

Background

- Vibriosis is an infection caused by any species of the family *Vibrionaceae*
- Vibriosis causes an estimated 80,000 illnesses and 100 deaths in the United States each year
- Vibrio* can cause gastrointestinal (GI) symptoms (watery diarrhea, abdominal cramps, nausea, vomiting, fever, and chills) and other Non-GI symptoms (wound infection, otitis externa, and septicemia)
- Commonly reported exposures include consuming raw or undercooked seafood particularly oysters, and/or contact with seawater
- Tennessee (TN) reports *Vibrio* cases to the "Cholerae and Other *Vibrio* Illness Surveillance (COVIS) System" at CDC
- Vibrio* is not easily identified on routine enteric media. So, CDC requested inclusion of positive culture-independent diagnostic testing (CIDT) cases to the 2017 case definition
- We reviewed confirmed (culture positive) and probable (CIDT positive) cases in TN from 2017-2021

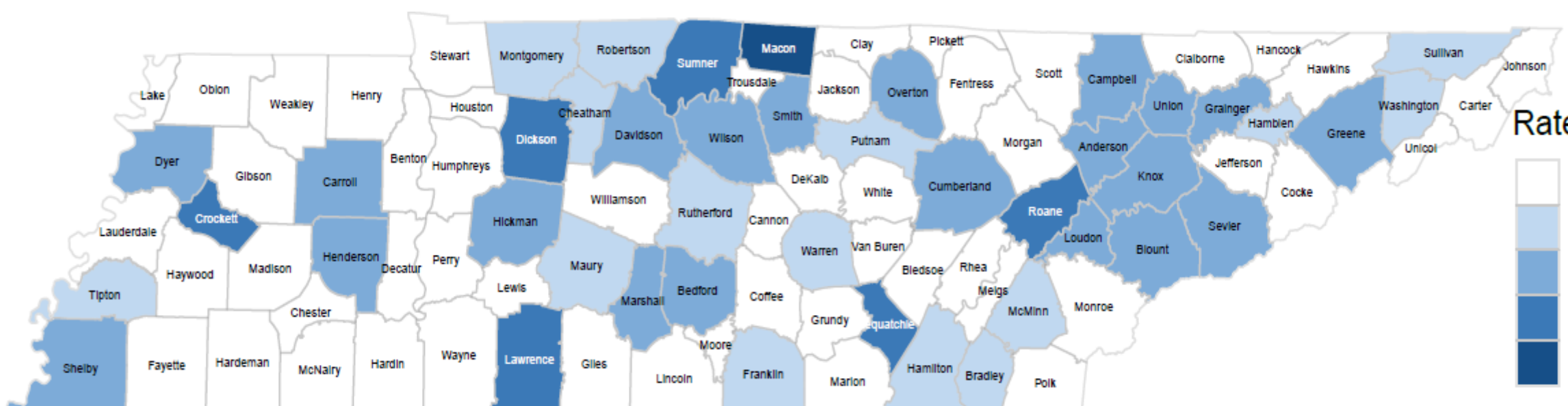
Methods

- Vibrio* reports from clinical and state public health laboratories were reviewed
- Persons with positive culture from any source were identified as 'Confirmed Cases', and those with positive CIDT identified as 'Probable Cases'
- Demographic, clinical, and exposure data were collected through routine case interviews using the CDC COVIS Report
- Confirmed cases of all sources and confirmed cases of only stool were compared with probable cases using Epi Info 7
- Cases lost to follow up were excluded from the analysis

Results

- A total of 164 *Vibrio* cases were reported in TN during 2017-2021
- Six or more cases per 100,000 were reported from each of 7 counties and 1-5 cases per 100,000 were reported from each of other 36 counties

Map. Rate of Vibriosis cases (N=164) per 100,000 Population, Tennessee 2017-2021



Results (Cont.)

