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Opinion

Managing Pandemic Disasters: A Resource-Based Analysis

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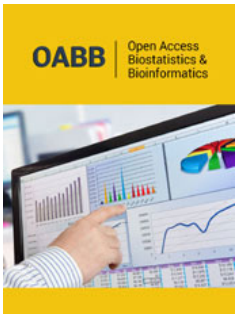

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Healthcare crises are well-known phenomena that occur and are highly disruptive. Consider, for example, Covid19 and other pandemics, wars, multi-casualty natural disasters, industrial disasters, etc. Healthcare systems in Brazil, Spain, Italy, and more around the world collapsed due to the lack of a clear methodology for handling such crises. Following a large-scale value creation project with a large medical center we developed a resource-based methodology to cope with three healthcare crisis scenarios: "Peace", "War" and "Tsunami".

We identified three load/capacity scenarios for hospitals: "Peace", "War" and "Tsunami". The Peacetime scenario is the normal overload situation in a hospital (Figure 1). During "peace" times hospitals are usually 10%-20% short in resources. To overcome bottlenecks, managers apply evolutionary methods such as constraint management [1], the complete kit concept, etc. This is the normal condition in hospitals where there are fluctuations in supply and demand. Bottlenecks in this situation are typically medical crews: senior physicians and experienced nurses.

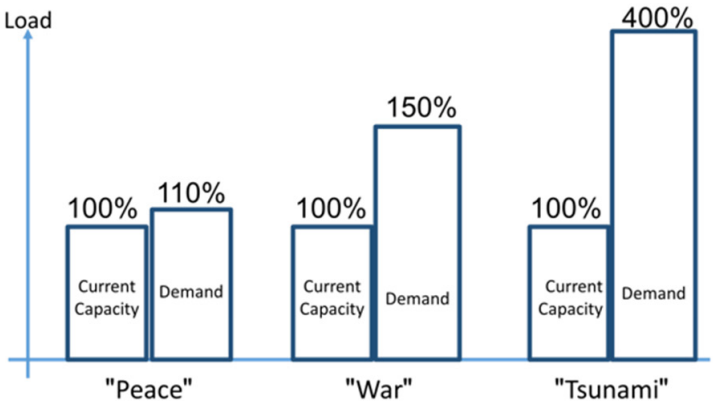

Figure 1: We identified three load/capacity scenarios for hospitals: "Peace", "War" and "Tsunami". The Peacetime scenario is the normal overload situation in a hospital.

During "War" times, such as during the COVID-19 pandemic, the need for resources exceeds capacity by over 50%. To overcome this shortage, managers use the above-mentioned

evolutionary methods but must also apply revolutionary methods. Here too, system bottlenecks are typically the medical crews. The first step is to create a protective capacity by rapid deployment of auxiliary hospitals. Converting internal medicine wards to COVID-19 wards, postponing elective surgeries, etc. Medical crews work significantly harder and effort must be made to offload them through nurses, paramedics, physician assistants, etc. War scenarios require a hybrid application of evolutionary and revolutionary actions. During "Tsunami" times, thousands of patients storm hospital emergency departments. In this scenario, revolutionary methods must be applied. Since the bottlenecks are still medical crews, the policy should be to hospitalize a minimum number of patients and send the majority back to their communities.

Evolutionary steps are a waste of managerial energy during the Tsunami scenario as they focus on double-digit improvement rather than on an "order-of-magnitude" increase. For Peace and War scenarios, the Theory of Constraints (TOC) can serve as an effective tool to increase capacity. During "Peace" times, evolutionary strategies handle excess demand peaks. During "War" times, a hybrid evolutionary/disruptive (revolutionary) strategy should be applied. During "Tsunami" times, a disruptive (revolutionary) strategy should be applied exclusively.

This paper deals with healthcare crisis management during pandemic times. The leader must diagnose the condition the organization is in and act accordingly. The concept is applicable in other "code brown" crisis management scenarios such as chemical or nuclear massive accidents, natural disasters, etc. Many leaders respond intuitively to such crises. By establishing a resource management methodology, we strive to facilitate the dialogue within the team and also among teams that have not worked together in the past.

References

1. Ronen B, Pliskin JS, Pass S (2018) The hospital and clinic improvement handbook: Using lean and the theory of constraints for better healthcare delivery, Oxford University Press, UK.