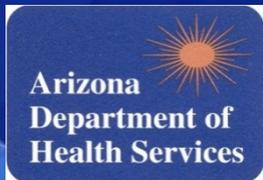


Prisons, Pruno, and Potatoes — Botulism in an Arizona Correctional Facility, 2012

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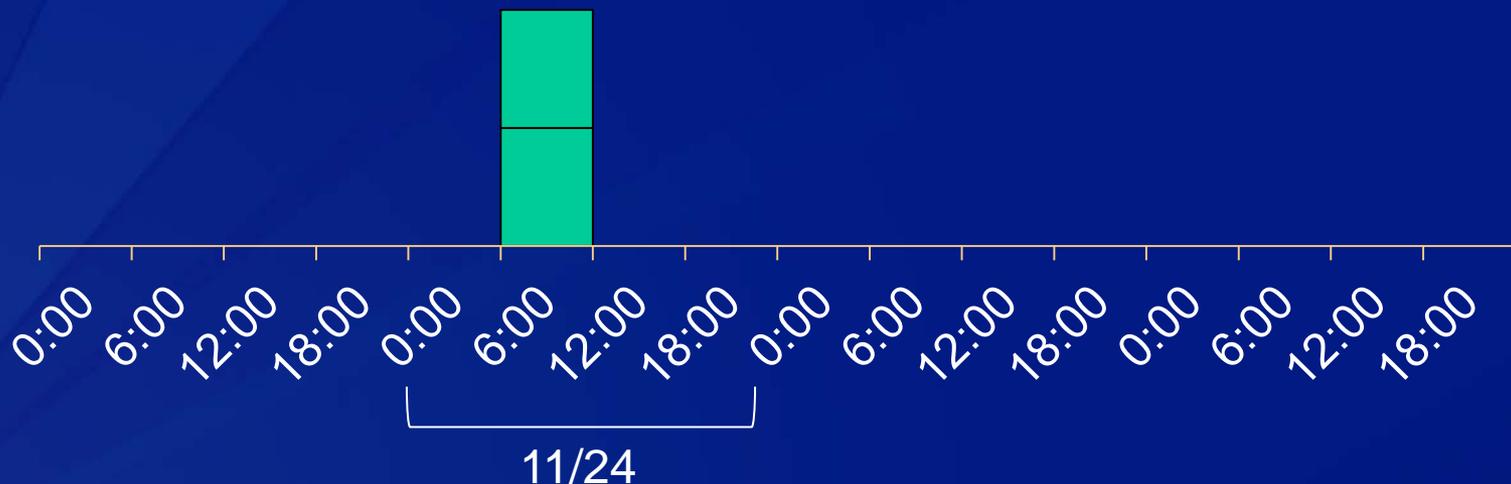


Prelude

- ❑ **August 2012**
- ❑ **4 inmates in a maximum security prison (Prison A) diagnosed with botulism**
- ❑ **No laboratory-confirmed source**
 - ❑ **Pruno (prison-brewed alcohol) suspected**

