

Allocation of medical service demand and capacity on multi-level hospital network

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Abstract

In healthcare systems, various types of medical services are provided by hospitals of diverse grades. In this paper, medical demands are classified into two types of flexible and non-flexible demands based on their transfer costs. Also, medical facilities are divided into two classes depending on their medical service capacity. In a practical hospital network model, relative medical service satisfaction index for patients was defined in consideration of medical care and the related cost under condition that medical demand can be transferred if necessary. The mathematical model is suggested with a satisfaction constraints, and the solution is found approximately using linear transformation applied on the loss function and normal distribution. Through the experiment, it was shown that when the average medical service satisfaction level was increased to a certain level or higher, and that the social cost was reduced as well as the total cost. Optimization on the total cost of the multi-level network with reasonable satisfaction can be accomplished by relocating the medical demands and facility capacity. The model presented in this study is expected to provide implications that is crucial to policy decision-making for alleviating unbalance in the supply and demand of medical services within a multi-hospital network.

Keywords

OR in healthcare; supply-chain management in healthcare; patient satisfaction.

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Biography

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