



Commonwealth of Massachusetts
Department of Public Health

Helping People Lead Healthy Lives In Healthy Communities

Preventing Foodborne Illness: An example of a coordinated public health response

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Steps in an OUTBREAK INVESTIGATION

DETECT A possible outbreak



FIND Cases in an outbreak



GENERATE Hypotheses through interviews



If cases continue

TEST Hypotheses through analytic studies and laboratory testing



Not finding associations ←

SOLVE Point of contamination and original source of outbreak vehicle



CONTROL Outbreak through recalls, facility improvements, and industry collaboration



If cases stop

DECIDE An outbreak is over



CS257778

Coordinated Foodborne Illness Response

Working Group on Foodborne Illness Control *(established in 1986)*

- **Bureau of Infectious Disease and Laboratory Sciences**
 - Epidemiology Program (Epi Program)
 - State Public Health Laboratory (SPHL)
- **Bureau of Environmental Health**
 - Food Protection Program (FPP)
- **Local Boards of Health**



Foodborne Illness Response

Division of Duties

- **Epidemiologists (Epi Program)**
 - Monitor surveillance data, interview cases, identify connections, generate hypotheses
- **Environmental Analysts (FPP)**
 - Collect specimens, inspect establishments, implement regulatory actions (recalls, embargoes, closures)
- **Laboratorians (SPHL)**
 - Test specimens, track laboratory data, find connections
- **Local Boards of Health**
 - Assist in all aspects of investigation and enforcement at the local level

Federal Role: PulseNet

- PulseNet is an electronic database of "DNA fingerprints" of foodborne organisms identified at local, state or federal laboratories
- Was created as a result of the "Jack in the Box" *E. coli* outbreak in 1993
- Plays a vital role in surveillance and the investigation of multistate foodborne outbreaks
- Is instrumental in the identification and resolution of outbreaks where the cases are geographically dispersed
- Allows for outbreaks to be identified in hours rather than days or even weeks
- Soon to integrate Whole Genome Sequencing

Example: Recent *Salmonella* Cluster

- In the fall of 2017 a national cluster of *Salmonella* serotype Paratyphi B was identified from the CDC PulseNet database
- Case interviews revealed a connection to food containing coconut eaten at Asian-style restaurants
- A coconut milk sample in New York State tested positive for a different *Salmonella* serotype *Salmonella* Newport
- Strain was posted to PulseNet
- Matched to a strain from a MA resident who reported consuming a coconut milk product at local Asian-style restaurant – “Establishment A”, part of a national chain

