Advantages and Disadvantages of Cook-Chill Food Production Within Hospital Setting

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March 21, 2012
NDFS 445
INTRODUCTION

Getting food to patients in a hospital is a necessary, yet daunting task. Although some hospitals may only have 100 beds, some can have over 1200. Because of the wide variety of hospital sizes and patient ages, all hospitals cannot produce food using the same technique. Additionally, a major concern for foodservice managers is patient satisfaction and choosing a method that patients will enjoy. This paper will focus on the advantages and disadvantages of the food preparation technique of cook-chill within the hospital setting.

HISTORY AND DEFINITION OF COOK-CHILL

The concept of cook-chill arose primarily through the need to produce quality food products in advance in a highly reproducible way while providing maximal food safety to customers. This was introduced during the 1960s for catering purposes. Subsequently, with the introduction of reliable refrigeration systems, chilled cooked food sector began to grow. However, with high electricity and equipment costs, cook-chill began to fade until it increased in the early 1990s when it was utilized in catering, school, and hospital settings due to energy efficiency improvements (1). Now cook-chill is again starting to decrease in popularity because of the poor satisfaction ratings (2).

The process of cook-chill is that the food has already been fully cooked and then is chilled until service. At time of service the food is then reheated and hot for the patient in a process called rethermalization or “retherm.” There are various ways that this can be accomplished, such as: microwaves, retherm carts, or ovens. Cook-chill requires a kitchen that can prepare bulk food, large refrigeration units to provide space for the cooked food, and a reheating unit for food service (1).
APPROPRIATE USE OF COOK-CHILL

Because of the large equipment cost it is unfeasible for every hospital to use this system of food preparation. Studies have found that it is appropriate and cost-efficient to utilize this method when there are more than 200 patient beds (3). For example, Rush Medical Center in Chicago, Illinois uses cook-chill and has a 676-bed facility (4). Similarly, Intermountain Medical Center has a 452-bed facility and also uses cook-chill, whereas Intermountain American Fork Hospital uses a cook-to-serve method because they only have 86 patient rooms (5). Thus showing that the large cost of equipment may not be worth the price for smaller facilities.

CHILLING PROCESS

The process of chilling the food is one of the most important elements of cook-chill because of the potential food safety hazards. It has been found that for food to not be at risk for pathogen growth, hot food must be cooled to 70 degrees Fahrenheit or lower within two hours of production. Then it must get to 41 degrees Fahrenheit or lower within the next four hours. However, it is the first two hours that is crucial and can be difficult to accomplish (6). Because ordinary home refrigerators cannot drop the temperature quick enough, other equipment is needed, such as tumble chillers and blast chillers (7).

Tumble Chillers

The tumble chiller is designed to chill filled hot food casings from 185 to 40 degrees Fahrenheit in less than one hour. The hot food bags are placed inside the stainless steel tumble chiller and it is tumbled with 100 to 1000 gallons of cold water. It is ideal for cooling products such as soups, sauces and ready meals because it can cool thicker items very quickly and efficiently. The chilled, sealed bags can then withstand refrigerated shelf life for up to six weeks.
before use. This method is popular because it holds for a long duration and maintains consistent food quality, while reducing food, energy, and labor costs (7).

**Blast Chilling**

Blast chilling is a method which chills food to below 40 degrees Fahrenheit within 90 minutes. Blast chillers have very powerful refrigeration equipment that blows high velocity chilled air into the refrigerator for maximum cooling at high speed. It has the ability to bring the core temperature of food items down through the danger zone much more quickly than a regular freezer so rapid bacterial growth is not an issue. The equipment is an upright stainless steel refrigerator with inside shelving. Hot food is placed onto bun pans, hotel pans, or any other container, and is placed on the racks in the blast chiller. It is optimal that food is placed as shallow as possible in the container so that it can cool as fast as possible. Hot food is also to be uncovered so that the cool air can circulate within the chiller to all the food products. After being chilled, the food can be held in a refrigerator for up to five days without ruining food texture and quality. This method is used for food that will be used within a few days, rather than kept for long term (6,7).

**PROCESS OF RETHERMALIZATION**

Once the food is chilled, it then needs to be reconstituted for service. Some foods can be reheated in bulk on a stove, such as soups and gravies. However, some foods such as meats and potatoes are not easily reheated and may need to use a different method, such as rethermalization. Rethermalizing the chilled food quickly for service can be a difficult and expensive task. The process of using retherm carts will be discussed below which are used to reheat cold, plated food for quick service.
Retherm Carts

Retherm carts are a more recent innovation within the hospital food service sector. These carts have about 12-26 slots to hold patient trays and have metallic, heated discs the plates sit on to be heated. The entire cart is plugged into electricity for 30 minutes within a refrigerated room, ensuring that the plates on the metal disc are heated and everything else, such as fruits and drinks, are chilled until service. This method can be very convenient because it uses a traditional tray-line with cold items. The patient trays can be assembled hours in advance and wait in the refrigerated room until the food is reheated for service (8,9).