- Data was available for 135 (82%) cases included in these analyses:
 - 72 (53%) confirmed cases
 - 63 (47%) probable cases
- Multiple specimen sources were noted in confirmed cases, where stool was the only specimen source in probable cases (Figure 1)
- The total number of cases ranged between 28-30 cases per year with a little decline in 2020 and 2021 probably due to underreporting during the COVID 19 pandemic (Figure 2)
- The percentage of each case classification clearly differed by year (Figure 2)
- Demographic and clinical data differed between cases (Table 1 and Table 2)

Figure 1. Number and Percentage of *Vibrio* Cases (N=135) by Specimen Source

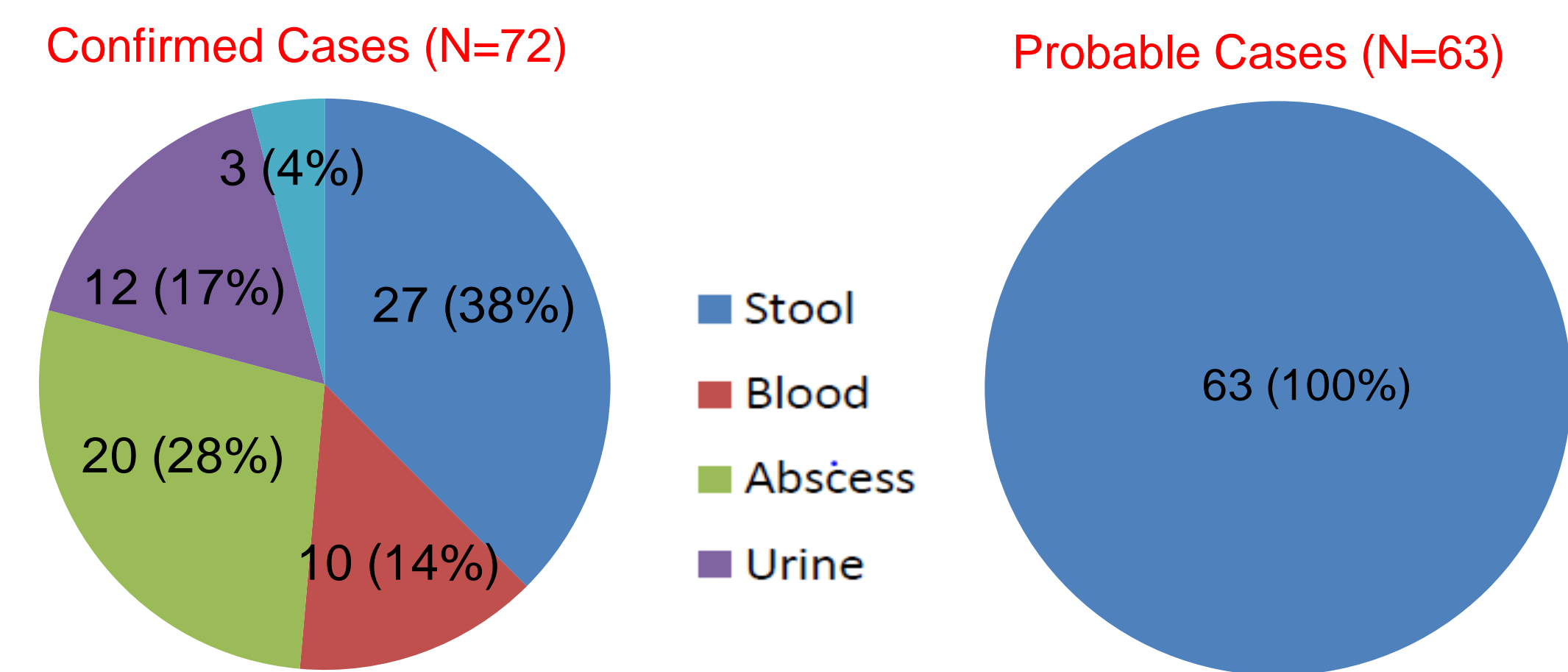


Table 1. *Vibrio* Case Demographics (N=135)

