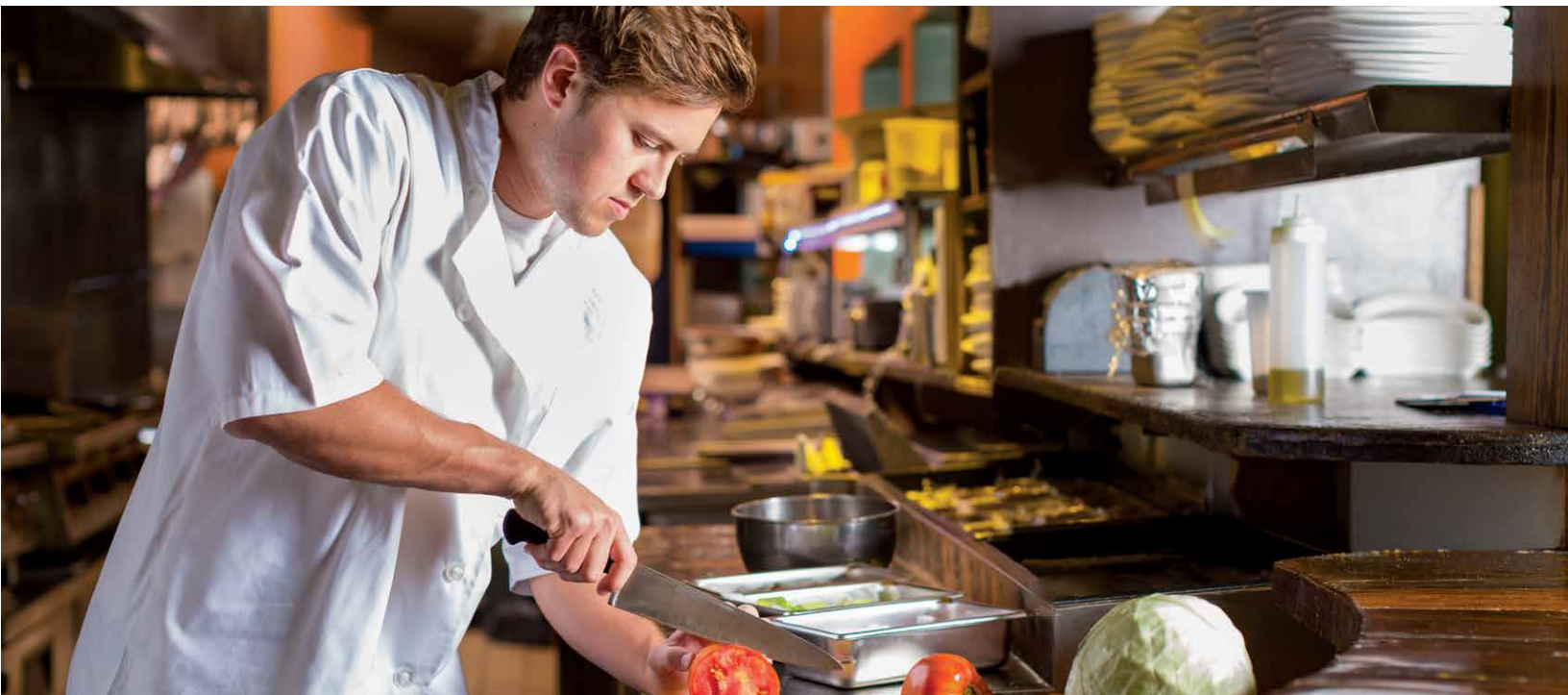


WHERE DO WE GO FROM HERE?

A look at food safety in the Foodservice Industry today



Dave Shumaker, B.S., Microbiologist
GOJO Industries, Inc., Akron, OH

James W. Arbogast, PhD, Vice President of
Hygiene Sciences & Public Health Advancements
GOJO Industries, Inc., Akron, OH

INTRODUCTION

Foodborne illness. The term becomes top of mind after any leading national restaurant chain experiences a widespread outbreak. As consumers, we assume we will not become ill when dining out with our family and friends at a restaurant. As restaurant owners, operators or managers, we believe our restaurant could never fall victim to an outbreak, and as restaurant employees, we are confident we follow safe food handling practices.

