

Restaurant-Associated Outbreak of Typhoid Fever Traced to a Chronic Carrier Colorado, 2015

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Objectives

- Describe the clinical and epidemiologic characteristics of Typhoid Fever.
- Describe the public health investigation of an outbreak of Typhoid Fever that occurred in Colorado in 2015 involving a retail food establishment.
- Describe the public health interventions and control measures implemented during the outbreak investigation.

The Call — Typhoid Fever

One Typhoid
fever case
reported.
Symptom
onset
September 2



9/11

September–October 2015

Salmonella Typhi

- Symptoms — fever, headache, constipation, myalgia, and malaise
- Humans only reservoir
- Transmission is fecal-oral
- Incubation period 3–60 days (range 8–14 days)
- Chronic carriage in 2%–5% of cases
- Shedding can be intermittent

Epidemiology

- *S. Typhi* is endemic worldwide, not in the U.S.
 - Approximately 22 million cases and 200,000 deaths
- In the U.S. about 5,700 cases annually.
- During 2009-2014 Colorado had on average of 6 cases annually.

2nd Case reported-Typhoid Fever

Single case of typhoid fever reported.
Symptom onset 9/2

Second case reported.
symptom onset 9/20



9/11

10/1



Colorado



Weld County

Population (2013) 269,785

Typhoid Fever-Investigation

- Started investigation out of concern for a larger outbreak.
- Look for common exposures.
- Stop transmission.

Salmonella Typhi Case Definitions

Case

- Clinically compatible illness
- Isolation of *S. Typhi* during July 1–October 15
- With 1 of 2 outbreak pulsed-field gel electrophoresis (PFGE) patterns.

Carrier

- Contact with cases
- No recent illness (within 3 months)
- *S. Typhi* isolated with 1 of 2 outbreak PFGE patterns

Determine Common Exposures

(n = 2)

Exposure Investigation

Questionnaires

Food recall

Credit card receipts

Shopper card records

Social media

Determine Common Exposures

(n = 2)