	Confirmed (N=72) n (%)	Probable (N=63) n (%)
Age Range		
0 to 9	5 (7)	15 (24)
10 to 19	7 (10)	3 (5)
20 to 39	15 (21)	9 (14)
40 to 69	34 (47)	30 (48)
≥70	11 (15)	6 (10)
Gender		
Male	46 (64)	32 (51)
Female	26 (36)	31 (49)
Race/Ethnicity		
White/Not Hispanic	65 (90)	47 (75)
White/Hispanic	0 (0)	4 (6)
White/Unknown	1 (1)	1 (2)
Black/Not Hispanic	2 (3)	9 (14)
Black/Unknown	1 (1)	0 (0)
Others	3 (4)	2 (3)
Public Health Jurisdiction		
Metropolitan	36 (50)	28 (44)
Non-Metropolitan	36 (50)	35 (56)

Table 3. Exposures among Confirmed *Vibrio* Cases (All Sources) and Probable Cases

	Confirmed (N=72) n (%)	Probable (N=63) n (%)	OR	p-value
Ate any seafood	40 (56%)	28 (44%)	1.56	0.2000
Exposure to sea water	32 (44%)	12 (19%)	3.40	0.0020
Out-of-state travel	47 (65%)	17 (27%)	5.09	<.0001

