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# Comparative analysis of three prehospital emergency medical services organizations in India and Pakistan

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ABSTRACT

*Objectives:* Strengthened emergency medical services (EMS) are urgently required in South Asia to reduce needless death and disability. Several EMS models have been introduced in India and Pakistan, and research on these models can facilitate improvements to EMS in the region. Our objective was to conduct a cross-case comparative analysis of three EMS organizations in India and Pakistan – GVK EMRI, Aman Foundation and Rescue 1122 – in order to draw out similarities and differences in their models.

*Study design:* Case study methodology was used to systematically explore the organizational models of GVK EMRI (Karnataka, India), Aman Foundation (Karachi, Pakistan), and Rescue 1122 (Punjab, Pakistan).

*Methods:* Qualitative methods – interviews, document review and non-participant observation – were utilized, and using a process of constant comparison, data were analysed across cases according to the WHO health system 'building blocks'.

*Results:* Emergent themes under each health system 'building block' of service delivery, health workforce, medical products and technology, health information systems, leadership and governance, and financing were described. Cross-cutting issues not applicable to any single building block were further identified.

*Conclusions:* This cross-case comparison, the first of its kind in low- and middle-income countries, highlights key innovations and lessons, and areas of further research across EMS organizations in India, Pakistan and other resource-poor settings.



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## Introduction

Prehospital care is an essential component in the continuum of emergency medical services (EMS).[1] Yet, the formal availability of these services is limited in low- and middle-income countries (LMICs).[2–4] With growing morbidity and mortality caused by non-communicable diseases and injuries in LMICs, EMS, are urgently required in order to prevent needless death and disability.[5,6] Prehospital care is essential to achieving this goal, as highlighted in a recent systematic review which showed that the availability of prehospital trauma systems in LMICs resulted in a 25% reduction in trauma-related mortality.[7]

Many South Asian countries, including India and Pakistan, are among those LMICs where systems of EMS are still fragmented, uncoordinated, and of poor quality.[8–11] In India, prehospital services are delivered by a range of providers from public, for-profit and non-profit sectors, with care ranging from extremely basic patient transport to highly specialized, mobile coronary care units.[9,12,13] Similarly in Pakistan, a range of public, for-profit and non-profit EMS providers deliver prehospital care, with the landscape of actors differing by province.[8,14,15] Karachi alone has a minimum of five private and charitable organizations currently delivering prehospital EMS; however, most focus on patient transportation, and none have been evaluated for impact.[8]

The challenges these countries face in establishing accessible, affordable and high-quality systems of EMS are considerable. Despite these difficulties, several models of EMS have been introduced in India and Pakistan in both public and private sectors. Given the shared characteristics of these two countries, such as high population densities, wide socio-economic disparities, weak infrastructure and mixed health systems, we believe that there is considerable opportunity for shared learning and reflection.[16] EMS is now the focus of increasing attention and investment, and the lessons learnt from these different models of EMS provision could be highly relevant and applicable to stakeholders looking to establish or strengthen EMS in the region. Utilizing data from three qualitative case studies of EMS organizations in India and Pakistan, the objective of this paper is to provide a cross-sectoral comparative analysis of these EMS providers, in order to draw out key similarities and differences in these approaches, and to use the findings to present preliminary lessons for EMS stakeholders working in LMICs.

## Methods

We conducted three case studies of EMS providers from different sectors, in India and Pakistan – Rescue 1122 in Punjab Province, Pakistan; GVK Emergency Management and Research Institute (GVK EMRI) in Karnataka, India; and Aman Foundation in Karachi, Pakistan. Case study methodology was utilized to systematically explore each of the models, given its suitability in comprehensively exploring complex social phenomena and real-life events.[17] We designed the study as a series of single, holistic cases, and each case was selected due to their unique nature within their setting. We selected GVK EMRI due to its partnership with the Government of Karnataka in India through a public-private partnership; Aman Foundation due to its position as a private sector provider of EMS in a fragmented emergency care market in Karachi, Pakistan; and Rescue 1122 given its standing as a government-funded, public sector provider of EMS across Punjab Province in Pakistan. Our studies focused on each of the cities in which the organizations were based. All three cases were also chosen due to pre-existing relationships with the Johns Hopkins International Injury Research Unit (www.jhsph.edu/IIRU) at the Johns Hopkins Bloomberg School of Public Health. To the best of our knowledge, this is the first application of this methodology to prehospital EMS organizations in South Asia. Methodological details of each case study are provided in forthcoming publications. This research was classified as exempt from ethical review by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

The unit of analysis was the organization, and data collection was guided by the Framework for Action for strengthening health systems proposed by the World Health Organization.[18] According to this framework (Fig. 1), health systems can be understood through the lens of six, interconnected components or 'building blocks' – service delivery, human resources, financing, supply chain, information systems, and leadership and governance.[18] We applied this framework to all three cases, and qualitative methods were used to collect data on each of the components through in-person site visits between June and July 2013 that lasted between four and six working days, based out of the headquarters of each site. We used three forms of data collection – in-depth interviews using a semi-structured interview guide, document review and non-participant observation. Secondary data was also provided by each of the organizations regarding key indicators. Detailed descriptions of the methods for each case are found in forthcoming publications.

We deductively categorized relevant data and themes by the appropriate building block.[19,20] Memos on fieldwork were regularly shared, reviewed and discussed by several authors.[21] We also used respondent validation (member checking) by sharing initial drafts of the results with the organizations involved, as well as in a workshop conducted with leaders of Aman Foundation and Rescue 1122.

We developed a table to facilitate the comparisons by determining relevant categories for each building block and analysing these categories across the organizations. We focused on the following three areas in our analysis – 1) similarities between the organizations; 2) differences in their approaches; and 3) research gaps when taken in context of the wider literature.[17] Following a process of constant comparison, we identified key themes around areas of similarity and difference across the organizations.[22] Finally, we prepared additional memos outlining these ideas, and utilized further peer debriefing by discussing the themes among the research team.[21]

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