VIRGINIA
EPIDEMIOLOGY BULLETIN

Robert B. Stroube, M.D., M.P.H., Commissioner
Grayson B. Miller, Jr., M.D., Epidemiologist
Editor: Carl W. Armstrong, M.D., F.A.C.P.

April, 1993 Volume 93, Number 4

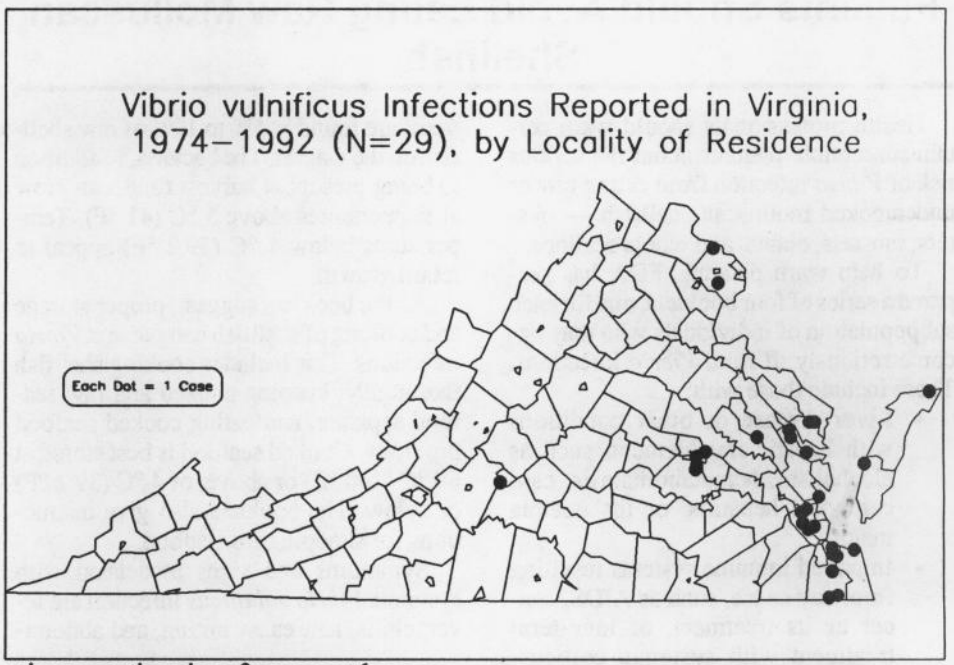
Vibrio vulnificus Infections, Virginia, 1974-1992*

From 1974 to 1992, 29 cases of *Vibrio vulnificus* were identified at the Office of Epidemiology as a result of physician reports or laboratory confirmation of the organism at the State lab (Division of Consolidated Laboratory Services, Virginia Department of General Services). Three deaths were reported among these cases. The distribution of cases over these years has remained unchanged, with an average of one to two cases reported per year.

Of 25 cases for whom the culture site was known, 9 (36%) had the organism isolated from blood, 14 (56%) had it isolated from a wound, and 2 (8%) had it isolated from some other site. *Vibrio vulnificus* infection manifests itself in two main ways:

- A person, typically with a history of liver disease or alcohol abuse, develops primary septicemia after eating improperly cooked shellfish.
- A person wounds himself while working with shellfish or while in saltwater, or exposes a preexisting wound to saltwater. The result is a wound infection which may or may not develop into a secondary septicemia.

We collect information only on the site where the culture was taken, which is not necessarily the site of the primary infection. Therefore, from our data it is not possible to differentiate whether patients with a positive blood culture suffered from primary septicemia or from secondary septicemia due to a wound infection.



Twenty-one patients (72%) resided in counties along the coast of Virginia (see map). Cases ranged from 9 to 89 years in age and two-thirds were age 60 or older. Most cases were white (62%) and male (72%). All cases occurred in the months from June through November with peak incidence in August and September (see figure).

More detailed information is available for the years 1974 through 1979 when the Office of Epidemiology conducted a retrospective study of ten reported cases of *V. vulnificus* using medical records review and interviews of physicians and patients.[1] That study found that all ten patients were coastal residents. Three patients (30%) became ill after eating raw or cooked shellfish. All three developed primary septicemia and one died as a result of his illness.

