Preventing Cruise Ship Foodborne Illness Outbreaks

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INTRODUCTION

It is popular to take a vacation to different locations around the world on a cruise. According to Cramer (2008), outbreaks of illness during cruises are continuously decreasing with improved equipment and more consistent supervision. However, prevention only comes with strict guidelines and careful execution. A majority of the outbreaks are caused from foodborne illnesses (2). The Vessel Sanitation Program (VSP) has been developed to prevent and control the introduction, transmission, and spread of illnesses on cruise ships. Foodservice managers need to be aware of the common causes of foodborne illnesses that occur in the kitchen and work to prevent them. It is only through excellent supervision and thorough training that these outbreaks can be minimized.

FOODBORNE ILLNESS

Gastrointestinal (GI) illness is the most common outbreak that occurs on cruise ships (3). GI illness becomes reportable once a passenger experiences three or more loose stools within a 24-hour time period, or experiences vomiting along with one of the following symptoms: muscle ache, headache, abdominal cramp, or fever (3). Most cases of GI illness result from the eating contaminated food, known as foodborne illness. According to Rooney (2004), a foodborne illness is defined as the “various acute syndromes that result from ingestion of contaminated foods”, particularly infections caused when microorganisms invade and multiply in the intestinal mucosa or other tissues. In order for a GI illness outbreak to be documented on a cruise ship, it has to meet certain criteria. The cruise has to be sailing on a voyage between 3-21 days and carry 100 or more passengers (3). In addition, the cruise ships must have 3% or more of its passengers or crew report symptoms of diarrheal disease to the ships medical staff during the voyage (3).
Programs and procedures have been implemented to decrease the occurrence of foodborne illness outbreaks on cruise ships.

**PREVENTION**

**Vessel Sanitation Program (VSP)**

The Center of Disease Control and Prevention (CDC) has a program devoted to the sanitation of ships—The Vessel Sanitation Program (VSP)—which provides guidelines for management (3). This program provides expanded training, education and cruise ship inspection programs to reduce the outbreaks of illness into the United States (1). All ships carrying thirteen or more passengers must receive two unannounced inspections annually conducted by VSP environmental health officers (1). These surprise inspections keep managers on their toes, requiring them to follow all procedures and be prepared for an inspection at all times. With a possible 100 points, these inspections must receive a minimum score of 85 to pass (3). Significant violations result in a reduction of points while minor violations are noted on the report and may or may not result in a reduction of points (1). The six major categories evaluated are: disease reporting, potable-water maintenance and distribution, swimming pools and spas, food safety and handling, medical log maintenance and reporting, and environment health practices, such as housekeeping (1). Food safety and handling is one of the major categories that causes a reduction of points (1). Studies have been completed to link the outbreaks with routes of transmission, such as cross-contamination and person-to-person transmission via infected food handlers (2, 4). Specific procedures have been produced to control these “hazard points” and prevent future outbreaks (5). The VSP has continued to change and improve their methods for inspection (1). Being prepared for surprise inspections ensures that proper food handling practices are being followed.

**Proper Training**

A majority of the outbreaks are a result of the misuse of food preparation procedures in the kitchen and practicing improper hygiene, which can be prevented with proper training (1, 2, 3).
The most common foodborne illness causes include inadequate temperature control, infected food handlers, contaminated raw ingredients, cross-contamination, and inadequate heat treatment (1, 2). It takes only one small mistake to cause a foodborne illness. Salmonella outbreaks on cruise ships are often caused by cross-contamination, frequently resulting from improper handling of cooked and uncooked poultry (4). For example, uncooked poultry kept in the same fridge with cooked poultry is typically handled by the same staff. If improper hand-washing and sanitizing is maintained and cooked meat is placed on surfaces that had previous contact with uncooked meat, cross-contamination is likely to occur. Handling raw meat is a very important part of food safety (4). In 1994 a variant strain of *Norovirus* affected at least 217 of the 527 (41%) passengers of a cruise ship in Hawaii (5). The consumption of contaminated fresh-cut fruit served at two buffets is associated with this GI outbreak. The fresh-cut fruit was likely contaminated with uncooked poultry due to improper cleaning and sanitizing procedures (5).

Unskilled workers begin working without prior knowledge of safe food handling practices. It is up to the supervision to train them and make sure they understand all processes and procedures. All of these causes can be prevented with adequate training and constant supervision of the trained staff and management.

**Diverse Employees**

When untrained and unskilled workers begin they must be trained thoroughly in all of these procedures. Employees and food handlers come from many diverse backgrounds and origins (6). They have different health behaviors, speak different languages and have different backgrounds in health and immunization status. In addition to this obstacle, foodservice employees are frequently changing. The constant change of employees makes it difficult to ensure that everyone is trained properly; therefore training is occurring on a regular basis. Taking adequate time to train all employees thoroughly is necessary and can prevent many foodborne illness outbreaks.
Isolation

Unfortunately, outbreaks can still occur while taking all precautions and carefully handling the food. Several outbreaks have been linked to sources of GI-illness exposure during shore excursion (4). While eating at local restaurants, passengers consume contaminated food and bring it back to the cruise ship with them. Supervision and training cannot prevent outbreaks of this sort, but they can help stop and prevent the spread. Taking proper measures quickly can minimize the spread of the illness. Prompt and thorough disinfection of ships and isolation of ill crew-member and passengers is necessary (7). Isolated persons are not allowed to leave the room for 48 hours after the last symptoms (8). They are not allowed to receive visitors, except assigned ship’s personnel strictly following decontamination procedures. Many measures are taken to improve the patients’ attitude and outlook including prompt assistance from medical and service staff following any request, free medical attention, and some monetary compensation for lost quality cruise time (8). A strict isolation policy is expensive but essential (8).

CONCLUSION

It is the supervisors and foodservice managers’ responsibility to make sure all training gets completed. Managers must have an extensive knowledge of how to handle food safely in order to teach their employees correctly. They must not only know how but why, making sure to explain to the employees why the procedures are implemented as why they are necessary. Often a “learn-as-you-go” technique is thought to be adequate training but this technique results in important processes and procedures being left out. Training new and unskilled workers takes time and patience but pays off in the long run. Constant and consistence supervision allows mistakes to be seen early and training to be continuous. Only with both of these aspects can kitchens handle food in the safest way possible, preventing outbreaks of illness.
REFERENCES


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