

Summary of infections reported to *Vibrio* Surveillance System, 1999

This report summarizes *Vibrio* infections reported to CDC through the *Vibrio* Surveillance System in 1999. It is broken down by two categories: non-cholera *Vibrio* infections, both those reported from Gulf Coast and those from other states, and *Vibrio* infections causing cholera.

Non-cholera *Vibrio* infections

Since 1988, CDC has maintained a voluntary surveillance system for culture-confirmed *Vibrio* infections in the Gulf Coast states of Alabama, Florida, Louisiana, and Texas. Using a standardized form, investigators obtain clinical data, information about underlying illness, and epidemiologic data on seafood consumption and exposure to seawater in the week before illness. When a food item is implicated in illness, a traceback investigation is performed by state field investigators or the U.S. Food and Drug Administration (FDA). Surveillance data have been used to identify environmental risk factors, retail food outlets where high-risk exposures occur, and target groups that may benefit from consumer education.

In recent years, other states have been invited to participate in the *Vibrio* Surveillance System, and surveillance has expanded to include FoodNet sites as well as states along both the East and West coasts. Surveillance for sporadic cases is the primary focus of this system, although outbreak-associated culture-confirmed cases are also included. Isolates from *V. parahaemolyticus* cases that occur in the Gulf Coast or FoodNet sites are submitted to CDC for serotyping.

A total of 342 cases of culture-confirmed non-cholera *Vibrio* infections were reported to the *Vibrio* Surveillance System in 1999, 164 from 5 Gulf Coast states (Alabama, Florida, Louisiana, Mississippi, and Texas) and 178 from 17 other states (Figure 1). Among patients about whom this information was available, 141 (46%) of 311 were hospitalized and 33 (11%) of 300 died. Although *V. parahaemolyticus* was the most frequently reported *Vibrio* species, *V. vulnificus* accounted for 31 (94%) of the 33 reported deaths.

Syndromes

Tables 1 and 2 divide the data into Gulf coast versus non-Gulf coast residents. The following is a summary of data from all sites: Three hundred (88%) of the *Vibrio* infections could be categorized into one of three well-recognized syndromes. One hundred seventy-two (50%) were classified as gastroenteritis, defined as an illness with diarrhea, vomiting, or abdominal cramps, no evidence of a wound infection, and *Vibrio* spp. isolated from stool alone. Eighty-two (24%) illnesses were classified as wound infections, in which the patient incurred a wound before or during exposure to seawater or seafood drippings, and *Vibrio* spp. was subsequently cultured from blood, a wound, or a normally sterile site. There were 46 (13%) cases of primary septicemia, characterized by fever or shock in which *Vibrio* spp. was isolated from blood or a normally sterile site, and no evidence of a wound infection (Tables 1 and 2). In 22 (6%) cases, the organism was cultured from ear, eye, gallbladder, urine, or the abdomen; and 20 (6%) case report forms contained insufficient information to be classified into one of these syndromes, all of these cases were reported as "other or unknown" syndrome.

Among illnesses with one *Vibrio* species in which the species was determined, *V. parahaemolyticus* accounted for 95/166 (57%) of the gastrointestinal illnesses, while *V. vulnificus* was isolated in 41/45 (91%) of septicemia cases. Although *V. vulnificus* was isolated in 28/71 (39%) wound infections, *V. alginolyticus*

and *V. parahaemolyticus* made up 20% and 23%, respectively.

Seasonality

Gastrointestinal *Vibrio* infections had a clear seasonal peak, with 108 (63%) occurring between June and October. The majority of both wound infections, 69 (84%), and septicemia infections, 41 (89%) occurred between April and October (Figure 2).

Exposures

Of the 218 persons with gastroenteritis or septicemia, 178/191 (93%) consumed seafood in the 7 days before illness onset. Of the 91 (51%) who consumed a single seafood, 61 (67%) ate oysters, 11 (12%) ate shrimp, 9 (10%) ate fish, 8 (9%) ate crabs, and 2 persons ate only clams or lobster. Of the 86 persons who provided information, 62 (72%) consumed their seafood raw.

Laboratory

In 102 (46%) of 222 *Vibrio* cases, the species was confirmed by the state public health laboratory. Twenty-four clinical isolates of *V. parahaemolyticus* from 23 patients in five states (CA, GA, MN, OR, and TX) were submitted to CDC for serotyping. Of the 23 patients, 5 (22%) had serotype O3:K6, 4 (17%) had O4:K12, while the remaining 14 patients had 10 other serotypes.