Figure 2. Number and Percent of *Vibrio* Cases (N=135) by Year

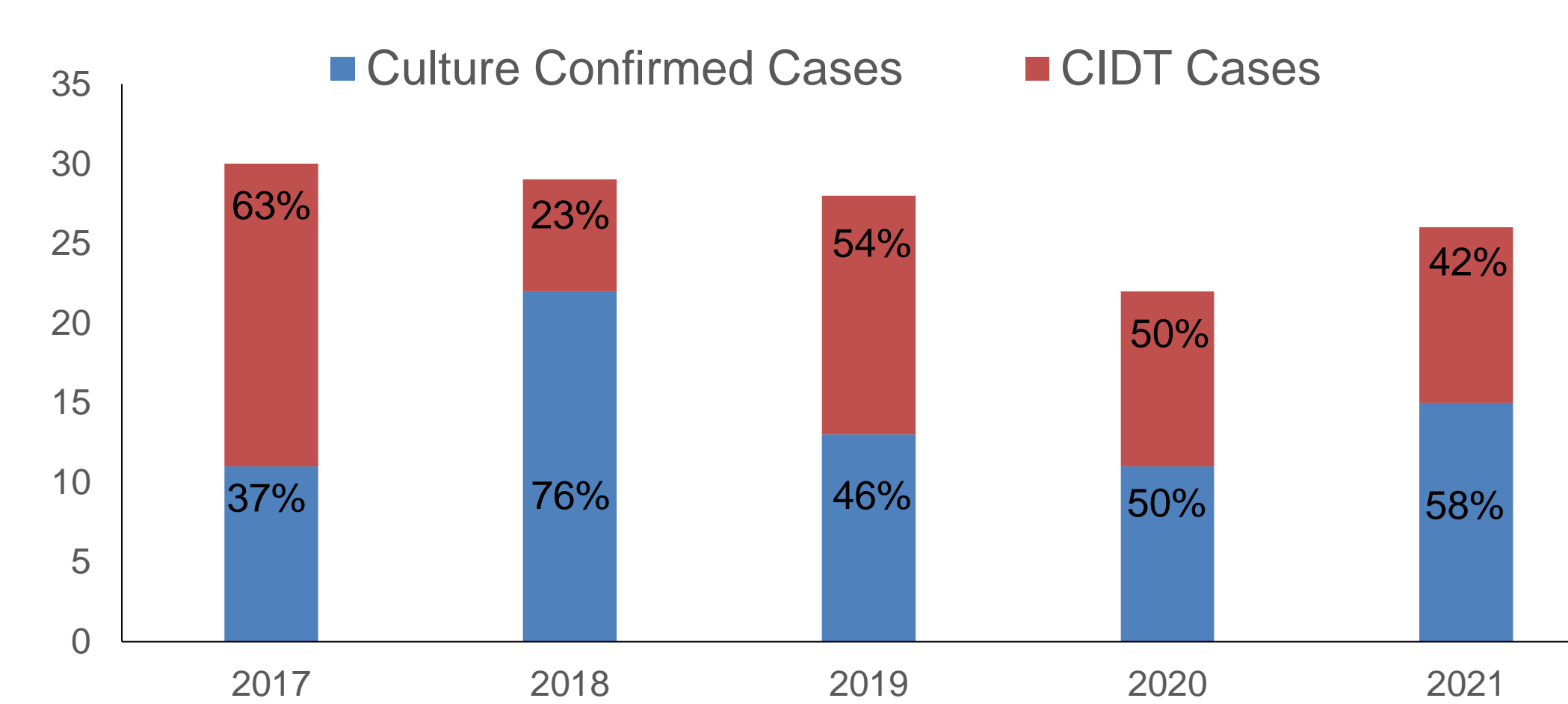


Table 2. Clinical Presentations of *Vibrio* Cases (N=135)

	Confirmed (N=72) n (%)	Probable (N=63) n (%)
Clinical Presentation		
Gastroenteritis	34 (47%)	61 (97%)
Cellulitis/Wound infection	22 (31)	0 (0)
Ear infection	11 (15)	0 (0)
Septic shock	2 (3)	0 (0)
Chronic medical Condition	2 (3)	1 (2)
Unknown	1 (1)	1 (2)
Hospitalization	24 (33)	21 (33)
Death**	4 (6%)	0 (0)

* Death reported for 4 confirmed cases linked to travel to coastal states: 3 *Vibrio Vulnificus* cases (2018, 2019, and 2020) and one case of *Vibrio Fluvialis* in 2020

- Confirmed cases were significantly more likely to travel-out-state than probable cases (Table 3 and Table 4)
- Confirmed cases from all sources were more likely to report exposure to sea water than probable cases (Table 3)
- Confirmed cases from stool only were significantly more likely to report seafood consumption than probable cases (Table 4)

Table 4. Exposures among Confirmed *Vibrio* Cases (Stool Only) and Probable Cases

	Confirmed (N=27) n (%)	Probable (N=63) n (%)	OR	p-value
Ate any seafood	23 (85%)	28 (44%)	6.76	0.0008
Exposure to sea water	7 (26%)	12 (19%)	1.43	0.5800
Out-of-state travel	17 (63%)	17 (27%)	4.71	0.0037

Summary

- Approximately 40% of confirmed cases had *Vibrio* isolated from stool; other specimen sources included:
 - wound (28%)
 - ear (17%)
 - blood (14%)
 - urine (4%)
- Nearly 25% of probable cases versus 7% of confirmed cases were under 10 years old, while almost half of cases from each case status were 40-69 years old
- Of confirmed cases, 64% were males compared to 51% of probable cases
 - 90% of confirmed and 75% of probable cases were among Non-Hispanic white population
- Almost all probable cases (97%) reported GI symptoms, while > 50% of confirmed cases reported non-GI symptoms such as cellulitis and ear infection
- Confirmed cases were more likely to report travel out of state and exposure to seawater compared to probable cases.
- When comparing confirmed cases from stool specimens only to probable cases, travel out of state remained significant as well as seafood consumption

Conclusions

- Demographic and clinical features differed between confirmed and probable cases
- Out of state travel, seafood consumption, and exposure to seawater were reported more often by confirmed cases
- Reflex culturing for CIDT positive cases is recommended to better facilitate case ascertainment and understand the epidemiology of vibriosis

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