There has been a recent rise in multi-state, foodborne illness-related outbreaks¹

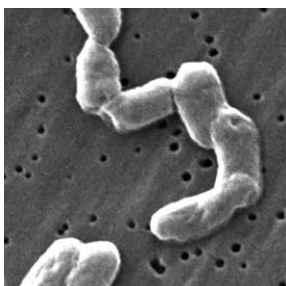
While we all believe we are taking the necessary steps to prevent the spread of foodborne illness, one striking fact remains – foodborne illness still occurs way too often! According to a 2015 Centers for Disease Control and Prevention (CDC) report, there has been a rise in multi-state foodborne illness-related outbreaks.¹ Now, more than ever, is the time for all food service establishments to re-evaluate their current food safety practices to ensure they are doing enough to mitigate the risk of foodborne illness, which can be incredibly costly to both their bottom line and reputation.

But first, how do these dangerous pathogens find their way into your restaurant? Unfortunately, there are many ways risky microorganisms can enter. Some walk through the front door with your guests, which is often a largely overlooked risk. Others come in with the food supply. This means if a restaurant does not follow the receiving of safe approved vendor ingredients and products, proper cooling, storage, cooking, heating and other preparation protocols to reduce the risk, pathogens are more likely to survive, thrive and cause real harm. Employees can also play a role, especially if they come to work sick or do not follow proper hygiene protocols – every time they handle food, every day!

How is the restaurant industry doing? According to the CDC, retail foodservice establishments are the most commonly reported locations leading to foodborne illness.² In light of recent widespread events, more restaurants are taking a closer look at their food safety efforts. While there is always room for improvement, the time is now for restaurant owners and operators, food service workers and guests to fully understand their role in food safety.

So how can the restaurant industry be more diligent in reducing the risk of this happening? Before we take a deep dive into the state of food safety at restaurants across the United States, let's first take a closer look at the types of illnesses impacting the industry.

FOODBORNE ILLNESSES



There are more than 250 foodborne illnesses caused by viruses, bacteria, parasites, toxins, metals and prions.³ Some of the most common foodborne pathogens are *Listeria*, *E. coli*, *Salmonella* (shown to the left), *Campylobacter* and viruses like Hepatitis A and Norovirus, which all pose a serious threat to public health.

- **Listeria** frequently makes headlines. *Listeria* is unique in that it can grow at low temperatures, whereas other bacteria need higher temperatures to grow. Another key attribute of *Listeria* is that it comes from the environment and is spread to the food through cross-contamination. *Listeria* is most dangerous for immunocompromised individuals, especially pregnant women, because it can lead to infant mortality.

- **E. coli**, which causes intestinal illness and has been linked to many outbreaks, can cause an infection even if you ingest only small amounts.⁴ It is important to note that the impact of *E. coli* ranges from mild discomfort to violent vomiting to possible death. The most common source and way to acquire an *E. coli* infection is by eating contaminated food, including fresh produce. The bacteria is spread by a fecal-to-oral route – it can start at the farm with contamination and then infect by the food not being prepared properly (e.g. not cooked to the correct temperature), poor hand hygiene or cross contamination due to not properly cleaning and sanitizing surfaces.
- **Salmonella** is another bacteria often associated with foodborne illness that affects the intestinal tract. It is prevalent in food, wild and food animals such as cattle, pigs and chickens.⁵ Most people are infected with *salmonella* by eating foods that have been contaminated by feces since it is typically spread person-to-person through either cross contamination or improper hand hygiene.⁶
- **Norovirus** is a highly contagious virus that is spread most commonly through human-to-food-to-human contact in a food service environment due to poor hand hygiene. This virus often survives for weeks in the environment.⁷ Humans can still be infectious and transfer the virus even if they are not showing any symptoms.
- **Hepatitis A** is a viral infection that can be prevented through vaccination. However, unvaccinated people can become infected by a fecal-to-oral route of exposure (ingestion of contaminated feces), which is why proper handwashing, specifically after using the restroom, is important. Symptoms of Hepatitis A infection include fever, fatigue, loss of appetite, headache, and yellowing of the skin and eyes.⁸ Other preventative measures include getting a vaccination and avoiding eating raw or undercooked oysters and shellfish.⁹
- **Campylobacter** typically comes from raw or undercooked poultry. It is critical to properly handle poultry to prevent cross contamination and to cook and hold poultry at safe minimum temperatures.¹⁰
- **Clostridium perfringens** infections often occur when large quantities of food are prepared and kept below 140°F for long periods of time, which causes spores to survive the cooking process and then grow at the holding temperature, which in turn, contaminates the food and causes foodborne illness. Keeping foods hot (above 140°F) and refrigerating foods (below 40°F) within two hours can help prevent *Clostridium perfringens* infections.¹¹

