

Botulism in the Village: A Coordinated Approach



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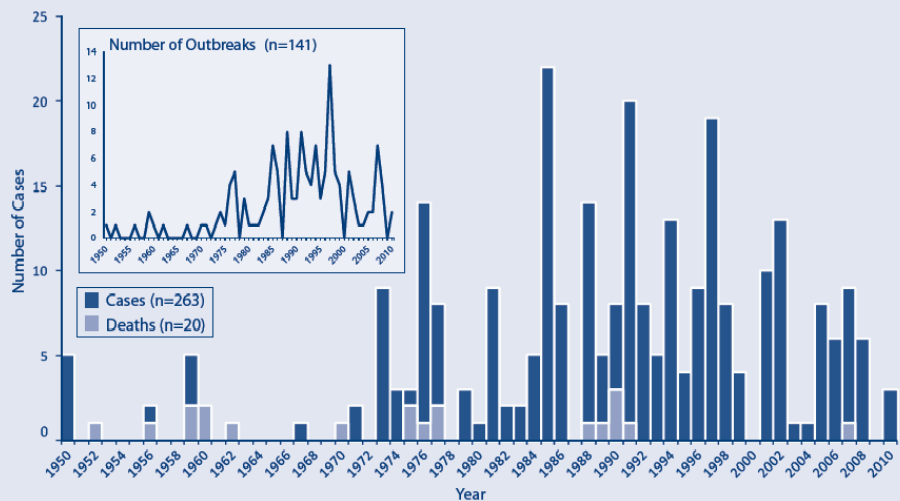


Foodborne Botulism in Alaska

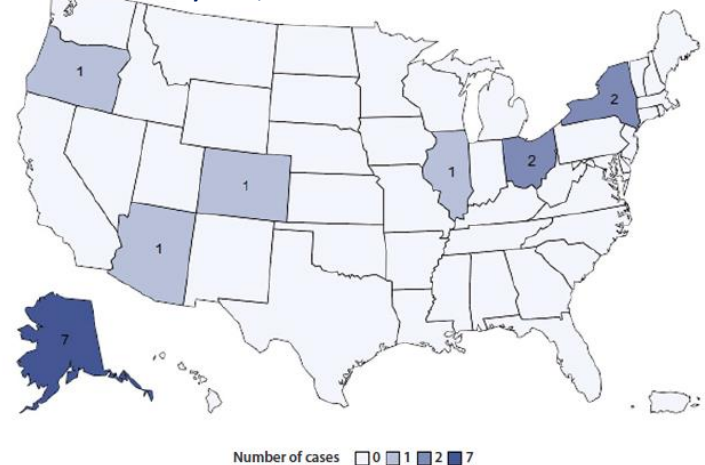


High rates of foodborne botulism associated with consumption of traditionally prepared Alaska Native foods

Figure 1. Botulism outbreaks, cases, and deaths, by year — Alaska, 1950 to 2010.



Foodborne (N=15) Number of confirmed foodborne botulism cases by state, United States 2014



<http://dhss.alaska.gov/dph/Epi/id/Pages/botulism/resources.aspx>

http://www.cdc.gov/nationalsurveillance/pdfs/botulism_cste_2014.pdf

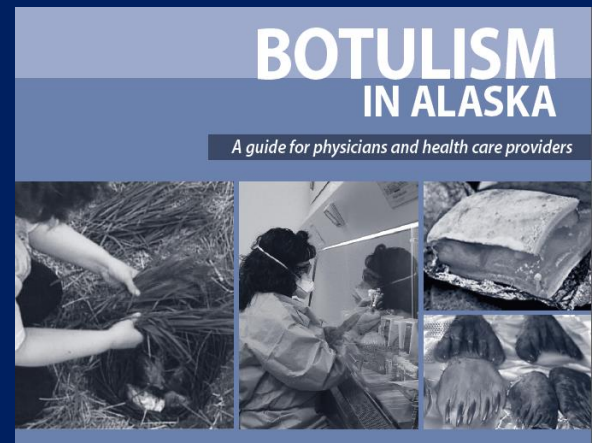
Alaska Native Foods



Culturally and nutritionally an important food source

– Messaging emphasizes risk reduction

- Food preparation and storage – prevention?
- Symptom recognition and prompt medical evaluation
- Mandatory reporting
- Consultations available 24/7
- Pre-positioned (Botulism antitoxin) BAT™



Botulism case definition



A confirmed case of botulism is any person in Alaska with a compatible illness having one or more symptoms, and who met at least one of the following conditions:

1. The identification of botulinum toxin in an implicated food; or in serum, stool, gastric aspirate or vomitus collected from the person.
2. The isolation of *C. botulinum* organism from the person's stool or gastric aspirate/vomitus.
3. A history of eating the same implicated food as a person meeting one of the first two conditions.

