

Listeria monocytogenes Outbreak Linked to Pasteurized Ice Cream Product Washington, 2014



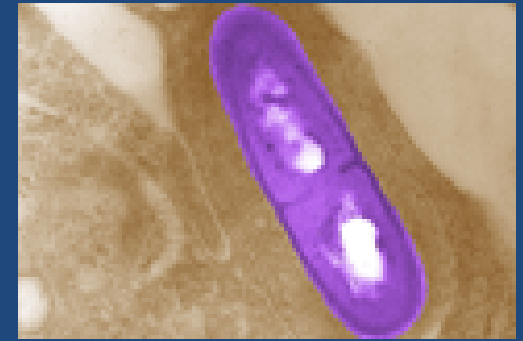
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Outline

- Background
- The Investigation
- Recall & Media
- Conclusions

Listeriosis



- Serious infection usually caused by eating food contaminated with *Listeria monocytogenes* bacteria
- Primarily affects older adults, pregnant women, newborns, and adults with weakened immune systems
- Most people require hospital care and about 1 in 5 people with the infection die
 - ~1,600 listeriosis cases reported in the US each year
 - ~11 to 29 cases of listeriosis are reported in Washington State each year

What foods are risky?

When it comes to *Listeria*, some foods are more risky than others. Meet some of the other foods where *Listeria* is known to hide.



Sprouts



Raw Milk
(unpasteurized)



Soft Cheeses



Deli Meats and Hot Dogs
(cold, not heated)



Smoked Seafood

3

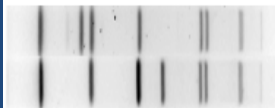
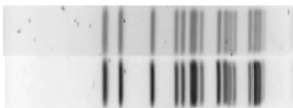

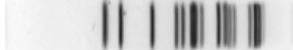


Detecting the Outbreak

- Public Health - Seattle & King County
 - November 20-December 8, 2014
 - 2 listeriosis cases reported roughly two weeks apart
 - Overlapping stays at the same hospital
- WA State PHL
 - Confirmed *Listeria monocytogenes* in both patients

Laboratory Testing - PFGE

- WA State PHL PFGE (DNA Fingerprinting) Results

PFGE-Ascl	PFGE-Apal	Key	PFGE-Ascl-pattern	PFGE-Apal-pattern	IsolatDate	NARMS-EB	WA-Ascl-Pattern	WA-Apal-Pattern
		20323			2014-12-05	REF20146389	LS144	LMA106
		20286	GX6A16.0425	GX6A12.0899	2014-11-18	REF20146348	LS143	LMA106

Patient Interviews

- Interviewed with CDC Listeria Initiative questionnaire
- Additional exposure data
 - Hospital dietary records
 - Hospital menu
- Common foods eaten
 - Deli meats (turkey/ham)
 - Cut cantaloupe and watermelon
 - Multiple high protein milk shakes (chocolate and vanilla)



Environmental Investigation

- December 10-11, 2014: Hospital A's kitchen inspected
- PHSKC and WA DOH joint investigation
- Review of food preparation practices
- Review of cleaning and sanitizing procedures
- Product source information collected
- Six food and 17 environmental samples were collected
 - Included unopened packages of ice cream mix

WA DOH Food Lab Testing Results

- December 15, 2014
Unopened packages of ice cream mix (chocolate and vanilla) and a sample from the vanilla milk shake machine were positive for *L. monocytogenes*



Call Federal Partners

- WA State Department of Agriculture (WSDA)
- December 15, 2014—Manufacturer notified by WSDA and WA DOH
- WSDA initiated facility inspection
 - Ice cream mix processing records were reviewed
 - 63 environmental samples collected
 - 3 cases of unopened ice cream mix and several single serving containers collected
 - Firm voluntarily ceased production and instructions were given to clients to hold products

More Food Laboratory Testing

- WSDA positive isolates
 - *Listeria monocytogenes* identified
 - Environmental swab samples from Producer A
 - Finished product samples from Producer A
- Isolates sent to WA PHL for PFGE