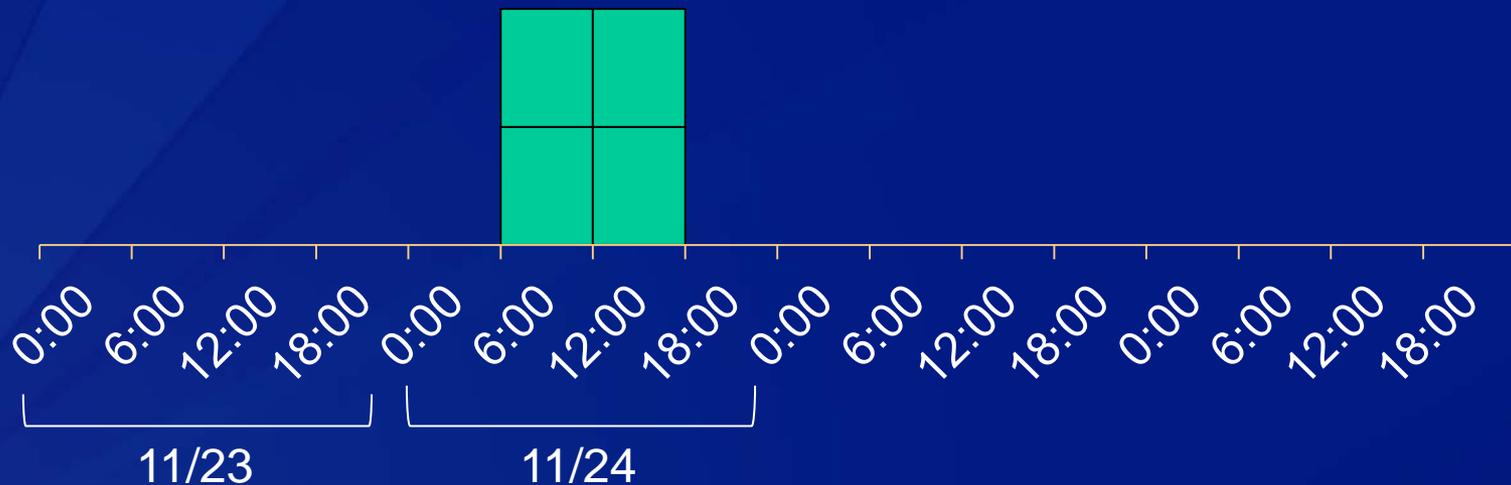
The Call — November 24, 2012

- State health department notified of 2 inmates in Prison A
 - Vomiting, dizziness, blurred vision, double vision, dry mouth, difficulty speaking, shortness of breath, upper extremity weakness, and bilateral, symmetric ptosis



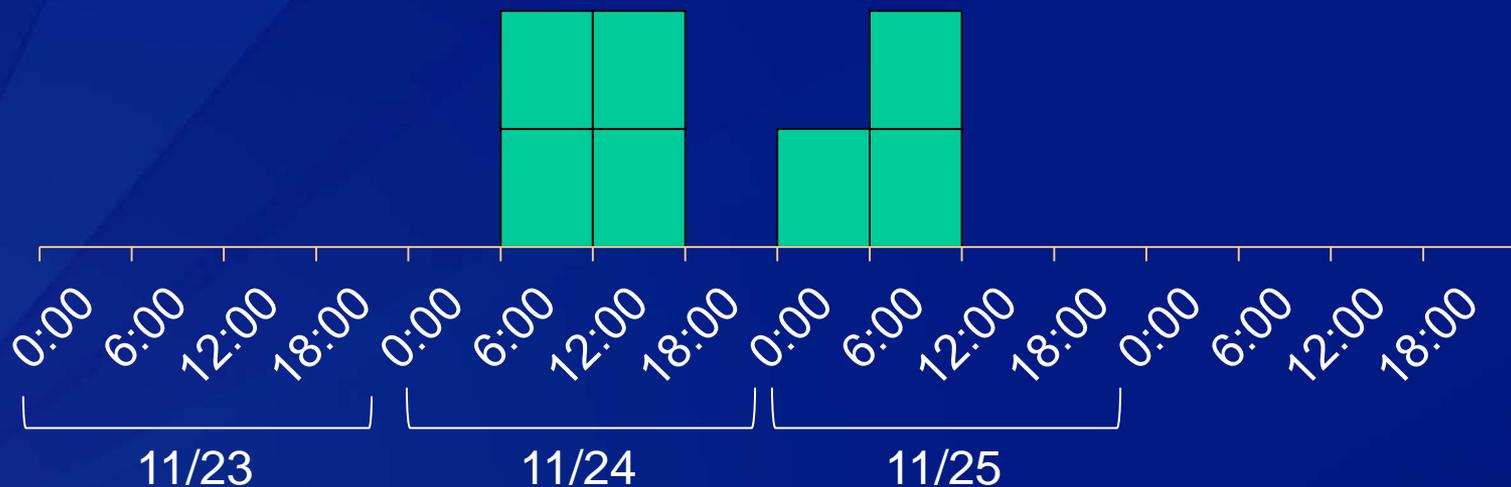
Day 1

- **Two more inmates with similar signs and symptoms**
 - **Double vision, slurred speech, upper extremity weakness, and asymmetric extraocular palsy**