A probable case of botulism was a person with a compatible illness following consumption of food frequently associated with botulism, but who did not meet any of the three above conditions.

An outbreak is the occurrence of botulism among one or more persons who have eaten a common food

Signs and symptoms of botulism by system



Gastrointestinal / Urinary

- Abdominal pain
- Diarrhea
- Intestinal ileus
- Nausea
- Urinary retention
- Vomiting

Neurologic

- Blurry vision
- Decreased gag reflex
- Dilated or unreactive pupils
- Diplopia
- Dry mouth
- Dysphagia

Muscular

- Dyspnea (without typical signs, such as gasping)
- Fatigue
- **Respiratory muscle paralysis**
- Symmetrical skeletal muscle weakness

December 19, 2014 (1)



Two suspected botulism cases reported to Alaska Section of Epi (SOE) at 3:30PM

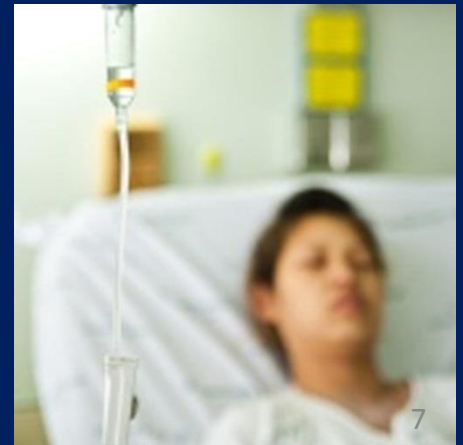
- Shared meal of seal oil 12/18 PM in Village A
- Presented to clinic 12/19 AM with dry mouth, difficulty breathing, fixed dilated pupils
- Medevac'd to regional hospital
- BAT™ administered

DECEMBER 2014						
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

December 19, 2014 (2)



- Adult sisters, ages 56 & 61 shared meal with one (1) adult female and two (2) children ages 8 & 12
- Total of five (5) exposed
- Sample of oil at YK Delta Regional Medical Center
- One BAT™ kit remaining at YKDRH



December 19, 2014 (3)



- **Immediate consult SOE Chief/MD**
- **Action/Plan:**
 - SOE Drug Rm. to Gold Streak 3 BAT™ kits to YKDRH
 - PHNs to FU re: food, others exposed, surveillance, CHAP collaboration
 - Oil – supplier in Village B
 - SOE – Teleconf. with reporting MD. Exposed children will fly to Bethel for evaluation and monitoring
 - Alaska State Public Health laboratory (ASPHL) notified
 - Epi RN to Village A – onsite investigation 12/20 AM
 - Epi RN contacts all who shared meal – education, SX, FU, etc.
 - Epi RN leaves message for seal oil supplier – any others who may have eaten/have oil?

December 20, 2014



Epi RN in Village A for onsite investigation

- Oil supplier calls Epi RN – she & family still eating oil. “Not sick”. Refuse to stop eating.
 - Illness associated with 12/18 meal & food danger discussed
 - Stressed need to identify any others oil was shared with
- On site investigation
 - Surveillance - no others shared meal in Village A
 - No add'l oil from Village A batch
 - Worked with CHAP – targeted education
 - Community botulism education - materials provided
- YKRDH visit
 - 3rd adult female who shared 12/18 meal eval'd at YKDRH & released
 - Clinical specimens, seal oil & credo cube transported to ANC

December 21, 2014



5 individuals shared 12/18 meal

- 2 adults medevac'd from regional hospital to Anchorage; ventilated
- 8 yr-old with fixed, dilated pupils and excessive thirst receives BAT™
- 3rd adult and 12 yr-old evaluated and released with daily monitoring



December 22, 2014



- Specimens to ASPHL
- Village A pts. in ANMC ICU & vented
- Village B master batch sample to ASPHL
- Oil supplier names 8 in Villages C & D who may be exposed
- New contacts called to PHNs for FU
- Itinerant Nurse Mgr. flies to D'ham to assist PHN

December 23, 2014 (1)



- PHNs unable to fly to Village C – weather
- Contact monitoring/FU by phone – 18 total
- Botulinum Toxin Type E detected - seal oil highly positive -5:40 PM
- Results called to PHNs, YK & D'ham providers
- Oil supplier finally agrees to stop eating oil. Names 2 more contacts.