Laboratory Testing - PFGE

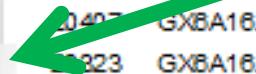
- PFGE (DNA Fingerprinting) Results

20374	GXBA16.0425	GXBA12.0899	Listeria. FD121614-02-003	Food	2014-12-22	Ice Cream
20375	GXBA16.0425	GXBA12.0899	Listeria. FD121614-02-004	Food	2014-12-22	Ice Cream
20376	GXBA16.0425	GXBA12.0899	Listeria. FD121614-02-005	Food	2014-12-22	Ice Cream
20377	GXBA16.0425	GXBA12.0899	Listeria. FD121614-02-006	Food	2014-12-22	Ice Cream
20378	GXBA16.0425	GXBA12.0899	Listeria. FD121614-01-012	Environmental	2014-12-22	Sponge
20379	GXBA16.0425	GXBA12.0899	Listeria. FD121614-01-014	Environmental	2014-12-22	Sponge
20381	GXBA16.0425	GXBA12.0899	Listeria. FD121614-01-032	Environmental	2014-12-22	Swab
20382	GXBA16.0425	GXBA12.0899	Listeria. FD121614-01-035	Environmental	2014-12-22	Sponge
20386	GXBA16.0425	GXBA12.0899	Listeria.	Human	2014-11-25	Blood, NOS
20373	GXBA16.0425	GXBA12.0899	Listeria.	Food	2014-12-22	Ice Cream
20383	GXBA16.0532	GXBA12.0899	Listeria. FD121614-01-038	Environmental	2014-12-22	Sponge
20388	GXBA16.0229	GXBA12.0899	Listeria. FD121614-01-011	Environmental	2014-12-26	Sponge
20399	GXBA16.0229	GXBA12.0899	Listeria. FD121614-01-017	Environmental	2014-12-26	Sponge
20404	GXBA16.0229	GXBA12.0899	Listeria. FD121614-01-037	Environmental	2014-12-26	Swab
20407	GXBA16.0229	GXBA12.0899	Listeria. FD121614-01-049	Environmental	2014-12-26	Sponge
20323	GXBA16.0229	GXBA12.0899	Listeria.	Human	2014-12-11	Blood, NOS
20380	GXBA16.0026	GXBA12.0154	Listeria. FD121614-01-022	Environmental	2014-12-22	Sponge

Laboratory Testing - PFGE

- PFGE (DNA Fingerprinting) Results

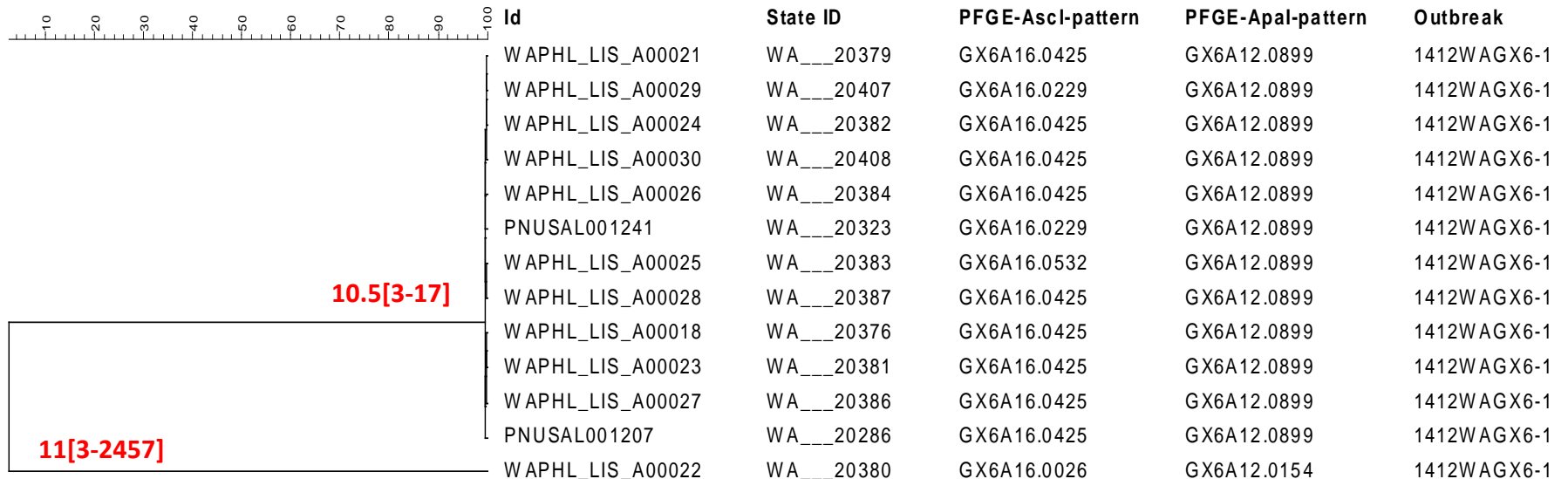
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	20376	GX8A16.0425	GX8A12.0899	Listeria. FD121814-02-005	Food	2014-12-22	Ice Cream
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Whole Genome Sequencing (WGS)