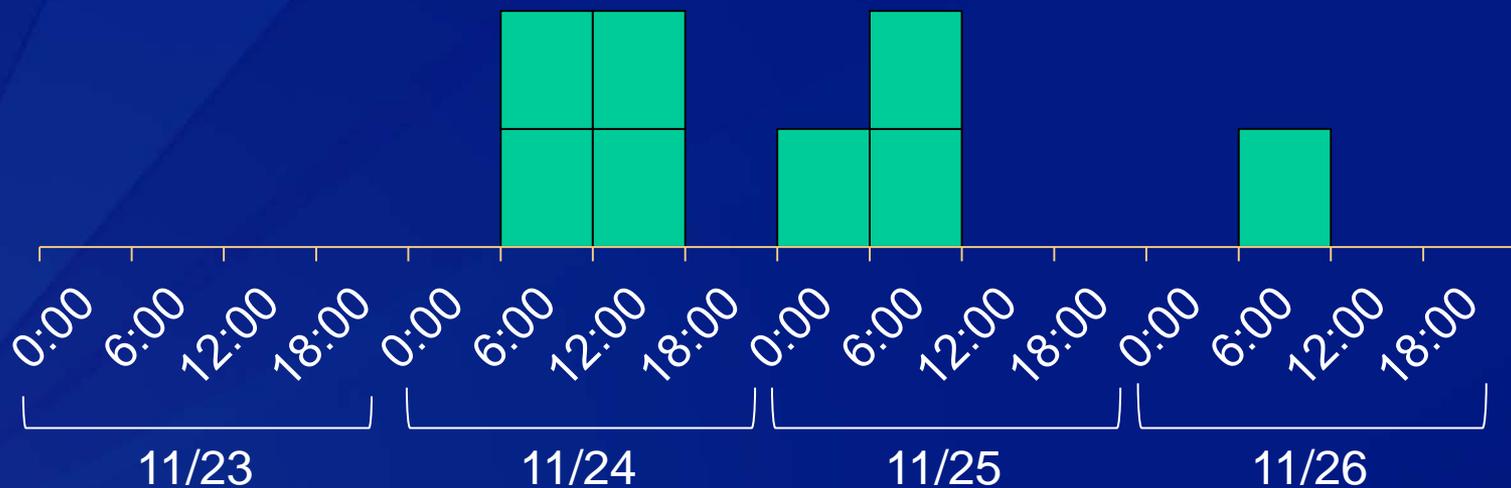
Day 2

- **Three additional inmates hospitalized**
 - **Nausea, blurred vision, double vision, dysphagia, slurred speech, shortness of breath, and weakness**



Day 3

- Eighth inmate admitted to the hospital
 - Vomiting, dizziness, and double vision



Progression

- ❑ Seven of eight patients intubated shortly after admission to the hospital
 - ❑ Mechanical ventilation
- ❑ All received botulinum antitoxin

Foodborne Botulism

- ❑ **Toxin produced by *Clostridium botulinum***
 - ❑ **Environment = anaerobic + low salt + low sugar + low acid + warm temperature**
- ❑ **Most commonly associated with consumption of improperly processed home-preserved foods**
 - ❑ **Home-canned vegetables**



Botulism Symptoms

- ❑ **Symmetric cranial neuropathies**
 - Diplopia, drooping eyelids, difficulty swallowing, dry mouth, altered voice, or difficulty speaking
- ❑ **Acute, descending flaccid paralysis in a proximal to distal pattern**
- ❑ **Possibly but not necessarily:**
 - Abdominal pain
 - Nausea
 - Vomiting
 - Diarrhea
- ❑ **Progresses to respiratory muscle paralysis**

Objectives

- ❑ **Confirm the diagnosis**
- ❑ **Define and identify cases**
- ❑ **Identify source of outbreak**
- ❑ **Prevent future cases**

Methods

- ❑ **Interviewed correctional officers and inmates**
- ❑ **Sent specimens from patients and potential sources to CDC for testing**

Results — Case Investigation

- ❑ Correctional officers reported inmates appeared intoxicated day prior to symptom onset**
- ❑ On November 23, all eight patients reported sharing a batch of pruno (prison-brewed alcohol) made from potatoes**
- ❑ Leftover pruno found in prison and sent to CDC**

Pruno

- ❑ **Ingredients commonly include fruit, sugar, and bread**
 - ❑ **Brewed in plastic bag or bottle**
- ❑ **Inmates reported consuming pruno regularly**
- ❑ **Potato-based pruno previously associated with botulism outbreaks in correctional facilities**