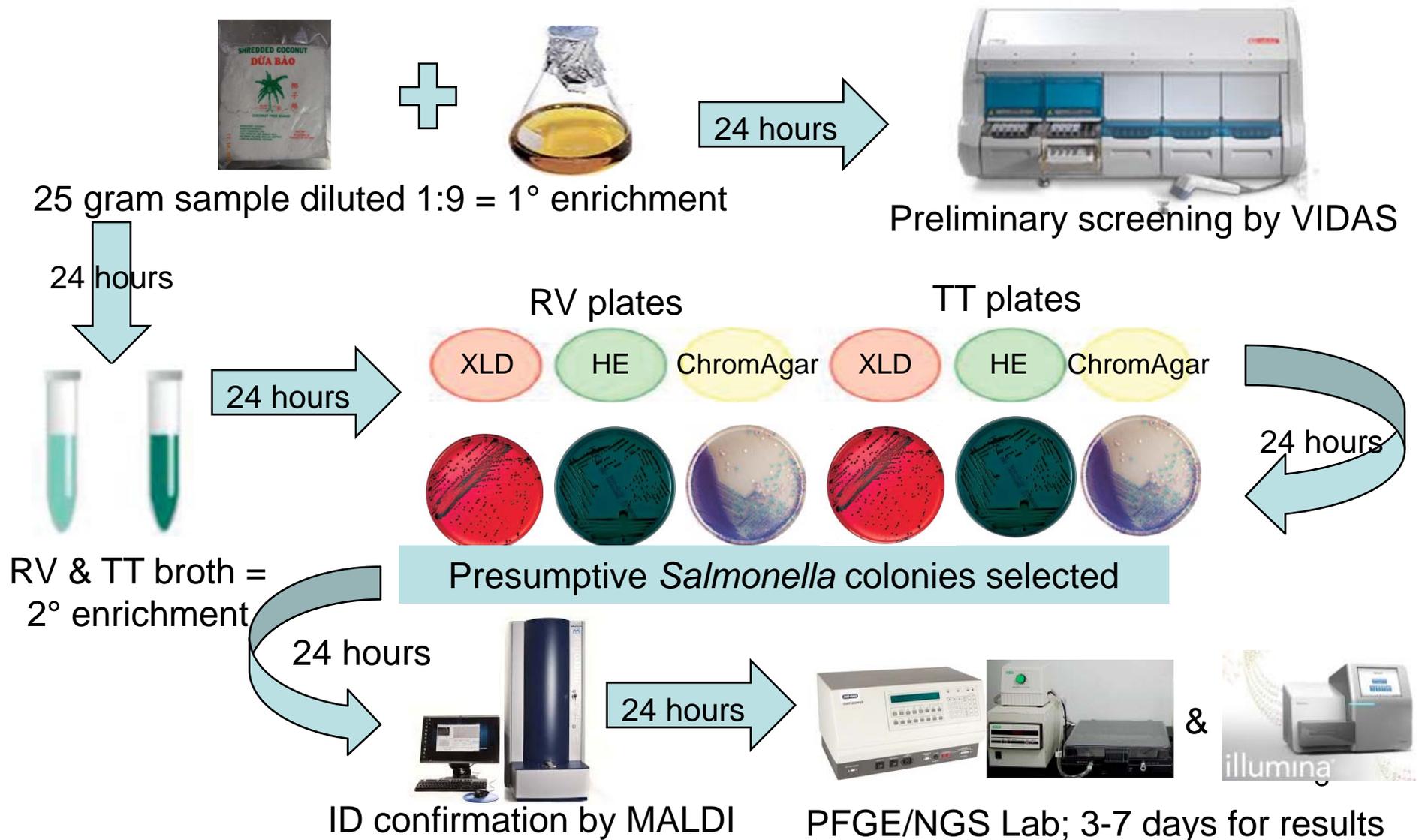
“Establishment A” Site Visit

- The MDPH Food Protection Program and the Local Board of Health visited the establishment identified by the case
 - Queried staff on food purchasing, preparation and storage practices and processes
 - Collected food samples
 - Collected invoices



SPHL Food Lab – Isolation and Identification Process

(finding the needle in the haystack)



Food Testing Results

- *Salmonella* was identified from an intact package of frozen shredded coconut
- Notifications to FDA, CDC, LBoH
- Product embargoed (held) at food establishments
- The *Salmonella* found did not match any other *Salmonella* strains in the PulseNet database
- FPP collected additional samples from multiple lots



Recall based on MDPH Investigation

Evershing International Trading Company Recalls Frozen Shredded Coconut Because of Possible Health Risk

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For Immediate Release January 3, 2018

Contact **Consumers**
☎ (408) 975-9660

Announcement

[View Product Photos](#)

Evershing International Trading Company is recalling Coconut Tree Brand Frozen Shredded Coconut, 16 oz., because they have the potential to be contaminated with *Salmonella*, an organism which can cause serious and sometimes fatal infections in young children, frail or elderly people, and others with weakened immune system. Healthy persons infected with *Salmonella* often experience fever, diarrhea (which may be bloody), nausea, vomiting and abdominal pain. In rare circumstances, infection with *Salmonella* can result in the organism getting in to the bloodstream and producing more severe illnesses such as arterial infections (i.e., infected aneurysms), endocarditis and arthritis.

Recall Effectiveness Checks

- MDPH FPP conducts Recall Effectiveness Checks (RECs) to verify that affected establishments have received notification of a recall and taken appropriate action
- FPP reached out to LBoH to conduct RECs on the two establishments that were part of the implicated chain
 - There was some confusion in the firm's recall language, which was communicated to FDA
 - Ensured affected product was not in use

Large-scale Contamination of this Product was Determined

- *Salmonella* was identified in 9 of 10 samples
- Multiple *Salmonella* serotypes:
 - Rissen
 - Thompson
 - Javiana
 - Hillingdon
 - strain new to National PulseNet database.
 - Paratyphi B (4,[5],12:b:-)
 - two different strains.
 - **Including the original outbreak strain.**

MDPH Foodborne Outbreak Response

- Each year we identify >90 MA foodborne illness clusters
- 75% involve cases that match a national outbreak
- Remainder involve outbreaks that occur in MA alone, but contribute to the national database
- 2017 exposures:
 - papayas, deli meat, live poultry, hummus, soy nut butter, and raw oysters, plus exposures to pets (puppies, turtles)
- All were investigated by the Working Group on Foodborne Illness Control in a coordinated way
- The great majority of MA residents eat at home, at events, and in restaurants/food outlets every day without getting sick--a product of this coordinated vigilance and response¹³



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Thank you

