cross-subsidize based on the type of demographic they serve. This is particularly viable in markets where there is diverse economic stratification. Wealthier patients are charged more and that revenue is used to discount more affordable or free service for lower-income consumers. Rather than maximizing profits, ambulatory social enterprises repurpose their profits to serve larger numbers. Ambulatory services such as 108 have also been able to expand because of public-private partnerships (PPPs) with state governments in India in the form of tenders. Governments serve as an important customer for both traditional and social businesses, but for ambulatory services, it is a critical means through which they can serve more patients in greatest need of their service.

Ambulatory services have found a creative source of generating revenue by placing corporate logos on their ambulances. Large corporations like to be associated with these social enterprises as part of their corporate social responsibility initiatives, and it keeps the enterprises financially sustainable. It is a win-win for both the traditional and social businesses. In 2007–08, 1298 ambulances generated USD 208,608 in ad revenue. Private health providers also promote their brand using these ambulances. yielding benefits for all stakeholders.

Financial Viability

Many ambulatory services rely on grants or patient capital in the early stages of operations to stay financially viable. International organizations, donors, governments, private companies, or nonprofits, which want to address gaps in emergency medical care or inefficiency in health systems in emerging markets, initially pay for most ambulatory business models. Unlike the consumers, they have an incentive to pay for the application since it is in line with their mission. Ambulatory enterprises also innovate on their product design and service delivery using local solutions and/or technology that helps them increase their operational efficiency, adapt, and remain sustainable. Additionally, ambulatory services have identified revenue streams that make them more viable.

Ambulatory services often employ cross-subsidization. Tebita ambulances have developed a business model based on cross-subsidization. It offers high quality, ISO-certified ambulance service, remote medical assistance, and emergency aid training to multinationals, diplomatic missions, foreign NGOs, and expatriates. Surplus income from those activities subsidizes the cost of a local ambulance service in surrounding provinces. As a result, Tebita can offer ambulance service to the public for an average of USD 15–20, even though the actual cost is USD 51. The costs for lower-income end-users are kept low to encourage uptake. This puts pressure on companies to operate efficiently and at scale, to recover investments and operating costs. Financial returns are received in the form of cost savings and raising awareness rather than the actual paid costs by consumers.

Partnerships

Ambulatory social enterprises create partnerships that benefit them in various ways. Some help them with funding their operations, some support them by training employees and raising awareness among local communities, some help in the design and deployment of the service, and others help them simply scale up their operations. All of these types of partnerships are crucial at various phases as the enterprise grows and matures. 1298 was initially set up in association with the London Ambulance Service, a UK Government Agency, which has provided processes, systems, protocols, training, and project implementation assistance. In other Indian states, 108 Emergency Response services is run either by the government or it is contracted out to other organizations, such as the Emergency Management and Research Institute (EMRI).

EMRI's PPP model leverages pre-existing government infrastructure and resources to provide emergency services to the population for free. The capital and operational costs are paid for by the government in the form of grants, formalized through a memorandum of understanding with each state. EMRI also conducts training programs at its Emergency Medicine Learning Centre, which forms one of the primary sources of revenue for the organization. The technology platform to run the emergency response system is designed and provided pro bono by Indian IT major Tech Mahindra. With this partnership model in place, EMRI has been able to scale the 108 service to cover half of the country, encompassing 15 states and two Union Territories and reaching a population of 750 million.

Implementation: Delivering Value to the Poor

Awareness

Healthcare points of care and health workers play an important role to make patients aware of ambulatory services. Significant marketing efforts have also been used to explain these services, such as conventional advertising, radio, billboards, and community outreach.

Acceptance

Ambulatory services have addressed challenges faced by consumers by keeping the user interface simple and easy-to-understand, even for those with minimal literacy. For example, 108 has a three-digit toll-free number that is easily accessible from landlines and mobile phones. Ambulatory services have also customized solutions for specific demographics, such as pregnant women, patients in hard-to-reach places, etc. Ambulatory services are increasingly being provided by public or private providers, also improving their rates of acceptance. By providing better service in a quick and efficient manner, these enterprises are increasingly being accepted by all stakeholders.

Accessibility

Developing markets have limited healthcare services available, and this is a huge challenge to be resolved for those at the last mile. Ambulatory services have innovated smart product design to make themselves more accessible for these consumers. In places with inadequate infrastructure, organizations such as Motomedics and Zambulance have found local, cost-effective, and simpler solutions for the communities they serve. For example, most rural areas in Africa are unreachable by regular vehicles due to its rough terrain. Bike4Care aims to solve this problem by providing bicycles to health workers. The program also aims to generate income for local health workers by reinvesting a portion of the funds they pay for their bikes into income-generating activities.