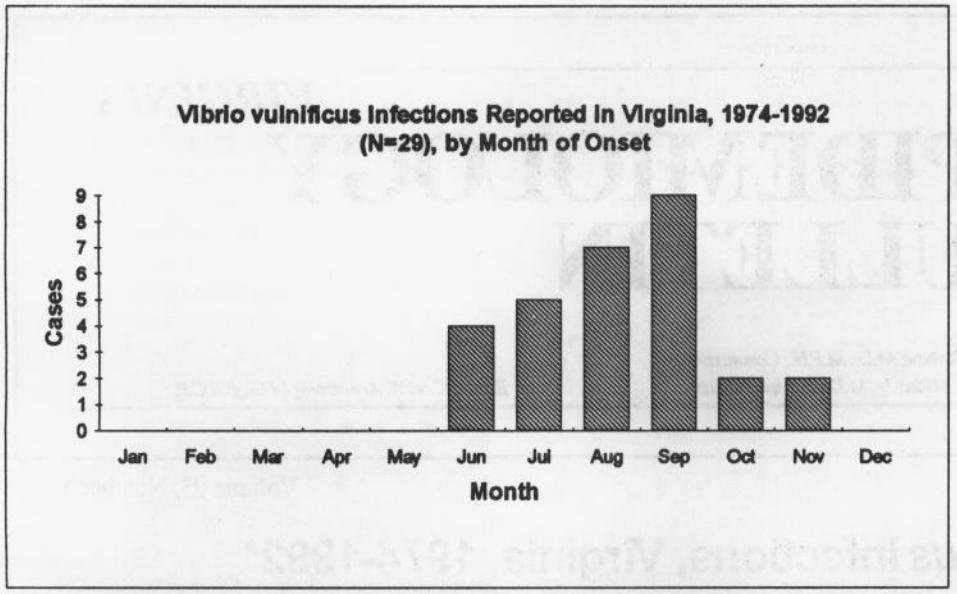
There were no deaths among the remaining cases, distributed as follows. Five patients (50%) either injured themselves while in saltwater or immersed an existing wound in saltwater (one of these persons was a crab handler). One (10%) went swimming with a perforated eardrum and subsequently developed a *V. vulnificus* ear infection, and for the remaining two cases (20%) the cause could not be determined.

References

1. Armstrong CW, Lake JL, Miller GB. Extraintestinal infections due to halophilic vibrios. So Med J 1983;76:571-574.

**Submitted by Elizabeth Barrett, DMD, MSPH, EIS Officer and Assistant State Epidemiologist, Office of Epidemiology, VDH.*

In This Issue:



To Prevent *Vibrio* Infections, High-Risk Patients Should Avoid Eating Raw Molluscan Shellfish*

Health professionals should warn certain susceptible patients about the serious risk of *Vibrio* infection from eating raw or undercooked molluscan shellfish — oysters, mussels, clams, and whole scallops.

To help warn patients, FDA has prepared a series of four booklets, one for each subpopulation of individuals who may become seriously ill from *Vibrio* infections. These include those with:

- Liver disease or other conditions with hepatic involvement, such as alcoholism, hemochromatosis, cancer, viral hepatitis, or thalassemia major.
- Impaired immune systems resulting from any cause, such as AIDS, cancer or its treatment, or long-term treatment with systemic corticosteroid drugs.
- Diabetes mellitus.
- Gastrointestinal disorders, including therapeutically induced or naturally low gastric acid.

Recent data from Florida highlight the potential problem of *Vibrio* infections in high-risk individuals. From April to December 1992, nine people in Florida died from *V. vulnificus* infection after eating raw oysters. All but one had liver disease.

FDA is concerned about the potential for serious *Vibrio* infections for several reasons. First, consumption of raw shellfish is common, particularly in certain regions of the country. For example, a recent survey in Florida found that one-third of the respondents reported eating raw oysters.[1] Also, FDA studies suggest that pathogenic vibrios, including *Vibrio vulnificus*, are found in 5% to 10% of raw shellfish on the market. The bacteria, in addition to being present at harvest time, can grow at temperatures above 5 °C (41 °F). Temperatures below 4 °C (39.2 °F) appear to retard growth.

As the booklets suggest, proper storage and cooking of shellfish can prevent *Vibrio* infections. This includes cooking shellfish thoroughly, keeping cooked and raw seafood separate, and eating cooked seafood promptly. Cooked seafood is best stored at 60 °C (140 °F) or above, or 4 °C (39.2 °F) or below. The booklets also give instructions for shopping for seafood.

Symptoms and signs associated with systemic *Vibrio vulnificus* infection are fever, chills, nausea, vomiting, and abdominal pain.[2,3] High-risk patients who have eaten raw or lightly cooked molluscan shellfish recently and who show signs of septicemia should be promptly evaluated for treatment, even before the specific cause is determined. Tetracycline with an aminoglycoside has been recommended as the antibiotic treatment of choice for *Vibrio vulnificus* infections.[4,5]

One set of the four booklets on seafood safety for high-risk individuals is available to health professionals free of charge from: FDA, Seafood Brochures, HFI-40, 5600 Fishers Lane, Rockville, MD 20857. They can be photocopied.