December 23, 2014 (2)



- Interviews identified 20 additional people, from 3 communities not previously named, who may have consumed suspect seal oil



December 24, 2014



- **Monitoring tool developed/distributed**
- **Epi RN to D'ham - 3 add'l BAT™ kits**
- **Mtg. with BBAHC/Hosp. medical, clinical staff, PHNs**
- **Collaborative monitoring plan**
- **Media – local BBAHC, D'ham - radio; Dr Cooper – radio & TV**
- **ADN article 12/25**
- **SEP notified; SOPHN contingency plan**
- **Ongoing surveillance and monitoring until 1/2/15**

SOE Investigation



Coordinated with local and regional health care providers to:

- Identify and interview individuals who shared meal(s)
- Ensure medical evaluation for additional exposed persons
- Ensure adequate BAT™ in regional hospitals
- Establish surveillance for additional cases
- Trace source of seal oil

Public Health Partners: Roles



- **Surveillance, case finding and education**
- **On-site investigations**
 - Village A – SOE + CHAP
 - Village C – SOE + PHN
 - Village D – attempted by PHN
- **Identification, location and shipping of suspected food – seal oil – Villages A & B**
- **Guidance on specimen collection, shipping & disposal - ASPHL**
- **Testing of clinical specimens and suspected food – ASPHL.**

Epi Bot Case Report / Assignment Form

Last Name _____ First Name _____ MI _____

Date of birth ____/____/____ Sex: Female Male Race: Alaska Native/American Indian Other: _____

Village: _____

Phones (home) _____

(cell) _____

(work) _____

Provider/Medical Facility: _____ Phone: _____

Date Reported: ____/____/____ Time Reported: _____

Disease Information

Suspect food(s): _____

Date(s) Eaten: ____/____/____ ____/____/____ ____/____/____

Symptoms:

Blurred Vision Slurred Speech Difficulty Swallowing Dry mouth

Muscle Weakness Drooping Eyelids _____

BAT Recommended

BAT Administered Date: ____/____/____ Time: _____ BAT kit # _____ BAT lot # _____

Patient Hospitalized Date: ____/____/____

Patient Transferred to _____ Date: ____/____/____

Specimens:

Specimens:	Date Collected:	Date Shipped:	Result:
<input type="checkbox"/> Pre BAT serum:	____/____/____	____/____/____	_____
<input type="checkbox"/> Stool:	____/____/____	____/____/____	_____
<input type="checkbox"/> Gastric/emesis:	____/____/____	____/____/____	_____
<input type="checkbox"/> Suspect food(s):	____/____/____	____/____/____	_____
_____	____/____/____	____/____/____	_____

Others who ate suspect food (Include all dates people are contacted for 10 days after eating suspect food*):

ph: _____ Contacted by: _____ Dates _____

ph: _____ Contacted by: _____ Dates _____

ph: _____ Contacted by: _____ Dates _____

*Initiate 10 day monitoring form: PHN _____ Dates: _____ CHA: _____

Comments: _____



Notified:

PHN* _____ Date: ____/____/____

OEH _____ Date: ____/____/____

Call lab at 855-222-9918 Date: ____/____/____

CHAP _____ Date: ____/____/____

IP _____ Date: ____/____/____

Depot Restock _____ Date: ____/____/____

BAT release to CDC _____ Date: ____/____/____

Case report to CDC _____ Date: ____/____/____

Clinical outcome to CDC _____ Date: ____/____/____

Case report to Cangene _____ Date: ____/____/____

Clinical outcome to Cangene _____ Date: ____/____/____

Assign to:

Kate Helfrich

Catherine Ducasse

Donna Fearey

Karen Martinek

Louisa Castrodale

Kim Spink

Seal Oil Source

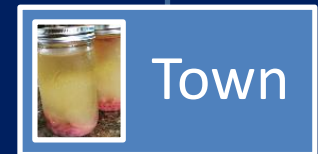


Supplier in Village B interviewed

- Denied symptoms
- Discussed botulism associated with this batch of seal oil
- Requested names of others who may have shared the seal oil
- Advised not to eat/share more seal oil



Seal Oil Distribution



- **Wide geographic distribution**
- **Remote villages accessible only by air**

“Bot-Watch” Monitoring



Tool developed for local community village health aides and regional PHNs

- Daily monitoring for 10 days from last exposure

BOTULISM MONITORING LOG

Consumer under symptom watch: _____ DOB _____
Telephone: _____ Village: _____ CHAP/PHN: _____
Last date of consumption _____

Day	1	2	3	4	5	6	7	8	9	10
Date										
Time										
Abdominal Pain										
Vomiting										
Nausea										
Diarrhea										
Constipation										
Urinary Retention										
Blurred Vision										
Double vision										
Dilated /unreactive pupils										
Drooping eyelids										

Outbreak Communication



- SOE reaches out to media (TV, newspaper, radio, social media) to alert communities of botulism outbreak
- Ongoing updates and teleconferences with local health care providers and other partners
- Local providers also used local media to reinforce key messages
- Botulism education for village community members and community health aides