Although this method is very convenient, it can be very costly. The utility costs for retherm carts are high because of the need for a large refrigerated room and electricity. The carts themselves and installation within the hospital can be very expensive as well. Intermountain Medical Center found that their carts cost about $15,000 each and they have 57 of them, which doesn’t include the hundreds of thousands of dollars to install it (10). One of the major disadvantages is the cost upfront. However, many find that the benefits outweigh the initial cost (3).

BENEFITS OF COOK-CHILL

Labor and Food Cost

Because food is prepared in advance, experienced cooks are not required to work during all hours of operation. This allows for less experienced and less expensive employees to be hired for reheating the food and working on tray-line, making it a cheaper scenario than having to batch cook food throughout the day. Additionally, since the patient trays can be chilled in their carts in the refrigerated room, they can be assembled hours in advance, making it possible for the kitchen staff to be scheduled for only eight hours instead of all hours of operation (3,7).
Food cost is also lower with cook-chill because there is less food waste. When preparing food in advance, the chilled products can last for up to five days in a walk-in. Food isn’t reheated unless it is going to be served to the patient immediately, so it can stay preserved in the walk-in until needed. Comparatively, a traditional tray-line batch cooks food before service, so whatever is leftover has to be wasted. Cook-chill provides a less expensive alternative when considering food and labor costs (3,11).

**Ease of Catering and Forecasting**

Many hospital food service operations participate in on-site catering, meaning they will cater food for various banquets, floor activities, meetings, or daycares at their hospital location. It can be very difficult to cater for large amounts of people while still keeping food warm. However, cook-chill provides a simple approach for the catering opportunities on-site because it allows for large amounts of food to be held for days in advance (3).

In hospital settings it can be difficult to forecast exactly how many patients you will be serving each day; often there is not enough of a product or there is too much and it needs to be wasted. Forecasting the amount of food to be used each day is simpler with cook-chill because there is no need to get an exact amount of trays needed per day. Food is rotated in the walk-in and is available on-demand whenever needed (3).

**DISADVANTAGES OF COOK-CHILL**

**Equipment and Utility Cost**

Although cook-chill seems to be cheaper with labor and food costs, the equipment and costs are significantly more expensive than other food preparation methods. Prices for blast chillers range from $5,000 to $25,000, whereas the tumble chiller can cost between $15,000 to $150,000, depending on capacity and style. Additionally, the utility cost for the large equipment
is much greater than cooking to order, such as with an oven or stove. The equipment and utility may be costly, but many find that the low labor and food costs make up for the loss (12).

**Patient Satisfaction**

Cook-chill provides a less demanding workload for the kitchen staff in the hospital setting, but patients have noticed the difference. From being so confined, food is one of the only things a hospital patient can control. Patient satisfaction of the food is a large determinant in the healing process. If a patient doesn’t like the food, chances are that he will not be consuming enough energy and protein for the recovery. Similarly, food quality and satisfaction ratings are important determinants of whether or not an unhealthy person will choose to be hospitalized at a facility or not (2,13).

Through patient surveys, studies have shown that patients dislike reheated food because it doesn’t taste as fresh and often has an off-texture (2). These concerns are valid. With cook-chill the food served is usually not made that day and may have a different flavor than freshly prepared food. Depending on the reheating method, the texture can also be abnormal (3,14). The texture of a frozen lasagna may be more mushy than a freshly baked piece would be. When retherming food, the plate often contains more than one item, such as green beans with lasagna. Since they are reheated together, the flavor and smell of the lasagna can crossover onto the green beans, giving them an improper smell and flavor. Cook-chill has received a negative connation from patient satisfaction surveys which proves to be a major complaint for the process (14).

**CONCLUSION**

Although cook-chill can be a very convenient way to produce food in hospital settings for food service staff, it may not be worth the cost of equipment, installation, and utilities for a smaller operation of less than 200 beds. When cook-chill is used, patients report a dislike for the
texture and flavor by food produced by reheating chilled products. However, cook-chill is very beneficial because of the cost and labor savings. Foodservice managers highly concerned about patient satisfaction rates in hospital settings may want to consider other food preparation methods.
REFERENCES


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