FDA has also set up a toll-free seafood hot line to answer consumers' questions on buying, handling, storing, and cooking seafood. The number is (1-800) FDA-4010. Those calling from Washington, D.C., should dial (202) 205-4314. Public affairs specialists are available from 12 noon to 4 p.m. Eastern time. An automated hotline and fax service are available at all times.

References

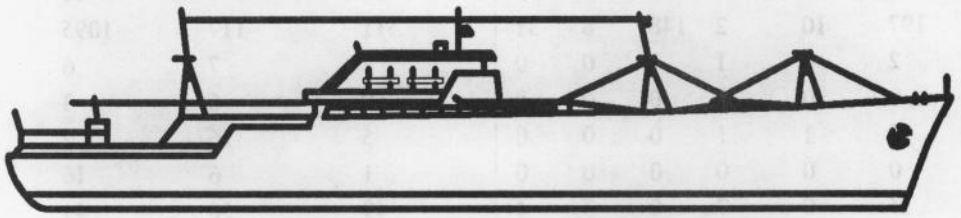
1. Klontz KC et al. The raw oyster consumer — a risk taker? Use of the Behavioral Risk Factor Surveillance System. Epidemiology 1991;2:437-440.
2. Janda JM, Bryant RG. Pathogenic *Vibrio* spp.: An organism group of increasing medical significance. Clin Micro Newsletter 1987;9:49-53.
3. Tacket CO et al. Clinical features and an epidemiological study of *Vibrio vulnificus* infections. J Infect Dis 1984;149:558-561.
4. Bowdre JH, Hull JH, Cocchetto DM. Antibiotic efficacy against *Vibrio vulnificus* in the mouse: superiority of tetracycline. Pharmacol Exp Ther 1983;225:595-8.
5. Morris JG Jr, Tenney JH, Drusano GD. In vitro susceptibility of pathogenic vibrio species to norfloxacin and six other antimicrobial agents. J Antimicrob Chemother 1985;28:442-5.

Reprinted from FDA Medical Bulletin 1993;(3):6.

Shellfish Sanitation in Virginia*

The Virginia shellfish industry must meet both the requirements of the National Shellfish Sanitation Program (NSSP), and additional requirements of the Virginia Department of Health (VDH).

To assure that Virginia shellfish are not contaminated by pollutants,† the Virginia Department of Health, Division of Shellfish Sanitation (DSS) carries out the following program elements:



- **Shoreline Survey:** Once every six years, on average, the VDH inspects for pollution problems virtually all of the entire watershed draining to the shellfish growing areas in non-sewered areas, amounting to 6,931 properties in 1992.
- **Seawater Sampling:** Seawater samples are collected and evaluated monthly in shellfish growing areas to assure that unsafe levels of bacteria do not occur in the approved harvest areas; these totalled 25,208 samples in 1992.
- **Computer Modeling:** A computer modeling program determines the proper size of closed harvest areas needed around sewage treatment plants, marinas and other point source discharges of similar concern.
- **Growing Area Classification:** Using the data generated by the shoreline survey, the seawater sampling, and the computer modeling programs, shellfish growing areas are completely evaluated yearly and a determination is made to certify or condemn each area.
- **Toxic Substances Analysis:** Whole live shellfish are collected twice a year from representative shellfish growing areas throughout Virginia, and are analyzed for pesticides, toxic chlorinated hydrocarbons like PCBs, and heavy metals; 124 samples were collected in 1992.
- **Biotoxin Monitoring:** There has never been a reported problem in the Chesapeake Bay or along the Virginia coastline due to biotoxins in Virginia seafood arising from toxic algal blooms. Nevertheless, the VDH initiated a biotoxin monitoring program late in 1992. This program involves both the analysis of shellfish meat samples from strategic sampling locations and also frequent microscopic inspection of seawater samples for potential toxic algal blooms.
- **Shellfish Plant Inspection:** All shellfish plants in Virginia must be certified by VDH, and must meet the sanitary and construction requirements of the NSSP. VDH inspects all plants at least once a month, amounting to 2,083 inspections during 1992.
- **Miscellaneous In-Plant Samples:** Potable water used in processing shellfish is tested monthly at all plants, for a total of 3,762 analyses in 1992; 1,164 shellfish meat samples were also collected and analyzed microbiologically to assure their safety and quality.

The Virginia Marine Resources Commission (VMRC) maintains night and day patrols to prevent the illegal harvesting of shellfish from condemned areas, thus ensuring that shellfish harvested in Virginia come from approved areas. Once harvested, the shellfish for public consumption must be taken immediately to a dealer inspected and certified by the VDH, which ensures strict sanitary handling of the shellfish. After the product is shipped to Virginia markets, it is inspected by either the Virginia Department of Agriculture at the retail level, or by the local VDH restaurant inspectors.