Cholera Infections

Five cases of toxigenic *V. cholerae* O1 from 4 states were identified in 1999 (Table 3). Three patients acquired their infection in India, one in Liberia, and one had no history of travel but consumed foods brought from the Philippines the week before illness. All patients had gastroenteritis. Three patients were hospitalized, and none died.

Table 1: Non-cholera *Vibrio* infections reported from the Gulf Coast *Vibrio* Surveillance System¹, by syndrome and complications, 1999 (N=164)

<i>Vibrio</i> Species	Total #	Syndrome				Complications	
		Gastroenteritis # (%)	Septicemia # (%)	Wound Infection # (%)	Other/Unknown ² # (%)	Hospitalized # (%)	Deaths # (%)
<i>V. alginolyticus</i>	15	2 (13)	0	10 (67)	3 (20)	4/14 (29)	0
<i>V. cholerae</i> non-toxigenic ³	25	15 (60)	2 (8)	3 (12)	5 (20)	10/24 (42)	0
<i>V. damsela</i>	1	0	0	1 (100)	0	1 (100)	0
<i>V. fluvialis</i>	9	4 (45)	2 (22)	3 (33)	0	4 (44)	0
<i>V. furnissii</i>	1	1 (100)	0	0	0	0	0
<i>V. hollisae</i>	8	7 (88)	0	1 (12)	0	6 (75)	0
<i>V. metschnikovii</i>	1	0	0	0	1 (100)	1 (100)	0
<i>V. mimicus</i>	8	6 (75)	0	1 (12.5)	1 (12.5)	4 (50)	0
<i>V. parahaemolyticus</i>	29	16 (55)	0	13 (45)	0	13/27 (48)	1/26 (4)
<i>V. vulnificus</i>	55	4 (7)	23 (42)	21 (38)	7 (13)	49 (89)	21/53 (40)
Species not identified	7	2 (29)	1 (14)	3 (43)	1 (14)	1 (14)	0
Multiple species	5	2 (40)	0	3 (60)	0	3/4 (75)	1 (20)
Total	164	59 (36)	28 (17)	59 (36)	18 (11)	96/159 (60)	23/155 (15)

¹ Includes Alabama, Florida, Louisiana, Mississippi, and Texas.

² Includes eye, otitis, gall bladder, peritonitis, urine, and unknown.

³ Includes *V. cholerae* non-O1 non-O139 (24 isolates), and *V. cholerae* O1 (1 isolate).

Table 2: Non-cholera *Vibrio* infections reported to the *Vibrio* Surveillance System from non-Gulf Coast states¹, by syndrome and complications, 1999 (N=177)

<i>Vibrio</i> Species	Total #	Syndrome				Complications	
		Gastroenteritis # (%)	Septicemia # (%)	Wound Infection # (%)	Other/Unknown ² # (%)	Hospitalized # (%)	Deaths # (%)
<i>V. alginolyticus</i>	13	2 (15)	0	4 (31)	7 (54)	2/9 (22)	0
<i>V. cholerae</i> non-toxigenic ³	21	16 (76)	0	2 (10)	3 (14)	3/19 (16)	0
<i>V. damsela</i>	1	0	0	0	1 (100)	1 (100)	0
<i>V. fluvialis</i>	10	8 (80)	0	1 (10)	1 (10)	3/8 (38)	0
<i>V. hollisae</i>	5	4 (80)	0	1 (20)	0	2 (40)	0
<i>V. mimicus</i>	2	1 (50)	0	0	1 (50)	1/1 (100)	0
<i>V. parahaemolyticus</i>	87	79 (91)	0	3 (3)	5 (6)	8/78 (10)	0
<i>V. vulnificus</i>	28	1 (4)	18 (64)	7 (25)	2 (7)	23/24 (96)	10/22 (45)
Species not identified	8	1 (12)	0	3 (38)	4 (50)	2/4 (50)	0
Multiple species	3	1 (33)	0	2 (67)	0	2 (67)	0
Total	178	113 (63)	18 (10)	23 (13)	24 (14)	47/152 (31)	10/144 (7)

¹ Reports were received from California, Connecticut, Georgia, Hawaii, Illinois, Kentucky, Massachusetts, Michigan, Minnesota, Nevada, North Carolina, Pennsylvania, Oregon, South Carolina, Virginia, Washington, and Wisconsin. Reporting from these states is not routine and numbers may not reflect the true number of cases in each state.

² Includes gallbladder, otitis, urine, unknown.