So how do you reduce the risk of these dangerous pathogens impacting your guests and hurting your business, and what are the best practices you can implement to mitigate this risk?

THE FOUNDATION – A STRONG FOOD SAFETY PROGRAM

Having a strong food safety program and culture within a restaurant is critical to its overall health, especially when you consider the CDC has attributed 9.4 million illnesses, nearly 56,000 hospitalizations and more than 1,300 deaths to foodborne pathogens annually in the United States.¹²

First and foremost, for any food safety program to be successful, the employees need to understand why food safety procedures are important. This means a focus on education and openly discussing the importance of food safety practices and addressing any concerns is a must.

FOOD SAFETY MANAGEMENT PROGRAM COMPONENTS

Establishing a Food Safety Management Program is critical to the well-being of your guests and helps reduce the chance of an outbreak happening at your establishment. Components of this program, according to industry expert Hal King¹³ include:

- Identifying hazards and determining risk. Once you identify the hazards that could cause foodborne illness, it is important to define what they are, determine the impact they have on your business and then assess the likelihood of that hazard happening. According to King, Risk = Hazard x Probability

$$RISK = HAZARD \times PROBABILITY$$

- Implementing systems to reduce hazards. These systems can be programs, policies and/or standard operating procedures that reduce hazards known to cause foodborne illness.
- Manufacturing Control Systems in food manufacturing and retail food preparation, including Hazard Analysis and Critical Control Points (HACCP). HACCP is a preventive food safety assurance system that King believes provides the most value to a food retail business because it makes corrective action mandatory before a product is finished, as opposed to a nontraditional corrective system that measures the presence of hazard in the finished product. Both the FDA and USDA have established HACCP as a mandated food regulation for all food manufacturing in the United States.
- Corporate Control Systems including product withdrawal/recall systems which require cross-functional collaboration between many parts of the business.

Key FOOD SAFETY PROGRAM Components & Culture Habits

Having workers not come in while ill

Washing hands at key moments

Providing an alcohol-based hand sanitizer for guests to use when they enter the restaurant

Keeping restrooms visibly and hygienically clean

Following proper cooking instructions

Implementing processes to avoid cross-contamination

THE PRACTICES OF GOOD HYGIENE



Gloving

According to the FDA, gloves should be worn by food service workers when handling ready-to-eat foods. It is important to note that gloves should only be used for one task; food workers must change gloves when switching tasks. Hand hygiene (e.g. washing hands) should be performed before and after donning gloves.



Cleaning and sanitizing food contact and non-food contact surfaces

It is important to keep clean the surfaces your food and hands contact, especially in food preparation environments, which are ideal for growth and proliferation of bacteria. Be sure to use a surface cleaner and sanitizer designed specifically for the food service industry that quickly and effectively removes germs on surfaces, especially including Norovirus, *E. coli* and *Salmonella*. It is important to note the surfaces that touch raw food are the most susceptible to these pathogens.



Consider Both the Front and Back of the House

Illness-causing germs are not only spread in the back of the restaurant (i.e. the kitchen), they can also be brought in by guests. This is why it is important to offer an alcohol-based hand sanitizer in the front of the house, so your guests can sanitize their hands before they eat and after touching menus and other commonly touched and shared objects.