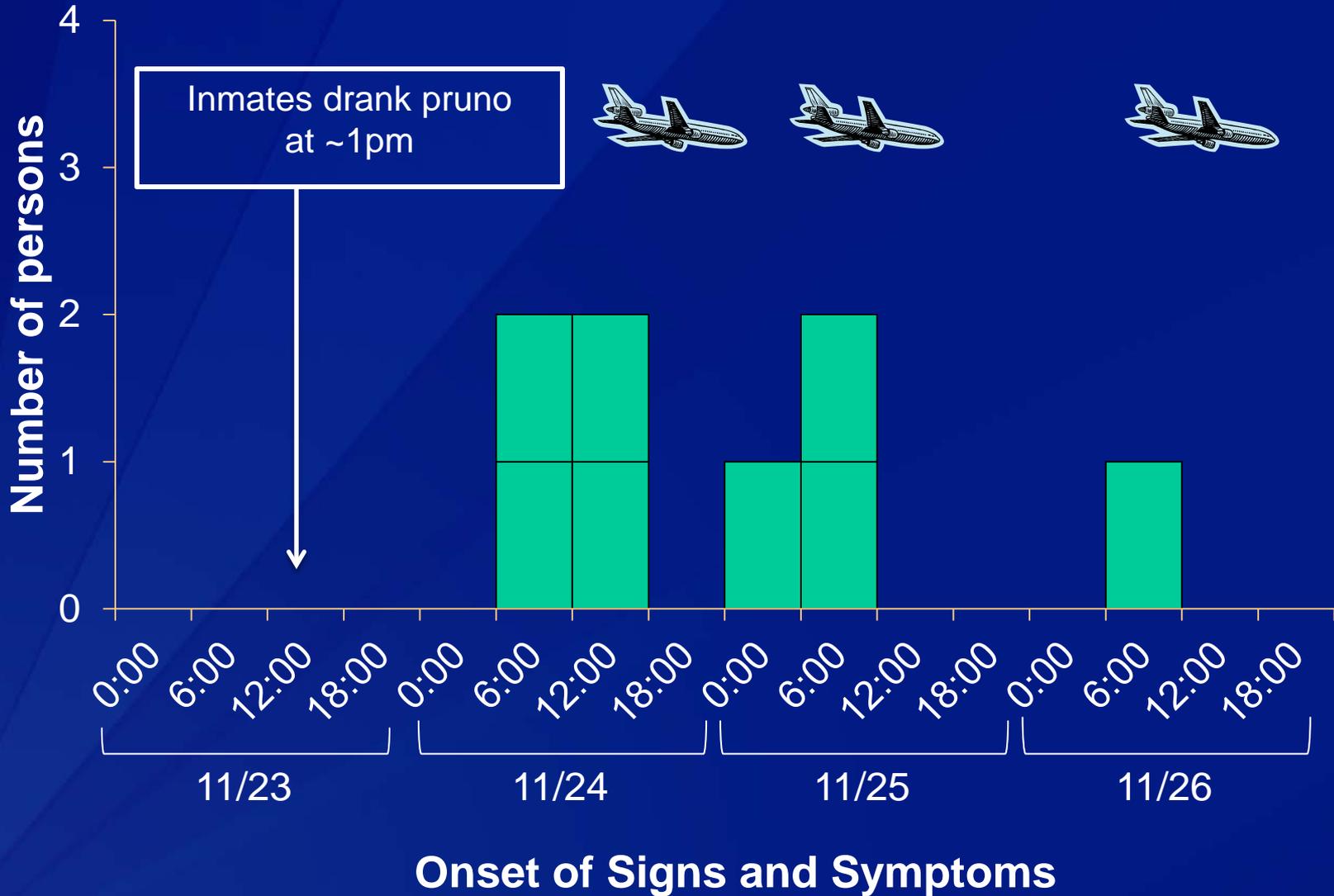


Non-outbreak pruno
from facility

Case Definition

- ❑ **Botulism signs or symptoms in a correctional facility inmate, with laboratory confirmation of botulinum toxin, during November 24–26**

Epidemic Curve



Case-Patients (n = 8)

