

The Scallion Escapade

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Murphy's Law

- Spill before a date 85%
- Rush hour when you're late 73%
- E-mail crash sending document 70%
- Interruption during shower 53%
- Salmonella from eggs 3.5/ million

**Hepatitis A Outbreak Associated
with Green Onions at a Restaurant
--- Monaca, Pennsylvania, 2003**

- 555 persons with hepatitis A identified, including at least 13 Restaurant food service workers.
- 75 residents of six other states who dined at the Restaurant.
- Three persons died.

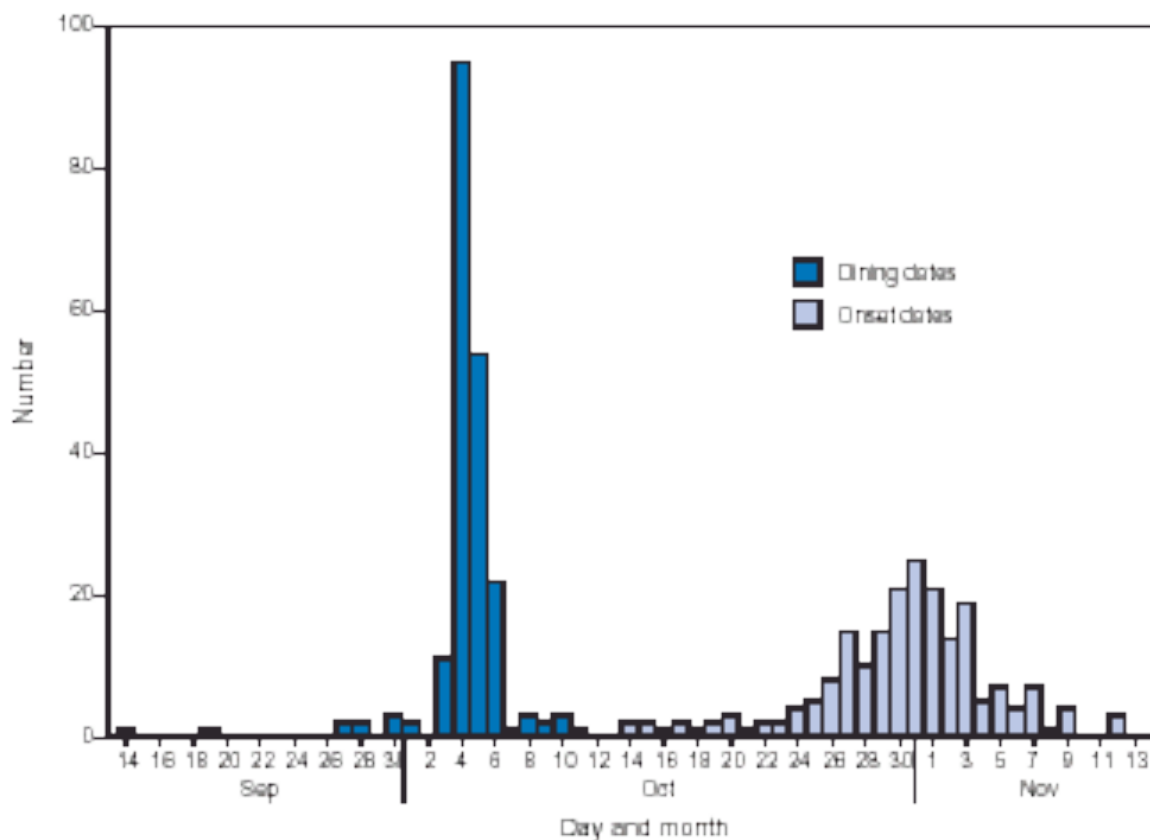
- Sequence analysis of viral RNA obtained from three patrons who had hepatitis A indicated that virus sequences were identical.
- Analysis of a case-control study implicated green onions as the source of the outbreak.

- Among 207 persons with hepatitis A who were interviewed and who ate at the Restaurant only once during the 2 to 6 weeks before illness, dates of illness onset were between October 14 and November 12, 2003.
- The typical incubation period for hepatitis A

- All infected food service workers became ill after October 26, 2003.
- This suggests that a food service worker was not the source of the outbreak.
- However, late October--early November, these ill food service workers were working At the Restaurant when they could have been infectious.

- Immune globulin has been provided to approximately 9,000 persons who ate food from the Restaurant during the time period of exposure to ill persons involved in the outbreak.
- The restaurant was closed.

