Laboratory identification of a bacterial pathogen or related toxin in a food item can support the epidemiological data collected during a foodborne illness investigation and facilitate rapid control measures. MDCH foodborne epidemiologists and laboratorians, along with the Epidemiology and Laboratory Capacity working group, have prepared this tip sheet to help foodborne outbreak investigators with the collection of food specimens for laboratory testing.

**Testing Laboratories**

MDCH Bureau of Laboratories (BOL) in Lansing [www.michigan.gov/mdchlab](http://www.michigan.gov/mdchlab) performs testing on foods directly associated with a foodborne outbreak, such as leftover foods, prepared foods from an implicated restaurant or venue, and opened packages of food from a patient home.

Michigan Department of Agriculture and Rural Development (MDARD) Laboratory in Lansing [http://www.michigan.gov/mdard](http://www.michigan.gov/mdard) can perform selected testing of unopened foods collected from a store, warehouse, or restaurant.

Foods can be tested for the following:

- **Bacillus cereus** (MDCH only)
- **Campylobacter** (MDCH only)
- **Clostridium botulinum** (MDCH only)
- **Clostridium perfringens** (MDCH only)
- **Shiga toxin producing E coli**
- **Listeria monocytogenes**
- **Scombrotoxin** (MDARD only)
- **Staphylococcus aureus**
- **Salmonella**
- **Shigella**
- **Yersinia enterocolitica** (MDCH only)

Negative test results are typically available in four to six days. If initial testing is positive and if toxin testing and/or plate counts are required, final results can take up to an additional four days. (C. botulinum testing requires additional time).

**Approval for Testing**

All testing for foodborne illness MUST be arranged with MDCH Surveillance and Infectious Disease Epidemiology Section (517) 335-8165 prior to specimen transport.

For testing to be approved, there should be a working hypothesis regarding the food(s) and causal agent(s) that are suspected. The hypothesis should be based on incubation time, clinical symptoms, attack rates, known reservoirs or other recent outbreaks and any observed violations in food handling, processing, temperature, storage, or other relevant information. **If more than one food is suspected, it is necessary to prioritize which food to test first.**
Food Sample Collection
At the start of a foodborne illness outbreak or disease cluster investigation it is important to collect or at least securely hold available foods (solid and/or liquid) should testing of these products be needed. Keep in mind the following ‘tips’ when collecting specimens.

1. Packaging
   - Keep items in the original packaging if possible. Keep the product temperature constant: frozen stays frozen, cold stays cold. For perishable foods, maintain refrigeration temperature or prevent thawing of frozen foods by placing into a Styrofoam cooler with a sufficient number of cold packs.
   - If there is a large quantity of food available, a representative sample can be taken. A minimum of 4 ounces (either solid or liquid) is needed for testing, however submitting a greater volume of sample (several cups or pounds) is recommended to improve detection ability. If the sample is not in original packaging, aseptically transfer the sample into a sterile zip-top bag, Whirl-Pak® bag, or a sterile container. If possible, include the labels from the original packaging.
   - Secure caps on containers with tape and place containers in plastic bags or another container before placing in the shipping container.

2. Labeling
   - Clearly label all food items collected with a permanent marker/pen. This label should include the collection date, time, outbreak identifier, and any other unique identifiers.

3. Chain of Custody Form
   - This document should be completed for each transfer from the time the item is collected to the time it is sent to the lab.
   - Keep a copy of this form for your records. A standard template is available on the MDCH CDInfo website www.michigan.gov/cdinfo

4. Take Digital Photos
   It is recommended to take photos of the food items that are submitted for easier identification later and to document the product details and description for sharing with regulatory officials as needed.
   - **Item Description** - Make sure photos clearly show the overall contents, packaging, labeling, weight or volume, markings, ‘sell-by-date’, production date, code numbers, and establishment numbers/seals. Inspect closely for all markings and take photos from multiple angles/sides to capture all information.
   - **Item Location** - Take a photo of the food item at the location where you obtained it (refrigerator, freezer, buffet line).
   - **Avoid blurriness.** Most digital cameras should have a macro feature (the icon is usually a flower), allowing the camera to focus close-up. Try this setting when taking pictures of labels.
   - **Use proper lighting.** Lighting is often a problem shooting close ups, because the flash may glare and make the words unreadable. Place items in a well lit area without shadows or harsh reflections. Try taking pictures with and without the flash (and compare). Use a background that contrasts with the item such as a plain, white background. If you can't use a plain background, at least avoid background clutter.
   - **Show the item scale and dimensions.** Include a ruler in the photo. If a ruler is not available, a coin or ink pen next to the item can also display the scale.
Laboratory Submission Tips
After approval for testing has been given, keep in mind the following ‘tips’ when submitting specimens to the laboratory.

Lab Requisition Forms
- A test requisition must be filled out completely for each specimen submitted. Use the DCH-0583 Microbiology/Virology Test Requisition form or DCH-1052 for multiple samples.  
- The sample containers must be labeled with information that matches the information recorded on the test requisition. This includes collection site, date of collection, and food type.
- A pre-arranged outbreak identifier must be included on the test requisition slip.

DOUBLE CHECK PRIOR TO TRANSPORT that:
- MDCH is notified of the approximate arrival time and the specific method used to transport specimens to the correct lab (courier service, FedEx etc).
- A lab requisition is completed for each specimen and the identifying information matches specimen container/s. It can be helpful to have someone other than the person who completed the paperwork check the information provided.
- Specimen container/s are labeled and caps secured.

For specimen pre-approval, questions, or consultation, call MDCH Epi at 517-335-8165

To consult re specimen collection or transport, call the MDCH Bureau of Laboratories at 517-335-8067