Exposure Investigation

Questionnaires

Food recall

Credit card receipts

Shopper card records

Social media

Common Exposures

Same groceries stores

Fresh produce

6 restaurants

No common social events



Health Alert Notification (HAN) Issued -Typhoid Fever

One Typhoid
Fever case
reported.
Symptom onset
September 2

Second case
reported.
Symptom onset
September 20

HAN issued



September–October 2015

3rd Case Reported —Typhoid Fever

One Typhoid fever case reported.
Symptom onset September 2

Second case reported.
Symptom onset September 20

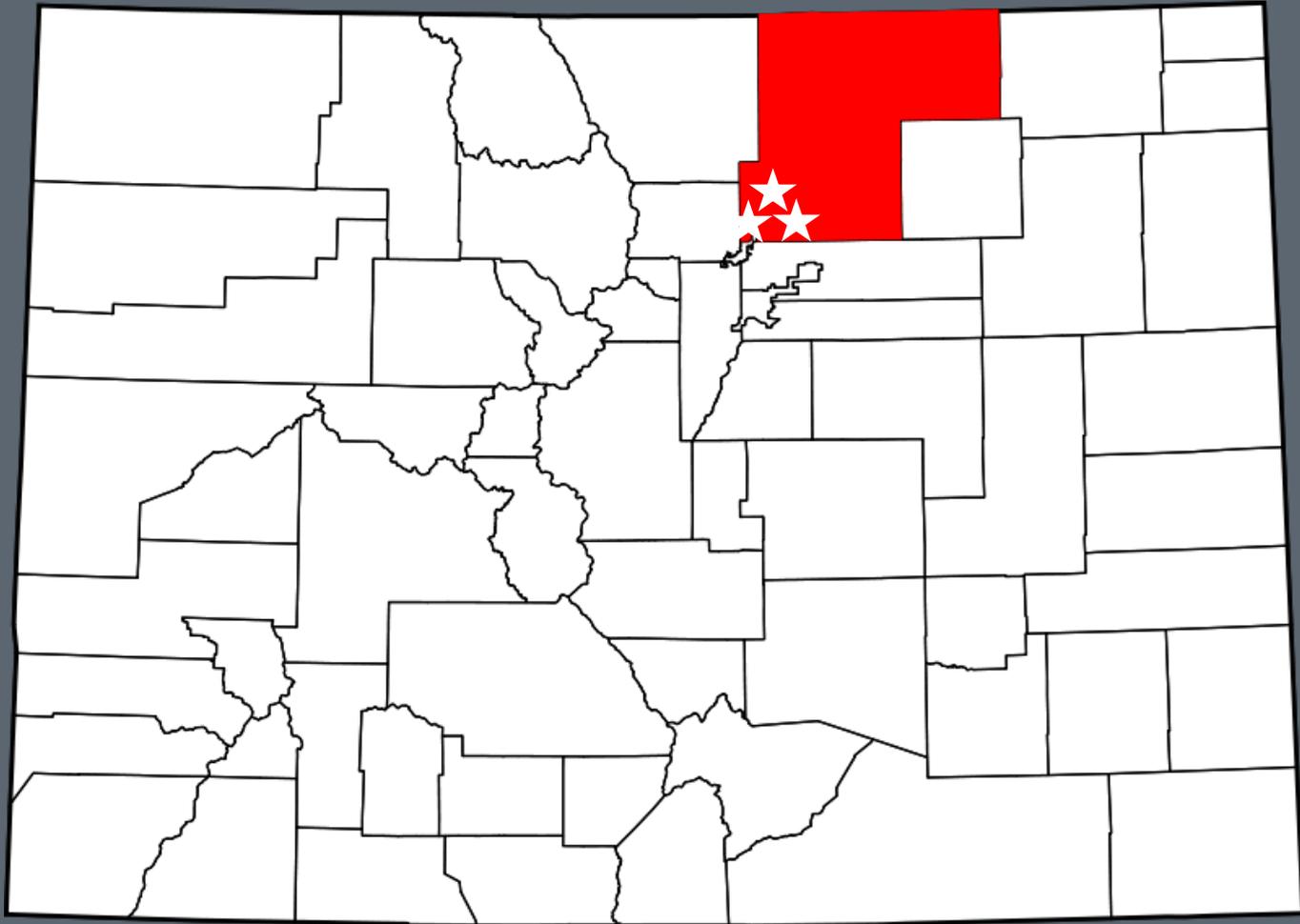
HAN issued

Third case reported.
Symptom onset September 15



September–October 2015

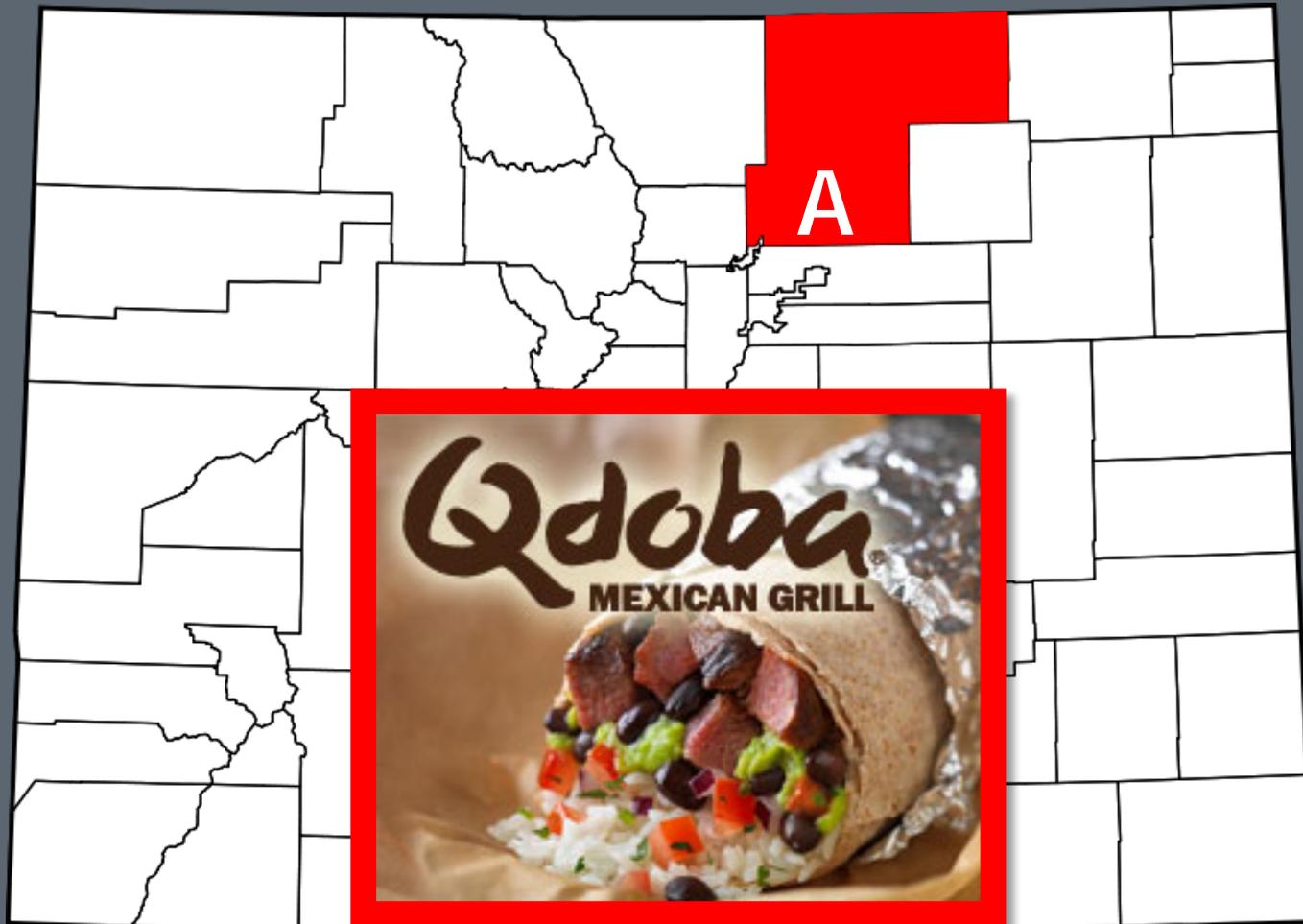
Typhoid fever Cases (n = 3) *— Weld County, CO, 2015*



Common Exposures

- Patient 3 lived less than 20 miles from patients 1 and 2
- Investigated possible common exposures:
 - No common restaurants, grocery stores or social exposures
- Only shared a single restaurant exposure.....

Map of Weld County Colorado



Investigation

- Investigated possible transmission routes using:
 - Environmental assessments
 - Staff interviews
 - Laboratory testing

Staff Interviews and Specimen Testing

- Restaurant A provided employee list, August 10–August 20
- Interviewed current employees
- Employees requested to obtain 2 rectal swab specimens
5 days apart



Carrier Identified — Typhoid Fever

One Typhoid fever case reported.
Symptom onset September 2

Second case reported.
Symptom onset September 20

HAN issued

Third case reported.
Symptom onset September 15

S. Typhi isolated from 1 food-worker's rectal swab



September–October 2015

Restaurant A Investigation Results

- All 28 employees responded and provided ≥ 1 rectal swab specimen
- *S. Typhi* was isolated from one food-worker's rectal swab
- Traveled to an endemic country in year 2000
- No symptoms

Recommendations— Food-worker Infected with S. Typhi

- Treated with azithromycin for 28 days
- Excluded from food service work until 3 negative stools
- Monitored with stool culture until three consecutive specimens obtained ≥ 1 month apart were negative for *S. Typhi*

Conclusions

- Chronic *S. Typhi* carriers can cause illness years after infection.
- Rapid and thorough investigation essential to identify source.
- Good collaboration and communication with local partners is essential.