Ambulatory services partner with healthcare providers, telecom companies, and government agencies to allow for mechanisms that make it easier to access services. Incentives are made for health workers to educate and encourage patients to use these services.

Ambulatory services allow those who live in remote places to seek medical attention. Many enterprises have invested in state-of-the-art technology, such as call centers, mobile apps, and infrastructure that identify the ambulance closest to an emergency and directs the ambulance team. For example, Dial 1298 ambulances take an average of 10–30 minutes in urban areas and 15–40 minutes in rural areas to reach a patient.

Affordability

Dial 1298 prices are competitive and approximately 10–15 percent cheaper in comparison to the local private ambulance provider. Through the 1298 program, Ziqitza operates a network of fully equipped Advanced and Basic Life Support Ambulances across two states in India. Dial 1298's business model uses a sliding price scale driven by a patient's ability to pay, which is determined by the kind of hospital to which patients choose to be taken. Financial sustainability is assured through cross-subsidization.

Results and Cost-Effectiveness

Scale and Reach

As consumers are made aware of the healthcare options available to them, they are quick to engage with these services and even recommend it to others in their communities. Ambulatory services provide a crucial healthcare service to those in need and with due diligence, good service and effective partnerships, they are able to successfully scale up, reach larger populations and create more impact. Standardizing their operating model also helps them replicate and scale up across geographies in a cost-effective manner.

Ad-din Ambulances in Dhaka is one of the philanthropic projects of the Ad-din Foundation, dedicated to serving the health needs of lower-income women and children. In 2008, they initiated the project with a fleet of 10 ambulances. Less than a year later, the fleet had grown to 46 vehicles, and public interest in the new program increased quickly. In 2011, another 20 vehicles were added to the fleet, bringing the total to 66. Bike4Care in Africa has reported a 258 percent increase in the number of households visited by community health workers since its launch. Bike4Care serves 63,740 households per month, with the average household at seven people. As of October 2012, there were over 500 community health workers trained and equipped with bicycles in Africa. The number of calls 1298 received increased from 11,417 in 2005 to over 40,000 calls in 2010. Dial 1298 for Ambulance has saved more than 70,000 lives in Mumbai alone. Ziqitza currently operates more than 980 Ambulances across five states in India and has served over 2 million people since 2005.

Improving Outcomes

The quality of health people live with in developing countries is directly influenced and determined by the quality of care they receive. 108 ambulance service responds to approximately 23,000 emergencies on a daily basis through a fleet of nearly 10,000 ambulances, making it the largest emergency response service in the world. In 2014, they responded to over 30 million emergencies, saving over 1.2 million lives—one life saved every 30 minutes.

The PPP approach allowed 108 to scale up quickly, and shows the potential of what private providers can do with government resources. EMRI headquarters in India has become a training hub for training of Emergency Medical Technicians (EMTs), a field so new that no licensing exam exists yet in India.

Scaling Up

Challenges

Ambulatory services that cater to the last mile face a multitude of challenges. They often operate in remote places with inadequate infrastructure, and the costs of operation are high and require collaborations with various stakeholders. Additionally, the training and manpower required to run operations is intensive and requires support from healthcare providers and government agencies to be sustainable. In developing markets, regulation and legislation is missing and makes an efficient ambulatory service difficult to sustain with competing interests.

Ethiopia's Tebita ambulance service faces a number of challenges, which includes access to finance. Even though they generate a healthy financial surplus, local banks are hesitant to provide loans, citing a lack of collateral. Impact investors are interested in financing Tebita, but current investment regulations in Ethiopia prevents foreign investors from participating directly in the emergency medical services sector. Another challenge is Tebita's vulnerable supply chain. Their current business license only allows them to import ambulances, not medical supplies, which are not available locally.

Role of Government and Public Policy

Governments in developing countries have an important role to ensure that everyone has access to healthcare systems and especially in cases of emergency. They need to introduce legislation that allows for ambulatory services to establish themselves, seek funding and be operationally sustainable.

Although ambulatory services often have support from foreign and local organizations, potential impediments to successfully scaling these social enterprises includes lack of government support and funding. There is potential to partner with both the public and private sector to expand their reach and impact more last mile consumers. Standardization of policies, as well as set guidelines for practice, would help implement ambulatory programs by overcoming inter-operability, portability, and legal issues.