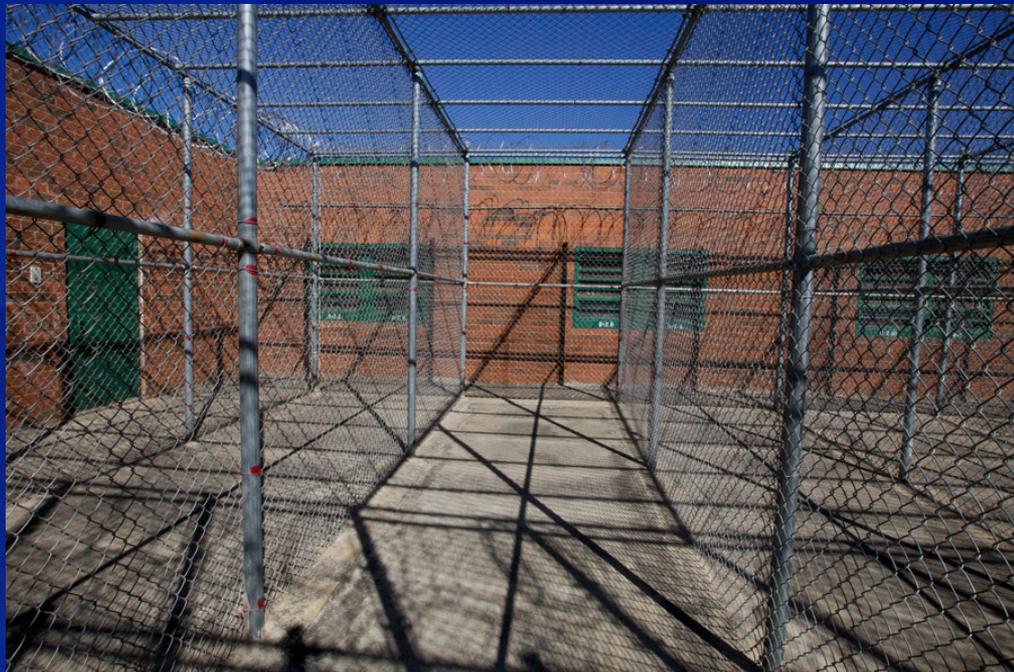
- All male
- Median age 25 (range 20–35) years
- Race/ethnicity
 - 6 Mexican-American
 - 2 American Indian
- Median incubation period 29 (range 16–64) hours

Heptavalent Botulinum Antitoxin (H-BAT)

- ❑ Investigational new drug released March 2010 for botulism in adults
- ❑ Equine-derived antibody to all known subtypes of botulinum toxin
 - ❑ A—G

How was the alcohol shared?

- ❑ Inmates in 2 different pods became ill — did go to recreation area at same time