Hand Hygiene

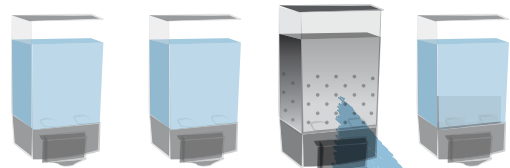
The practice of good hand hygiene – washing with soap and water and using an alcohol-based hand sanitizer – is one of the most important steps any restaurant worker and patron can take to ensure the safety of food and reduce the risk of getting sick. It has often been estimated that the majority of infections are caused by hand transmission, which highlights the importance of hand hygiene and the vital role it plays in preventing our food from becoming contaminated.

HOW HAND HYGIENE PRODUCTS WORK

Antibacterial soaps, which are common in the food service industry, contain ingredients designed to kill germs on the skin, adding an extra level of protection from microbial contamination. In addition, alcohol-based hand sanitizers can also be used as part of an overall hand hygiene regimen following handwashing. In fact, studies have shown that hand hygiene regimens that include handwashing and hand sanitizing reduce the risk of transmission of pathogens from contaminated hands of food service workers to food.¹⁴

Soap and hand sanitizer dispensers also play a key role in reducing the spread of illness-causing germs. For example, touch-free dispensers allow for portion-controlled dispensing and easy access to hand hygiene products. Another reason to move towards touch-free dispensers is that the use of these dispensers has been shown to improve compliance rates over manual dispensers, because these touch-free dispensers are typically used more often than manual dispensers.¹⁵

One dispensing system to avoid is an open, refillable bulk soap dispenser.¹⁶ Open, refillable bulk soap dispensers are those that are refilled by pouring soap into an open, partially filled reservoir.



1 IN 4

Refillable bulk soap dispensers is contaminated.¹⁶

Bulk soap dispensers are the old-fashioned kind, refilled from a jug of soap.



Continuing to use these types of dispensers actually works against efforts to create a healthy environment. One way to overcome this challenge is to switch to sealed soap systems, which provide

the solution to reducing contamination risks. The soap inside of these systems is protected from contamination because it is factory sealed and includes a fresh nozzle with each refill.

HAND HYGIENE COMPLIANCE

Published studies have indicated that 0% - 61% of restaurant workers, 6% - 73% of workers in institutional settings and 2% - 82% of workers in deli operations properly follow recommended handwashing procedures.¹⁷

Continued on next page.

Conclusion

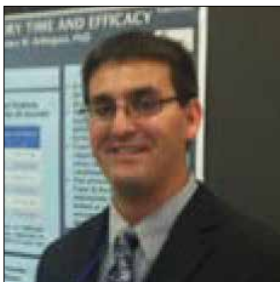
There are many factors driving these low compliance rates. These include a lack of understanding about the importance of hand hygiene, insufficient training, the wrong products, access and promotion of hand hygiene and lack of management support.

In the future, it will be critical for the restaurant policies and regulations at the state and national level (e.g. the FDA Food Code) to keep up with the science and be modified to ensure continuous improvement in food safety for the public. Today, restaurant owners and operators must look at their food safety procedures and ensure they are doing everything they can to reduce risk plus provide the best guest experience possible.

