

## Letters to the Editor

### Contaminated Foods in Healthcare Facilities

#### To the Editor:

During the summer of 1993, our hospital and skilled nursing home experienced a mixed foodborne outbreak during which over 100 residents were infected with *Salmonella* group B (Heidelberg) and/or *Campylobacter jejuni* (biotype III). The source of the pathogens was tracked to improperly prepared chopped chicken livers.

As part of our corrective action plan, we enhanced our educational program for food-service personnel to heighten awareness of the need for proper handling and processing of potentially high-risk foods. An integral part of this education process was a program of microbiologic food surveillance with regular feedback of results to food-service staff.

We targeted potentially high-risk foods prepared within the facility, such as tuna salad, egg salad, potato salad, macaroni salad, and chicken salad. In addition, surveillance was performed on commercially supplied precooked, ready-to-eat beef and poultry products (such as cooked turkey breast, corned beef, frankfurters, salami, and bologna) purchased from various vendors.

Initially, during the 2-year surveillance period, testing frequently revealed total plate counts of in-house prepared food items (particularly tuna and egg salads) in excess of 100,000 bacteria/g, exceeding local health standards (New York City Department of Health Code 81.07).

The most common microbial contaminants isolated from these foods consisted of mixed populations of *Enterobacter* species (*cloacae*, *agglomerans*), as well as *Acinetobacter anitratus*, *Klebsiella pneumoniae*, and *Enterococcus*. Less frequently isolated were *Streptococcus viridans* and coagulase-negative *Staphylococcus*.

Extensive evaluation of this problem disclosed that the initial inoculation of the salad with bacteria was due to the use of raw vegetables in the salad preparation. Our studies showed that tomatoes, cucumbers, carrots, and green peppers had high

counts of the contaminating organisms on the surface. In addition, lesser quantities of *Aeromonas hydrophila*, a potential human enteric pathogen, were isolated regularly from the raw vegetables. Thorough washing of the vegetables was somewhat effective in reducing the numbers of bacteria; however, total counts remained relatively high.

Interventions included intensive food-service employee education regarding temperature control and handwashing, as well as procedures for the use and handling of raw vegetables. These included the need to clean surfaces and utensils that come in contact with raw vegetables before using the area for other food preparation. In addition, a processing change was made that established a requirement for blanching in boiling water all raw vegetables used in protein-containing salads. These interventions were successful in eliminating the high bacterial counts in the salads.

We believe that the greatest value of these surveillance cultures has been to instill in staff a heightened awareness of the consequences of improper food preparation and handling, thus providing a greater measure of assurance that safe handling and preparation methods for all foods will be followed.

More disturbing has been our experience with significant bacterial contamination of commercially prepared, precooked, ready-to-eat products. In the last 2 years, we have identified beef and poultry products with high total plate counts comprising a variety of microorganisms within the sealed packages of the products.

Ready-to-eat turkey breasts with total plate counts of >1,000,000/g of *Aeromonas hydrophilia*, *Yersinia intermedia*, *Serratia liquifaciens*, and *Enterobacter* species resulted in a USDA product recall. In addition, precooked, ready-to-eat corned beefs obtained from three different manufacturers were found to have total counts in excess of 100,000 bacteria/mL in juice surrounding the product. Microbiologic analysis showed a variety of organisms including *Enterobacter* species, *Serratia liquifa-*

*ciens*, *Lactobacillus* species, *Enterococcus*, and *Acinetobacter anitratus*. Similarly, frankfurters from multiple vendors had counts of bacteria in excess of 100,000/mL in surrounding meat juice, which contained organisms such as *Enterococcus*, *Corynebacterium* species, *Enterobacter* species, *Klebsiella pneumoniae*, *Serratia liquifaciens*, and *Lactobacillus* species.

Less frequently, bologna has been found to contain high counts of *Lactobacillus* and coagulase-negative *Staphylococcus*.

In all cases, when the manufacturer has been notified, they have investigated and taken corrective actions. On two occasions the USDA was involved, with one investigation leading to a product recall. In another case, the manufacturer voluntarily condemned the product.

Although none of these "contaminated" foods could be linked specifically to increased patient or staff morbidity, the elevated incidence of nonspecific diarrhea in a hospital or nursing home population makes this difficult to detect. In any case, the consumption of contaminated or spoiled food by already debilitated patients is a situation best avoided.

The finding of contaminated commercially prepared products may serve as an indicator of poor manufacturing and inadequate quality assurance processes that could allow the growth of more problematic enteric pathogens such as *Salmonella*, *Listeria*, or enteropathogenic *Escherichia coli*, should the food product be contaminated inadvertently during manufacture.

We currently are using microbial surveillance screening as an aid in choosing vendors for purchase of perishable or high-risk foods, as well as continuing surveillance on hospital-prepared foods to aid in educating food-preparation staff.

Steven Brooks, PhD  
S. Malcolm, MS  
P. Lamont, BS  
A. Khan, MPH  
B. Madahar, MS, RD  
R. Hameed, MD

Kingsbrook Jewish Medical Center  
Brooklyn, New York