

# Contactless Food Supply and Delivery System in the COVID-19 Pandemic: Experience from Raytheon Mountain Hospital, China

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**Abstract:** The contactless food supply and delivery system of Raytheon Mountain Hospital is an innovative action to solve the dining problem and balance nutrition for medical staff and patients. The system was established according to five approval criteria, including localization, experience in hospital meal service, sufficient raw materials and supporting facilities, food safety, and high execution in dispatching. From the preparation phase to service optimization and improvement, the service model of the full collection of food and beverage information, point-to-point distribution, contactless food delivery, one-stop ordering, and full coverage of separately eating is established to safeguard the contactless food supply and delivery system operating smoothly. As of April 15, 2020 Raytheon Mountain Hospital had been operating safely for 68 days with no occurrence of food safety accident.

**Keywords:** COVID-19, food delivery, medical staff, nutrition, Raytheon Mountain Hospital

As is known, Wuhan encountered a temporary shortage of supplies in the early lockdown, and it was at that time medical staff and patients faced transient problems of food supply and delivery.<sup>1,2</sup> Accordingly, the Raytheon Mountain Hospital, a temporary large-scale designated hospital,<sup>2</sup> was not only built up for treating patients severely affected by coronavirus disease (COVID-19)<sup>3,4</sup> but also innovatively creating a contactless food supply and delivery system.

Because transmission routes were not fully understood at that time, this system was established with the biggest advantage of noncontact character compared with other online food delivery services. Around this feature, a responsible third-party company was selected with following criteria: (1) local company managed by the government to facilitate the organization and dispatching; (2) relevant experience conducive to rapid anti-epidemic works; (3) sufficient raw materials and corresponding reserves like insulation boxes and meal carts; and (4) accident-free is required to ensure food safety.

In the preparation phase, the Food Management Group with nutritionists developed personalized nutrition prescriptions for medical staff and patients. Nutrition prescriptions were developed under the Dietary Guidelines for Chinese Residents (2016)<sup>5</sup> and Nutritional Dietary Guidelines for the Prevention and Control of Coronavirus Diseases,<sup>6</sup> and followed the principles of balance and diversity. In addition, patients' nutrition prescriptions included fluid diet, semi-fluid diet, diabetes diet, low-salt low-fat diet, and high-protein diet, while northeastern Chinese

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cuisine, Shanghai cuisine, Cantonese cuisine, and Muslim meal were developed to cater for medical staff's special taste needs. Furthermore, kitchen and operation were sprayed with disinfectant and lit with ultraviolet light for two hours twice a day, and thermal containers and food carts were wiped with 84 disinfectant three times a day.

Ordering can be done directly via the WeChat application with the instruction of doctors and nurses. WeChat groups were built up with group leaders responsible for counting the mealtimes, set meals, and the number of diners. The full menu expands beyond traditional lunch offerings to encompass breakfast, dinner offerings, and limited snack offerings. After that, food-making was produced by healthy staff, who were required to wash hands with soap or antibacterial hand sanitizer, and then use 1~3 mL quick-drying hand sanitizer to wipe hands. Cooks need to wear masks, apron, kitchen cook paper hat, and disposable gloves.

Meals are separately packed with an insulation box to keep the center temperature over 62°C so that deliverymen who show negative nucleic acid tests are responsible for completing all distribution works within 60 min. Considering the transmissibility of COVID-19,<sup>3</sup> a restricted clean channel was set up in the distribution of meals and the number of deliverymen and meal carts were equipped based on the number of ward beds. Deliverymen strictly abided by the principle of contactless delivery, while a point-to-point delivery was required to avoid deliverymen becoming viral vectors and to avoid heat loss as much as possible.

As of April 15, the contactless food supply and delivery system of Raytheon Mountain Hospital had operated

well for 68 days, and it helped to reduce virus transmission to a large extent. Since COVID-19 is still alarming and countries all have invested a great deal of manpower and material resources,<sup>7,8</sup> we hope this summary can provide an effective reference for other emergency hospitals. To better deal with the continuous epidemic, hospitals in other countries could take similar measures to reduce virus transmission and take active steps to promise well-balanced nourishment for medical staff and patients.

## Disclosure

The authors report no conflicts of interest in this work.

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