wgMLST (<All Characters>)

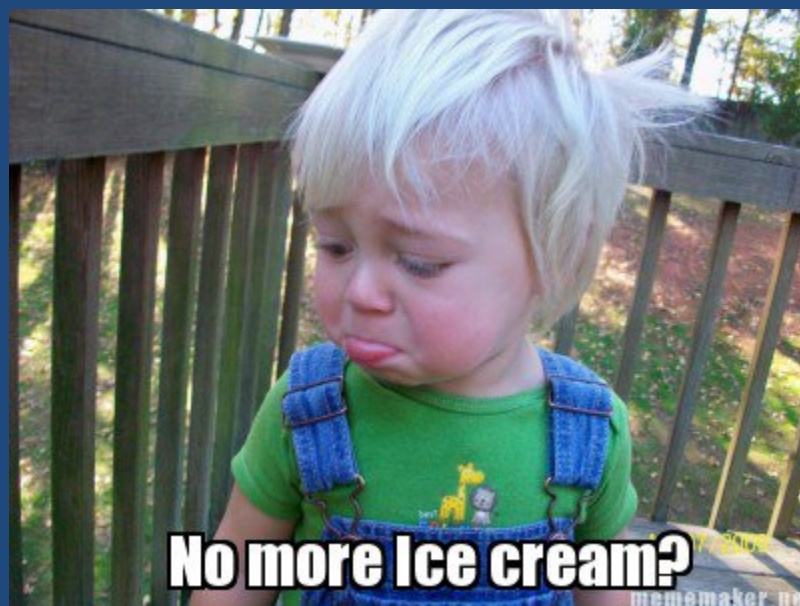
Median[*min-max*] allele differences at node



wgMLST courtesy of Steven Stroika, CDC

Recall & Media Release

- December 24th, “Producer A” voluntarily recalled all products
- FDA/WSDA posted recall and consumer advisory
- WA State DOH posted a media release to alert consumers not to buy “Producer A” ice cream products





Ice Cream Producer Clean Up

- Hired a food safety consultant and independent lab
- Production facility was disinfected
- Floor of the manufacturing area was upgraded
- Employees trained on food safety practices
- January 23, 2015 product reintroduced

Hospital Kitchen

- Milk shake machine disassembled and tested
 - Repeat positive results
- Cleaning process revised
- Milk shake service reinitiated using ice cream mix from a different manufacturer



Conclusions

- Two listeriosis cases were attributed to same commercially-produced liquid ice cream mix served in hospital shakes in Seattle, WA
- February 2015, multistate outbreak attributed to commercial ice cream products and included hospital-acquired infections
- Need to inquire about history of frozen and other dairy products
- Further study needed to determine if FDA's list of foods to avoid should be revised to include pasteurized dairy products

Acknowledgements

- WA State Department of Health
 - CD Epi
 - WA PHL
- Public Health - Seattle & King County
- WA State Department of Agriculture
- Centers for Disease Control and Prevention (CDC)
- The Food and Drug Administration (FDA)
- Snohomish Health District



Seattle Times, December 23, 2014

Thank You!