Public Health and Outside Partners: Roles



- **DPH**
 - SOPHN – investigation, monitoring, specimen collection, surveillance and case-finding
 - ASPHL – testing clinical and food samples; guidance on collection, shipping and disposal of specimens
 - SOE
 - Epi Team coordinates investigation - surveillance and case-finding, specimen collection, education, prevention, outreach
 - Pharmacist & Drug Room – BAT™ shipment and replacement
 - SEP – resources, contingency planning
 - PIO – communication, media, education
- **Regional Corporations – inpt, outpt, Infection Preventionists, and CHAPs**
 - YKHC
 - BBAHC - OEH
- **ANMC**
- **CDC – case report, BAT™ release**
- **Cangene – case report, clinical outcome**
- **Other**



BOT 2014-8 Final Results

Specimen	Test	Result
Pre-antitoxin serum - Patient 1	Direct Toxin Test	Botulinum Toxin Type E detected
Pre-antitoxin serum - Patient 2	Direct Toxin Test	Botulinum Toxin Type E detected
Pre-antitoxin serum - Patient 3	Direct toxin Test	No botulinum toxin detected
Stool - Patient 3	DIG-ELISA on initial sample	No botulinum toxin detected
Stool - Patient 3	PCR on Enrichment	No botulinum toxin type E genes detected
Stool - Patient 3	Culture	No botulinum neurotoxin producing Clostridia isolated
Stool - Patient 3	Direct Toxin Test	No botulinum toxin detected
Seal Oil Village A	DIG-ELISA on initial sample	Botulinum Toxin Type E detected
Seal Oil Village A	PCR on Enrichment	Botulinum Toxin Type E genes detected
Seal Oil Village A	DIG-ELISA on Enrichment	Botulinum Toxin Type E detected
Seal Oil Village A	PCR on Culture	Botulinum Toxin Type E genes detected
Seal Oil Village A	Direct Toxin Test	Botulinum toxin Type E detected
Seal Oil Village A	DIG-ELISA on Culture	Botulinum Toxin Type E detected
Seal Oil Village A	Culture –final result	Botulinum neurotoxin producing Clostridia isolated
Seal Oil Village B	DIG-ELISA on initial sample	Botulinum Toxin Type E detected
Seal Oil Village B	PCR on Enrichment	Botulinum Toxin Type E genes detected
Seal Oil Village B	DIG-ELISA on Enrichment	Botulinum Toxin Type E detected
Seal Oil Village B	Direct Toxin Test	Botulinum Toxin Type E detected
Seal Oil Village B	Culture- final result	No botulinum neurotoxin producing Clostridia isolated

Summary of Botulism Surveillance and Investigation by Community, December 2014

Community	# Cases	# Possibly exposed	# Who ate oil	# Monitored X 10 days*	Comments
Village A	3	5	5	2	56 y/o female CASE & 12 y/o male Village B residents. Brought seal oil to Village A to share with family.
Village B	0	6	6	5	Oil supplier, family & friends. Infant (16 mos.) not named until 12/29
Village C	0	7	7	7	
Village D	0	5	5	5	
Town	0	2	0	0	Couple froze seal oil for Christmas holidays. Did not eat.
Total	3	25	23	19	

* Contacts monitored by PHNs, Epi, CHAPs & BBAHC providers. One Village C contact was hospitalized for 2 days and released. BAT was not administered. Five (5) Village B contacts were flown to Village C and monitored there for 10 days post consumption.

Outbreak Summary



Seal oil was consumed by 23 people in 5 villages or towns between 12/13 – 12/23

- 11 ill consumers flown in from village for evaluation**
- 3 hospitalized**
 - 3 BAT™ administered
 - 2 adults intubated and medevac'd to Anchorage
 - No deaths
- Consumers not hospitalized were monitored for 10 days**
- Botulism toxin type E detected**
 - Clinical specimens from 2 initial patients
 - Seal oil from 12/18 meal and master batch

Challenges



Investigation involved multiple communities

- Poor historians, incomplete recall
- Reluctance to share information and to stop eating
- Christmas holiday season
- Weather
 - Field investigations
 - Specimens to lab



Take Home Points



-Alaska has the highest rates of foodborne botulism in the US

True

-In Alaska, botulism is usually associated with canned green beans

False

-Botulism is considered a public health emergency because:
it causes respiratory muscle paralysis

-BAT™ can be administered to persons with suspected botulism

True

-Partners involved in the identification, treatment, surveillance and monitoring of persons exposed during a botulism outbreak might include:
SOE, SOPHN, APSHL, Regional Corporations, ANMC, CHAPs, PIO, SEP, CDC, Cangene, other

Thank you and Acknowledgements



Alaska Department of Health and Social Services

Section of Epidemiology - EPI Team and Drug Depot team

Section of Public Health Nursing

Section of Laboratories - ASPHL

Section of Emergency Preparedness

Public Information Office

YKDRH, BBAHC, ANMC health care providers