Further issues, such as educating the general public on the options available to them, or supporting access to these services by improving basic infrastructure such as roads, telecommunications, etc. are challenges that could be best resolved at a government level.

India's GVK EMRI handles medical, police, and fire emergencies through 1-0-8 Emergency Service. This service is run either by the government or contracted out to other organizations. This is a free service delivered through emergency call response centers that are able to dispatch over 2,600 ambulances across 10 states. EMRI's goal is to respond to 30 million emergencies and save one million lives a year. To that end, 108 Emergency Response Services has signed memorandums of understanding with over 6,800 hospitals, which have agreed to provide initial stabilization of EMRI transported patients for free for the first 24 hours.

Each EMRI ambulance is accompanied by a trained EMT, who is responsible for pre-hospital care while transporting the patient to a hospital for stabilization. If required, the EMT is able to communicate via mobile phone with the in-house Emergency Response Care Physician, who is a qualified medical practitioner, available 24/7 to support the EMT. With the expansion of the fleet and services across more states, GVK EMRI now has over 10,000 ambulances covering a population of over a billion.

Table 1. Social Enterprises: Ambulatory Services for Emerging Markets

Company	Country	Description
The Ambulance Project	Kenya	The Ambulance Project offers emergency medical care in a remote region of western Kenya by providing the ambulance to transport patients from their homes to the dispensary.
Ad-din Ambulances	Bangladesh	The Ad-din Hospital established a low-cost ambulance service in 2008 after recognizing that many women in Dhaka were failing to access emergency obstetric care. Using mobile phones and a GPS tracking system, Ad-din manages a fleet of 66 ambulances stationed throughout the city.
Bike4Care	Burkina Faso, Kenya, Uganda	Bike4Care improves access to health care by equipping health workers with bicycles and helping clinics use bicycle ambulances in rural communities.
Bambulance	Kenya, Namibia	Bambulance is developing a medical device that transports people in rural sub-Saharan Africa to a hospital or clinic. It combines common forms of transportation with a means of safely and comfortably transporting people.
Donkey Cart Ambulances	Kenya, Afghanistan	Moving pregnant women across vast and sandy pastures to the nearest health facility in a hot, arid climate is difficult and dangerous. Care for the Mother project provides donkey carts as ambulances for transporting women in labor to local clinics.
GVK EMRI	India	GVK EMRI is an emergency transport and response model that is delivered through a PPP with state governments. Itx is provided either free or through user fees as mandated by the contract with the participating state government.
Motomedics	Vietnam	MotoMedics is a social enterprise founded to improve emergency medical response in Hanoi, Vietnam. Trained first responders on motorbikes are able to reach patients quicker and deliver them to the hospital in far less time than traditional ambulances.
Riders for Health	Gambia, Uganda, Lesotho, Ghana, Nigeria, Zambia, Zimbabwe, Kenya, Malawi, Tanzania	Riders for Health is an international nonprofit social enterprise that manages vehicles used for health care delivery by partner organizations. They manage 1,300 vehicles across sub-Saharan Africa.
Tebita Ambulance	Ethiopia	Tebita Ambulance and Pre-Hospital Emergency Services provide emergency ambulatory services, pre-hospital medical services, first aid training for non-health professionals, and emergency training for health professionals.
Zambulance	Uganda, Zambia	The Zambulance, manufactured by Zambikes, connects rural African villages to critical medical care. It is a trailer that can be easily attached to either a bicycle or motorbike. The innovative design provides the patient with an affordable and comfortable solution for emergency transportation to health centers in rural areas.
Ziqitza Healthcare Ltd	India	ZHL operates 24/7 call centers with ambulance tracking systems through an easy to remember four-digit telephone number (1298). Their ambulances are equipped with personnel trained in basic and advanced life support. A sliding scale fee is used

| | | based on the customer's ability to pay, and is determined by their hospital selection. |

Additional Reading

UN Commission: New investments in global health workforce will create jobs and drive economic growth

http://www.who.int/mediacentre/news/releases/2016/global-health-workforce/en/

Organization of ambulatory care provision: a critical determinant of health system performance in developing countries

http://www.who.int/bulletin/archives/78(6)791.pdf

Establishing Private Health Care Facilities in Developing Countries a guide for medical entrepreneurs

https://openknowledge.worldbank.org/bitstream/handle/10986/6600/464570PUB0Box3101OFFICIAL0USE0ONLY1.pdf?sequence=1&isAllowed=y

Dial 1298 for Ambulance: Marketing EMS in Mumbai

http://acumen.org/wp-content/uploads/2013/03/1298-Ambulance-Columbia-B-School.pdf