³ Includes *V. cholerae* non-O1 non-O139 (20 isolates), and *V. cholerae* non O1 (1 isolate).

Table 3: Cholera Infections, 1999 (N=5)

State	Age	Sex	Onset	Exposure	Isolate
AZ	1	M	5/14/99	exposed in India	O1 ET Ogawa ¹
AZ	5	M	5/15/99	exposed in India	O1 ET Ogawa ¹
NJ	24	M	8/5/99	exposed in Liberia	O1 ET Inaba ²
GA	43	M	12/30/99	exposed in India	O1 ET Ogawa ¹
CA	67	F	7/16/99	domestic- ? dried fish from Philippines	O1 ET Ogawa ³

¹ Resistant to furazolidone, sulfisoxazole, streptomycin, trimethoprim-sulfamethoxazole, and nalidixic acid

² Resistant to furazolidone, sulfisoxazole, streptomycin, and trimethoprim-sulfamethoxazole

³ Resistant to furazolidone, sulfisoxazole, and streptomycin

Figure 1: States that reported non-cholera *Vibrio* infections to the *Vibrio* Surveillance System, 1999 (N=342)

(numbers by each state indicate number of illnesses reported)

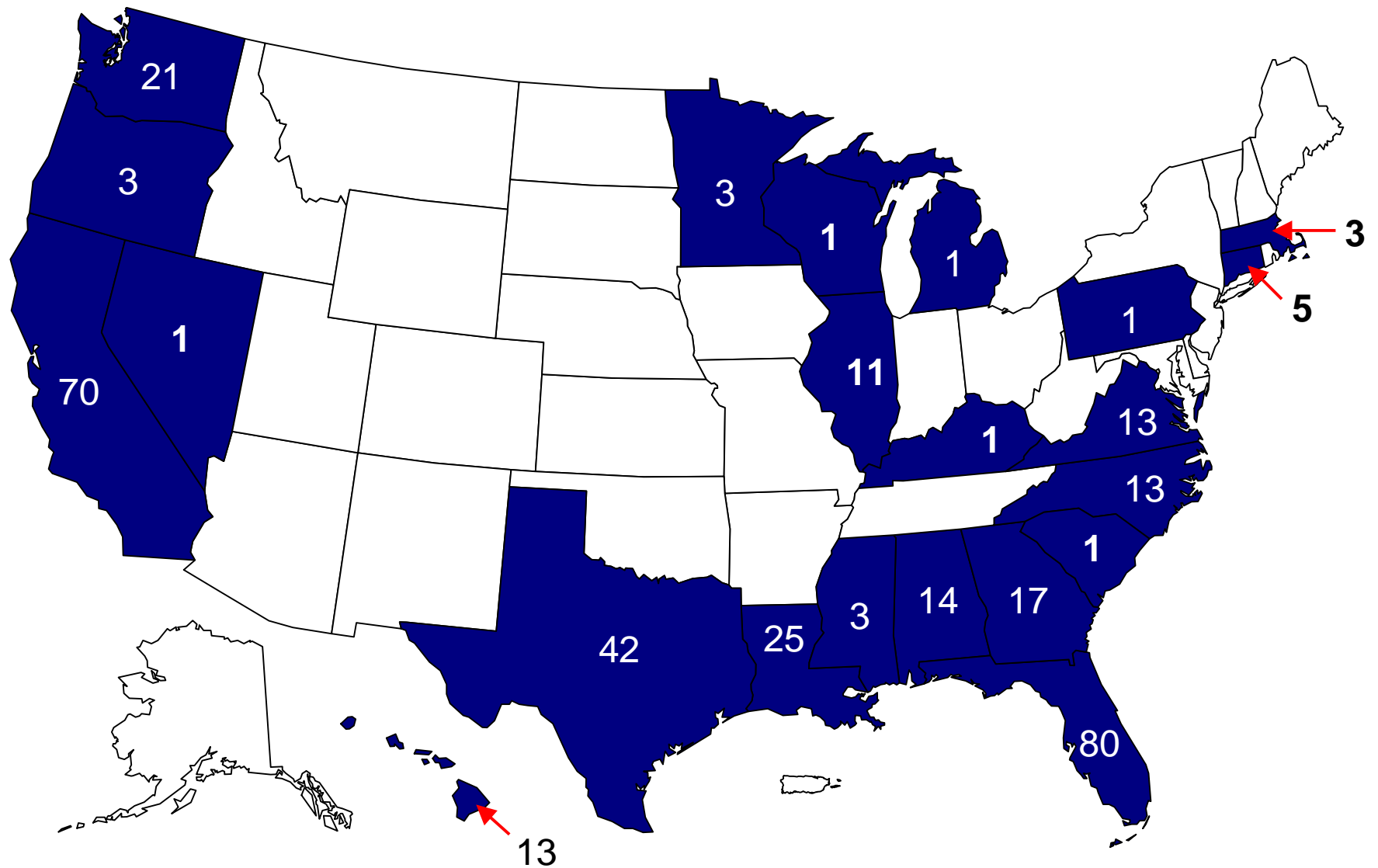
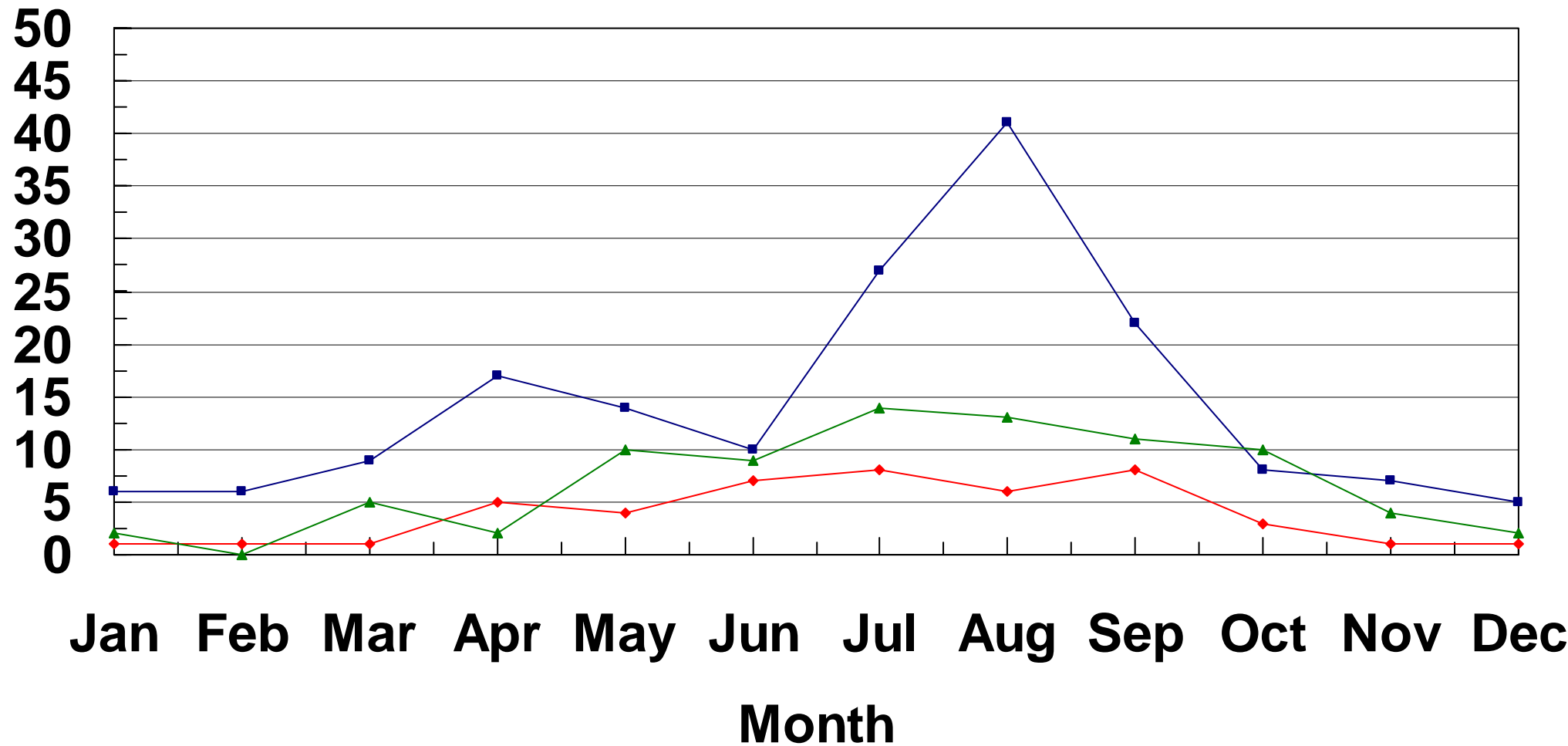


Figure 2: Seasonality of non-cholera *Vibrio* infections, selected syndromes, 1999 (N=300)



■ Gastroenteritis ◆ Sepsis ▲ Wound