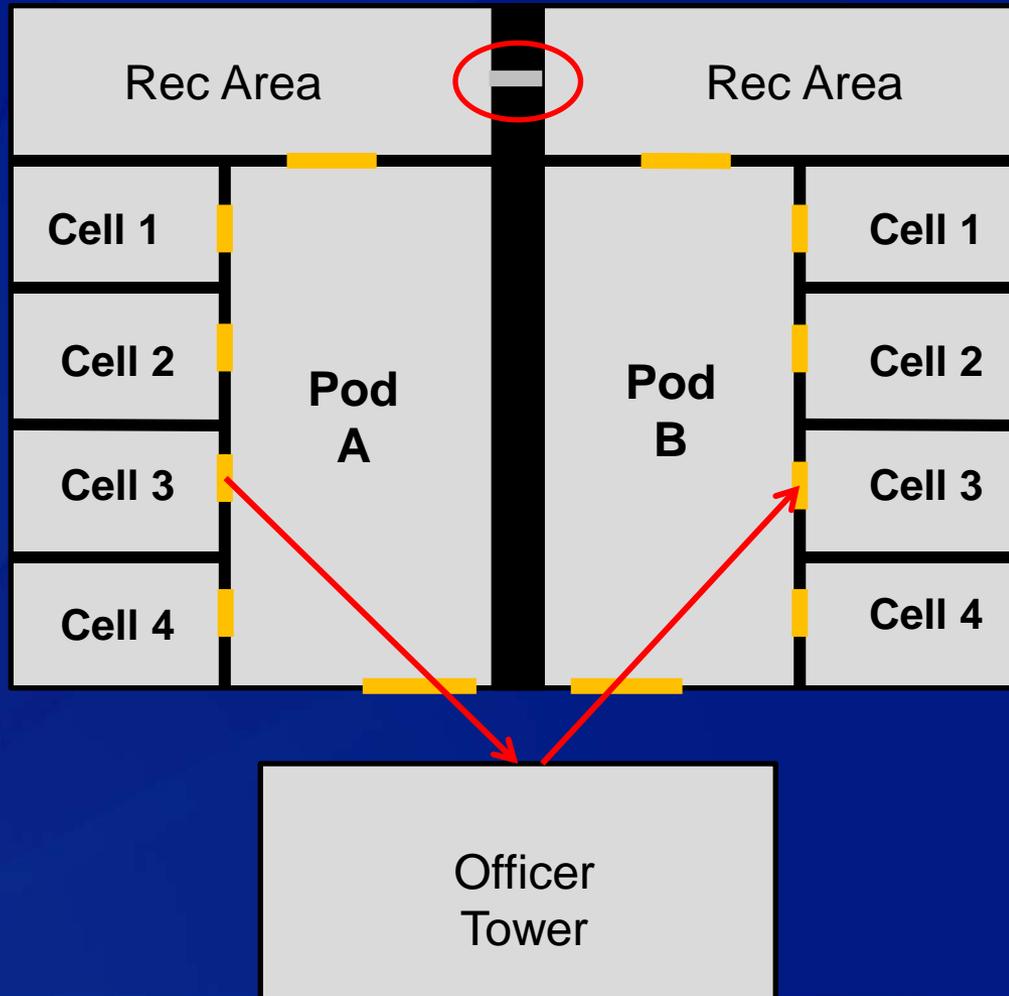


How was the alcohol shared?

- ❑ Inmates in 2 different pods became ill — did go to recreation area at same time



Affected Pods



Drainage Grate



Potential for Sharing Pruno



Laboratory Results

Specimen	No.	Botulinum toxin type A	<i>Clostridium botulinum</i>
Pruno	1	Positive	Positive
Patient sera	8	Positive	-
Stool	1	Positive	Positive
Gastric aspirate	7	Negative	Negative
Rectal swabs	7	-	5 positive

Laboratory Results — Mouse Bioassay

- ❑ All patient serum specimens (n = 8) positive for botulinum toxin type A
- ❑ Pruno also positive for botulinum toxin type A

Botulism Testing – Mouse Bioassay

Patient samples



Patient samples +
botulinum antitoxin type A



Patient samples +
botulinum antitoxin type B



Patient samples +
botulinum antitoxin type E



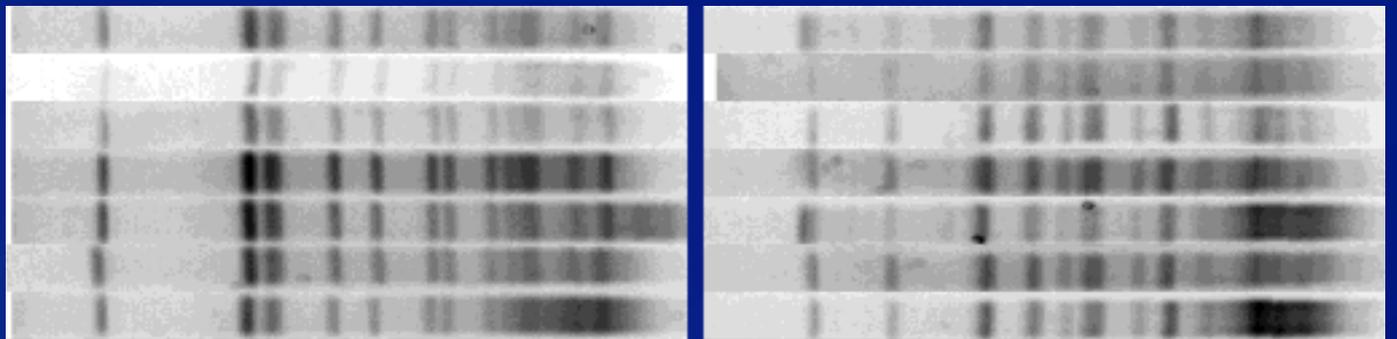
August & November Outbreaks Unrelated

- ❑ Distant areas of Prison A
- ❑ No contact between inmate populations
- ❑ PFGE patterns from isolates different

August
PFGE
pattern



November
PFGE
pattern



Prison-Associated Botulism Outbreaks

Year	State	No. of cases	Age range (yrs)	No. hospitalized	No. intubated
2004	California	4	19-35	4	2
2005	California	1	30	1	1
2011	Utah	8	24-35	8	3
2012	Arizona	4	27-33	4	1
2012	Arizona	8	20-35	8	7

Conclusion

- ❑ **Potato-based pruno associated with a botulism outbreak affecting 8 persons in an Arizona correctional facility**
- ❑ **August and November botulism outbreaks in Prison A unrelated**

Prevention Efforts

- ❑ Educate inmates and correctional officers about botulism from potato-based pruno
- ❑ Limit access to high-risk ingredients for botulinum toxin production in pruno such as potatoes

Prevention Efforts



Botulism in Prison

In recent years, there have been several outbreaks of botulism in prisons. Two outbreaks occurred in Arizona in 2012. All the cases were linked to "hooch," also called "pruno" or prison wine, made with potatoes.

