

# **Essays on Modelling Public-Private-Partnerships (PPP) for Emergency Medical Services**

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## ABSTRACT

Medical emergencies occur anywhere, at any time, in any country irrespective of whether it is a developed, developing or an underdeveloped country. These emergencies occur by the hour, consuming a lot of resources and sometimes, without even achieving the desired results, i.e., to save lives. Medical emergencies have been around since the start of the human civilization, however, they gained recognition as a specialty only around 30 years ago (Chung, 2001). An emergency medical system's goal should be to provide universal and integrative emergency care right from the time it receives information from an emergency user (Dykstra, E. H, 1997). Further, in a country like India, the seventh largest country, and with the second highest population in the world (David, S. S., & Vasnaik, M, 2007) and high income disparity, the implementation and context of the emergency medical system should be in a way to increase health equity and not worsen the current health disparities (David, S. S., & Vasnaik, M, 2007). This challenge faced by India and similar developing nations can be attended to by promoting systematic development of an evidence-based emergency medical system that is more cost-effective than those in developed countries like the USA, Canada and certain European countries where there is lesser income disparity. To design an effective emergency medical system, there is need to address questions such as how it would integrate with the current health-care infrastructure, local communities as well as their values, and the financial resources that would be needed to augment the services step by step (Gupta, M. Das, & Rani, M. 2004). In India, the public sector accounts for less than 20 percent of the total healthcare expenditure, which is the lowest in the world, and is less than 1% of the country's GDP (KPMG, 2005). Around 94% of the amount of private expenditure is from out of the pockets of citizens, and the remaining 6% is the provision's expenditure (Development Bank A, 2015). The way forward for the government to address this challenging situation is to consider the Public-Private Partnerships (PPP) model in the emergency healthcare sector in India. The emergence

of PPP in India has provided a viable solution wherein the government-led public sector forms a synergetic partnership with the technically advanced and innovative private sector (Raman, A.V et al., 2008). In emergency medical services, the government set-up 108 partnerships in 2005 (Besley, T., & Ghatak, M. 2017) with private organizations, such as GVK, Ziqitza Health Care Ltd., to deal with fatal emergencies, for example, dealing with the medical emergency during the Fani cyclone<sup>1</sup> at Odisha in 2019. However, the emergency services are fragmented in India (Subhan, I., & Jain, A. 2010), with many private services having entered the arena without regulation. Though this may look to be a good social and altruistic sign, in the long-run, it would hamper the progress of emergency services across the country. These questions will be well-addressed in this study when the rationality of promoting the emergency service systems is evaluated from the financing point of view. Further, in this study, we model the PPP contracts in accordance with the government's plan to integrate emergency services inclusive of fire and police with emergency health services under a common emergency telephone number, 112. Evidence is available to show that several roles, strategies, rules, and pay-offs govern procedures in the partnerships between the public sector and private firms (Bettignies, J.-E. de, & Ross, T. W, 2004). Thus, modeling them as complex games can help to better understand the failures and difficulties in such partnerships (Scharle, 2002). In this context, the researchers are implementing Nash bargain solutions in their research works to understand financial renegotiations (De Brux, J. 2010). However, there are very few studies to understand why financial renegotiation between government and service provider fails in a PPP contract. Through this study, we hope to provide a solid foundation to the integrated emergency medical services, which in turn, would provide Indian citizens the same equity, access, and quality of services which have been enjoyed by the people in the developing countries for decades.

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<sup>1</sup> Fani cyclone hit many parts of Odisha in April- May of 2019, article by Vishwa Mohan (May 4, 2019), Times of India.

In the first essay, we have modeled funding mechanisms for Profit-based (Corporate) service providers to provide emergency medical services in PPP during natural disasters such as cyclones and tsunamis or pandemic-like situations such as Covid-19 when there is an unprecedented increase in demand of this service provision. In the second situation, that is, pandemic-like situations, we have considered modeling conditions when the service provider is successful in renegotiating with the government as well as when renegotiation is unsuccessful and investor goes ahead with the funding under government intervention.. Insights from the study indicate that government underinvests during regular situations, whereas during situations which require unprecedented rise in demand, it needs to monitor the service providers to prevent moral hazards.

In the second essay, we have modeled funding mechanisms for non-profit-based (NGO) service providers under similar conditions as in the first essay. Further, in case of an unprecedented rise of demand, we have restricted to modeling in renegotiation, as the case of renegotiation failure does not occur in case of non-profit-based service providers. Insights from the study show that the government has preference for investing in non-profit service providers as their pay-off increases with the payoff of the non-profit service provider (SP).

In the final essay, we have modeled advertising as a signal to convey the type of service provider (profit/non-profit) to the citizens (/Users/Patients); and also help the service providers decide their service provision. The study reveals that in regular situations, the advertisement strategy may aid to serve the patients when they require the emergency services. Further, the government may prefer either of the SPs (Profit-Oriented or Non-Profit-Oriented) to provide better payoffs in the PPP contractual relationship.

We find that the government needs to incentivize service providers to attain demand /service realization. Alternatively, it can penalize service providers by formulating policies if the effort

decreases with an increase in investment, as in few scenarios. Further, in all scenarios the government needs to formulate policies that aid investment in insurance companies so that citizens have to make less “out of pockets payments” that are quite expensive in emerging economies like India. Though insurance schemes have been launched by the central government in the past few years, various states that have been in PPP -based contracts for emergency health services need to coordinate with the centre to launch more innovative insurance schemes to reduce “out of pocket” expenses” thereby, improving citizen’s welfare.

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