CHAPTER 1

INTRODUCTION

The lack of adequate number of hospital beds to accommodate the covid positive patients is a main problem in public hospitals. For controlling the occupancy of bed, we design a dynamic system that announces status of available beds. This system provides a wide network in the city for bed management that help us to distribute patient in hospitals.The COVID-19 pandemic challenge is unprecedented. In the early stage of the outbreak, the US's healthcare system was severely strained, with the demand for beds and some specialized equipment needed to treat patients and protect staff far exceeding supply [1]–[4]. An emergent question for each hospital is how many general ward and intensive care unit (ICU) beds are needed at the peak of the outbreak. An important follow-up question is how to optimally allocate these scarce resources to achieve the goal of reducing the case fatality rate and helping a maximum number of patients to recover. This study aimed to address the above questions using a computer simulation approach. The pandemic of COVID-19 could overwhelm hospitals, but a planning guidance that accounts for the complex and dynamic interrelationships between hospital operating factors is lacking. This is due to the differences among hospitals and between various pandemic scenarios (e.g., COVID-19 differs from Ebola and SARS in various aspects). Consequently, it is difficult to provide guidance based on historical experience, and the case-specific findings might not be broadly applicable to all hospitals. In addition, the relationship is governed by a stochastic process rather than being deterministic. There are inherent uncertainties in patient demand, length of stay, and day-to-day hospital operations. These factors are instrumental in accurately predicting and evaluating system performance. To guide hospital operations, a method that allows for the control of system performance, accounting for operational bottlenecks and the complex and dynamic nature of the system is desired. Discrete-event simulation (DES) has been a popular and effective decision-support tool for the optimal allocation of limited healthcare resources to strike the balance between minimizing healthcare delivery costs and increasing patient satisfaction.