FIGURE. Number of hepatitis A cases*, by date of eating at Restaurant A and illness onset — Monaca, Pennsylvania, 2003



*N = 206. Excludes one case-patient whose illness onset date was not available. Dining dates for three persons who ate at Restaurant A on October 15 (n = one) and October 17 (n = two) are not shown.

- Green onions were shipped in 8.5-lb. boxes containing multiple small bundles (6--8 green onions per bundle).
- Each box was unpacked, and bundles were stored upright (root side down) and refrigerated in a bucket with ice included in the shipment.

- Green onions were stored <5 days before rinsing intact onion bundles, cutting the roots off, and removing the rubber bands.
- Green onions from each box were chopped by machine to yield approximately 8 qts.
- Chopped green onions were refrigerated for approximately 2 days.

- Periodically (i.e., every 1 to 3 days),
salsas were prepared in batches of 40--80 qts.
- Mild salsa included chopped fresh green
Onions, but the hot salsa did not.
- Salsas were refrigerated in 8-qt containers
with a shelf life of 3 days.
- Mild and hot salsa were ladled into bowls and
provided free with tortilla chips upon seating.

- No ill food service worker identified could have been the source of the outbreak.
- The green onions likely were contaminated with HAV in the distribution system or during growing, harvest, packing, or cooling.
- Traceback investigations completed determined that the green onion source is one or more farms in Mexico.

- Restaurant also purchased previously chopped white onions and added them to several menu items, including hot and mild salsa.
- Mild salsa, which contains both green onions and white onions, was associated with illness.
- However, hot salsa, which contains only white onions, was not associated with illness.

- The genetic sequence of the outbreak strain is very similar to viral sequences obtained from persons involved in hepatitis A outbreaks in Tennessee, Georgia, and North Carolina during September 2003 that were linked epidemiologically to green onions.

These genetic sequences also were identical or very similar to sequences observed among persons with hepatitis A living along the U S-Mexico border and travelers returning from Mexico, consistent with a source in Mexico (CDC, unpublished data, 2003).

- Raw green onions from three firms in Mexico have been implicated in outbreaks in Tennessee and Georgia.
- FDA is still reviewing records to determine if additional firms are involved.
- The Mexican government assisted with the traceback investigation in Mexico and the determined the source of the contamination.

Several characteristics of the way food was prepared and served in the Restaurant could have contributed to this outbreak:

- 1) multiple opportunities for intermingling of uncontaminated and contaminated green onions in a common bucket for 5 days with the ice in which they were shipped.
- 2) serving contaminated items with a relatively long shelf life (e.g., mild salsa) to a large proportion of patrons over several days.

- HAV is transmitted by the fecal-oral route.
- Green onions require extensive handling during harvesting and preparation for packing.
- Contamination of green onions could occur:
 - 1) by contact with HAV-infected workers, especially children, working in the field during harvesting and preparation.
 - 2) by contact with HAV-contaminated water during irrigation, rinsing, processing, cooling, and icing of the product.

Green onions and other selected produce items (e.g., strawberries) might be more vulnerable to contamination because plant surfaces are particularly complex or adherent to viral or fecal particles.

Outbreaks of other enteric pathogens linked to green onions have been reported.

- HAV contamination of fresh produce can be reduced by using approaches such as the application of Good Agricultural Practices/ Good Manufacturing Practices recommended by FDA.
- Recommended control measures include providing sanitary facilities for field workers, ensuring appropriate water quality, use of properly treated manure or biosolids, and ensuring worker health.

- Reducing HAV transmission in areas where produce is grown and discouraging the presence of children in areas where food is harvested also will reduce opportunities for HAV contamination.
- Further investigation of this and other hepatitis A outbreaks linked to green onions, including observation of cultivation and harvesting practices, can guide additional specific critical control measures.

Teachable moment

- Condition of raw ingredient
 - Source and how supplied to processor
 - Handling by processor
- Implication of contaminated ingredient
 - Use in final product
 - Spread of contamination by secondary transmission.
 - Distribution of final product

Food Safety Systems

- GAP-Good Agricultural Practices
- GMP- Good Manufacturing Practices
- HACCP-
Hazard Analysis Critical Control Point
- Operational Plan- Required by NMED

RISK ASSESSMENT → RISK MANAGEMENT

TRACE BACK

OR

RECALL



Are You Ready?