REFERENCES

1. Centers for Disease Control and Prevention. *Vital Signs: Multistate Foodborne Outbreaks* – United States, 2010-2014. Retrieved March 1, 2016, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6443a4.htm?_cid=mm6443a4_w
2. Centers for Disease Control and Prevention, *CDC Surveillance of Foodborne Disease Outbreaks*, 1998 to 2008.
3. United States Department of Labor. *Foodborne Diseases*. Retrieved March 1, 2016, from <https://www.osha.gov/SLTC/foodbornedisease/>
4. Mayo Clinic. *E. coli. Causes*. Retrieved March 1, 2016, from <http://www.mayoclinic.org/diseases-conditions/e-coli/basics/causes/con-20032105>
5. World Health Organization <http://www.who.int/mediacentre/factsheets/fs139/en/>
6. Mayo Clinic. *Salmonella infection. Causes*. Retrieved March 1, 2016, from <http://www.mayoclinic.org/diseases-conditions/salmonella/basics/causes/con-20029017>
7. Knight, An., Haines, J., Stals, A., Li, D., Uyttendaele, M., Knight, Al. Jaykus, L. A systematic review of human norovirus survival reveals a greater persistence of human norovirus RT-qPCR signals compared to those of cultivable surrogate viruses. *International Journal of Food Microbiology*, 216:40-49, September 2015.
8. Mayo Clinic. *Hepatitis A. Symptoms*. Retrieved March 15, 2016, from <http://www.mayoclinic.org/diseases-conditions/hepatitis-a/basics/symptoms/con-20022163>
9. Foodsafety.gov. *Hepatitis A*. Retrieved March 15, 2016, from <http://www.foodsafety.gov/poisoning/causes/bacteriaviruses/hepatitisa/>
10. Foodsafety.gov. *Campylobacter*. Retrieved March 15, 2016, from <http://www.foodsafety.gov/poisoning/causes/bacteriaviruses/campylobacter>
11. Foodsafety.gov. *Clostridium perfringens*. Retrieved March 15, 2016, from <http://www.foodsafety.gov/poisoning/causes/bacteriaviruses/cperfringens/>
12. 12 Scallan, E.R.M., Hoekstra, F.J. Angulo, R.V. Tauxe, M.A. Widdowson, S.L. Roy, J.L. Jones, and P.M. Griffin. 2011. Foodborne illness acquired in the United States – major pathogens. *Emerg. Infect. Dis.* 17:7-15.
13. H. King, *Food Safety Management: Implementing a Food Safety Program in a Food Retail Business, Food Microbiology and Food Safety*, DOI 10.1007/978-1-4616-6205-7_4, © Springer Science+Business Media New York 2013
14. Edmonds, S., McCormack, R. Sifang, St., Macinga, D. and Fricker, C. Hand Hygiene Regimens for the Reduction of Risk in Food Service Environments. *Journal of Food Protection*, Vol. 75, No. 7, 2012, pp.1303-1309
15. Larson, E, Albrecht, S., O’Keefe, M. *Hand hygiene behavior in a pediatric emergency department and pediatric intensive care unit: comparison of use of 2 dispenser systems*. Retrieved June 15, 2015, from <http://www.ncbi.nlm.nih.gov/pubmed/?term=touch+free+dispenser>
16. Chattman, M., Maxwell, S., and Gerba, C. Occurrence of Heterotrophic and Coliform Bacteria in Liquid Hand Soaps From Bulk Refillable Dispensers in Public Facilities. *Journal of Environmental Health*, Vol. 73, No. 7, 2011, pp. 26-29
17. Fraser, A., Arbogast, J., Jaykus, L, Linton, R. and Pittet, D. Rethinking hand Hygiene in the Retail and Foodservice Industries: Are Recommended Procedures Based on the Best Science and Practical under Real-world Conditions? *Food Protection Trends*, December 2012.

MEET THE AUTHORS



Dave Shumaker, B.S. – Microbiologist, GOJO Industries, Inc.

Dave is responsible for hand hygiene research, evaluation of novel antimicrobial technologies as well as industrial and cosmetic microbiology. He received his Bachelor’s of Science degree in Microbiology at Ohio University.



James W. Arbogast, Ph. D. – Vice President of Hygiene Sciences & Public Health Advancements, GOJO Industries, Inc.

James, who holds a Ph.D. in organic chemistry and has more than 20 years of experience, joined GOJO in 2002 and currently serves as Vice President of Hygiene Sciences and Public Health Advancements. Prior to his appointment to his current role, he held a variety of technical leadership roles in Skin Care Science, Product Development and New Technology with the company. Throughout his career, he has been involved in the formulation and national launch of hundreds of products in the laundry, air freshening, hair care, skin care and hand hygiene markets.