This disease causes muscle paralysis so that someone can't move or even breathe. If not treated quickly, botulism can cause death. Even with treatment, people often stay in the hospital for months and full recovery can take years.

The germ that causes botulism, called *Clostridium botulinum*, makes a toxin when it is in a sealed container (like a bag). These germs come from ingredients like potatoes and other root vegetables, such as carrots or yams, as well as many other sources. This germ lives in soil and is present all over the world.

Signs of Botulism

- Double / blurred vision
- Drooping eyelids
- Slurred speech
- Difficulty swallowing
- Dry mouth
- Muscle weakness

If you or someone else starts to show signs of botulism, seek medical care immediately!

If you brew, this could be you!

Preventing Botulism

Don't drink alcohol made in prison.

If you do make or drink alcohol, be sure there are no potatoes or root vegetables (like carrots) in it.



For more information about botulism, visit www.cdc.gov/nczved/divisions/dfbmd/diseases/botulism/



Botulismo en la Prisión

En los últimos años han ocurrido varios brotes de botulismo en las cárceles. Dos brotes ocurrieron en Arizona en el año 2012. Todos los casos estaban relacionados con alcohol llamado vino de prisión, pruno o "hooch" que fue hecho a base de papas.

Esta enfermedad provoca parálisis muscular por lo que la persona no puede moverse y ni siquiera respirar. Si no se trata rápidamente, el botulismo puede causar la muerte. Incluso con tratamiento, las personas suelen permanecer en el hospital durante meses y una recuperación completa puede tardar años.

El germen que causa el botulismo, llamado *Clostridium botulinum*, produce una toxina cuando se encuentra en un recipiente sellado (como una bolsa). Estos gérmenes vienen de ingredientes como papas, otras verduras como la yuca y el ñame y de otras fuentes. Este germen vive en el suelo y está presente en todo el mundo.

Los signos de botulismo

- Visión doble o visión borrosa
- Párpados caídos
- Dificultad para hablar
- Dificultad para tragar
- Sequedad en la boca
- Debilidad muscular

Si usted u otra persona comienza a mostrar signos de botulismo, busque atención médica inmediatamente!

La prevención del botulismo

No beba alcohol hecho en prisión.

Si usted prepara o bebe alcohol, asegúrese de que no contiene papas u otras verduras u hortalizas de raíz.



Para obtener más información, visite: www.cdc.gov/nczved/divisions/dfbmd/diseases/botulism/

Acknowledgments

❑ Pinal County Health Department

- ❑ Graham Briggs

❑ Arizona Department of Health Services

- ❑ Ken Komatsu
- ❑ Shoana Anderson
- ❑ Joli Weiss
- ❑ Clarisse Tsang
- ❑ Evan Henke

❑ Hospital

- ❑ Muhammad Vasiq
- ❑ Mary Ann Moyer

❑ Arizona Department of Corrections

❑ CDC

- ❑ Seema Yasmin
- ❑ Jamae Morris
- ❑ Tara Anderson
- ❑ Agam Rao
- ❑ Carolina Luquez
- ❑ Janet Dykes
- ❑ Raj Mody
- ❑ Barbara Mahon
- ❑ Kris Bisgard
- ❑ Rebecca Sunenshine

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention



Thank You



Arizona EIS officers and prison warden modeling prison protective equipment (PrPE)

Clinical Course

- ❑ 1 patient discharged back to facility within 5 days
- ❑ 7 patients transferred to long-term acute care facilities on mechanical ventilation and supportive care

Complications

- ❑ **Seven patients developed pneumonia**
 - ❑ **Culture revealed:**
 - ❑ *Methicillin-resistant Staphylococcus aureus*
 - ❑ *Methicillin-sensitive Staphylococcus aureus*
 - ❑ *Enterobacter aerogenes*
 - ❑ *Serratia marcescens*
 - ❑ *Citrobacter koseri*
 - ❑ *Klebsiella pneumonia*
 - ❑ *Escherichia coli*
- ❑ **One patient had cholecystitis**
- ❑ **Five patients had elevated lipase levels**