Submitted by: Robert E. Croonenberghs, Ph.D., Director, Division of Shellfish Sanitation, Virginia Department of Health

†Vibrios are normal inhabitants of estuarine waters and are not considered pollutants.

Second World Conference on Injury Control

The Centers for Disease Control and Prevention (CDC) and 12 public and private organizations will cosponsor the Second World Conference on Injury Control during May 20-23, 1993, in Atlanta. The theme of the conference is "Injury Control--What Works." The conference will address such issues as transport injury, occupational injury, home and leisure injury, intentional injury, and acute-care and rehabilitation systems. Sessions will highlight the injury prevention and control needs of children and the elderly, the development of safe communities, and injuries among persons living in developing countries. Additional information about the conference is available from the Association for the Advancement of Automotive Medicine, 2340 Des Plaines Avenue, Suite 106, Des Plaines, IL 60018; telephone (708)390-8927; fax (708) 390-9962.

Eighth National Conference on Chronic Disease Prevention and Control

The Centers for Disease Control and Prevention (CDC), the Association of State and Territorial Health Officials, and the Association of State and Territorial Chronic Disease Program Directors will cosponsor the Eighth National Conference on Chronic Disease Prevention and Control on November 17 through November 19, 1993, in Kansas City, Missouri. The Kansas Department of Health will host the conference, which is open to the public. The conference will emphasize interactions among federal, state, and local health departments; voluntary health agencies; and professional organizations.

Additional information is available from CDC's National Center for Chronic Disease Prevention and Health Promotion, Mailstop K-43, 4770 Buford Highway, NE, Atlanta, GA 30341-3724; telephone (404) 488-5390; fax (404) 488-5962.

Cases of Selected Notifiable Diseases, Virginia, March 1 through March 31, 1993.*

Disease	Total Cases Reported This Month						Total Cases Reported to Date in Virginia		
		Regions							
	State	NW	N	SW	C	E	This Yr	Last Yr	5 Yr Avg
AIDS	390	43	85	41	122	99	564	139	134
Campylobacteriosis	29	10	4	4	6	5	71	88	89
Gonorrhea†	488	-	-	-	-	-	1501	4986	4209
Hepatitis A	13	0	7	2	2	2	41	26	51
Hepatitis B	14	3	1	4	2	4	35	49	61
Hepatitis NANB	8	1	3	2	2	0	11	7	11
Influenza	197	10	2	148	6	31	511	117	1095
Kawasaki Syndrome	2	0	1	1	0	0	4	7	6
Legionellosis	0	0	0	0	0	0	0	6	3
Lyme Disease	2	1	1	0	0	0	5	16	7
Measles	0	0	0	0	0	0	1	6	16
Meningitis, Aseptic	14	0	7	0	3	4	49	50	44
Meningitis, Bacterial‡	12	3	4	0	3	2	17	41	44
Meningococcal Infections	5	0	1	0	2	2	11	21	17
Mumps	1	0	1	0	0	0	10	18	19
Pertussis	2	0	2	0	0	0	3	2	5
Rabies in Animals	17	5	4	3	3	2	72	47	61
Reye Syndrome	0	0	0	0	0	0	0	0	0
Rocky Mountain Spotted Fever	0	0	0	0	0	0	0	0	0
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	40	7	13	5	4	11	169	172	214
Shigellosis	27	7	9	0	3	8	68	35	79
Syphilis (1° & 2°)†	58	1	2	5	6	44	145	167	183
Tuberculosis	115	8	34	10	30	33	115	99	87

Localities Reporting Animal Rabies: Augusta 1 ferret; Brunswick 1 skunk; Fairfax 1 raccoon, 1 skunk; Fauquier 1 raccoon; Floyd 1 fox, 1 raccoon; Hanover 1 raccoon; King William 1 skunk; Loudoun 1 raccoon; Louisa 1 raccoon; Middlesex 1 raccoon; Page 1 skunk; Powhatan 1 skunk; Prince William 1 raccoon; Rappahannock 1 skunk; Washington 1 skunk.

Occupational Illnesses: Asbestosis 6; Carpal Tunnel Syndrome 83; Coal Workers' Pneumoconiosis 14; Lead Poisoning 6; Loss of Hearing 15; Mesothelioma 2; Repetitive Motion Disorder 8.

*Data for 1993 are provisional.

†Total now includes military cases to make the data consistent with reports of the other diseases.

‡Other than meningococcal.

Published monthly by the
VIRGINIA HEALTH DEPARTMENT
Office of Epidemiology
P.O. Box 2448
Richmond, Virginia 23218

Telephone: (804) 786-6261

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Bulk Rate
U.S. POSTAGE
PAID
Richmond, Va.
Permit No. 936