LOUISIANA MONTHLY MORBIDITY — LHSRSA

DISEASES REPORTED DURING THE MONTH OF NOVEMBER, 1973 **BY PARISH OF RESIDENCE**

OYSTER RELATED HEPATITIS

From the Section of Epidemiology

On Thursday, November 1, Dr. Charles T. Caraway, State Epidemiologist, received a call from Dr. Calvin Klein, Jr., Viral Diseases Section, CDC, Atlanta, Georgia, informing him of two outbreaks of infectious hepatitis, tentatively attributed to "contaminated" Louisiana oysters. On this same day an intensive investigation into the source of these outbreaks began in Louisiana. This report deals with the preliminary findings of that investigation.

Hepatitis Outbreak, Calhoun, Georgia

Between October 16 and 25, 15 cases of hepatitis were reported from the town of Calhoun, Georgia. Four of these cases were examined for the presence of Australia antigenemia and found to be Au Agn negative (indicative of hepatitis A). An

BUREAU OF VITAL STATISTICS **DIVISION OF HEALTH MAINTENANCE AND AMBULATORY PATIENT SERVICES**

Prepared by: DIVISION OF TABULATION & ANALYSIS	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTIOUS	INFECTIOUS AND SERUM HEPATITIS	TUBERCULOSIS, PULMONARY	MENINGOCOCCAL INFECTIONS	PERTUSSIS	POLIOMYELITIS, PARALYTIC	RABIES IN ANIMALS	RHEUMATIC FEVER	RUBELLA *	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY
TOTAL TO DATE 1972	88	5	13	9	678	553	45	43	0	47	13	100	288	7	200	6	104	16019	805
TOTAL TO DATE 1973	108	1	17	4	862	488	49	12	0	51	25	100	216	6	226	4	87	21442	757
TOTAL THIS MONTH	6	0	1	0	113	63	6	0	0	8	2	0	5	0	11	0	0	1789	50
ACADIA					4	2												12	
ALLEN																		3	
ASCENSION																		1	
ASSUMPTION					1														
AVOYELLES						1							1					9	
BEAUREGARD																			
BIENVILLE																		1	
BOSSIER					2	1				1								8	1
CADDO					6	4												167	4
CALCASIEU					2								2		1			93	
CALDWELL																		1	
CAMERON						1													
CATAHOULA																			
CLAIBORNE					1													1	2
CONCORDIA						1												3	
DESOTO																		8	1
EAST BATON ROUGE					11	2												50	2
EAST CARROLL					2													14	
EAST FELICIANA																		1	
EVANGELINE																		4	
FRANKLIN						1												5	
GRANT																		8	
IBERIA						1												11	2
IBERVILLE																		4	

*Includes Rubella, Congenital Syndrome.

NOVEMBER, 1973

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JACKSON					1													3	
JEFFERSON			1		16	2	1						1		5			93	10
JEFFERSON DAVIS																		13	
LAFAYETTE	2				9													30	
LAFOURCHE																		13	
LASALLE																			
LINCOLN					1	2												53	
LIVINGSTON																		1	
MADISON					1													9	
MOREHOUSE																		13	
NATCHITOCHES					1	1												12	1
ORLEANS	3				22	20	3				2				2			702	22
OUACHITA					7	7				6					1			120	
PLAQUEMINES					2	1												4	1
POINTE COUPEE																		1	
RAPIDES					3	3												91	
RED RIVER																		1	
RICHLAND						1												11	
SABINE																			2
ST. BERNARD					1	1												6	
ST. CHARLES					1													7	
ST. HELENA					2													1	
ST. JAMES						1												1	
ST. JOHN													1					4	
ST. LANDRY					1	2												23	
ST. MARTIN	1				1													12	
ST. MARY																		12	
ST. TAMMANY					8													18	
TANGIPAHOA					3	5												21	
TENSAS																		2	
TERREBONNE					2		1											10	
UNION																		8	
VERMILION					2	2	1											6	1
VERNON																		51	
WASHINGTON																		3	
WEBSTER						1												13	
WEST BATON ROUGE																		4	
WEST CARROLL															2			4	
WEST FELICIANA																			
WINN										1								9	1
OUT OF STATE																			

From January 1 through November 30, the following cases were also reported: 3-Actinomycosis; 6-Brucellosis; 2-Malaria (contracted outside the U.S.A.).

epidemiologic investigation conducted by the Georgia Department of Human Resources, revealed that 13 of the 14 ill persons had attended a seafood dinner at a local club 4 weeks earlier on September 21 and 22. The fifteenth person, a 14 year old girl, had not attended the dinner, but ate raw oysters brought home from the dinner by her parents. Food histories obtained from those people who had attended the dinner showed a definite association between a history of raw oyster consumption and clinic hepatitis.

Hepatitis Outbreak, Houston, Texas

On October 31, 1973, the Houston City Health Department began receiving reports of cases of hepatitis A among employees of several Houston-based industrial companies. A common denominator to these cases soon became apparent. Each of the employees had consumed one or more meals at a particular Houston restaurant during a 1 to 2 month period prior to onset of their illness. Food histories from 61 cases and controls again implicated raw oysters on the half-shell as the vehicle of infection.

A vigorous hepatitis surveillance program was initiated in the Houston area and as of this date has identified in excess of 250 cases of hepatitis attributed to consumption of raw oysters. The majority of these cases consumed raw oysters on the half-shell at one Houston restaurant between September 20 and October 5. Additional cases, however, have developed among persons who ate raw oysters during this same period of time at 10 additional Houston restaurants.

Figure 1

DISTRIBUTION OF 79 SACKS OF OYSTERS HARVESTED BY BOAT A* AND BOAT B* ON SEPTEMBER 16

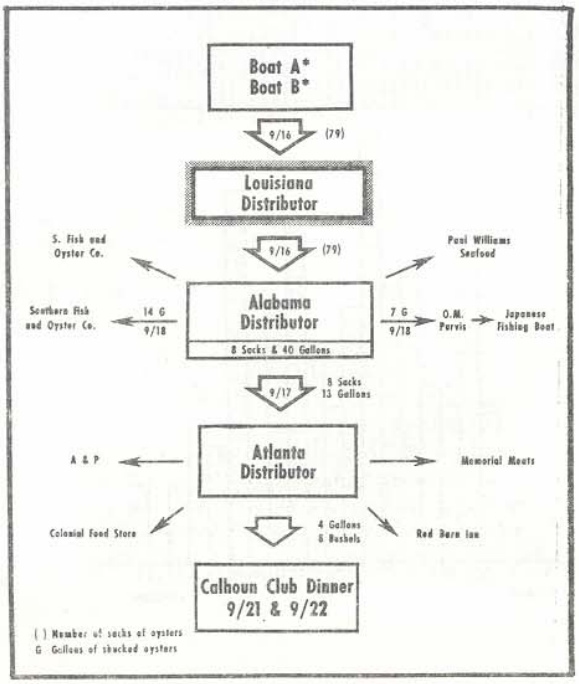
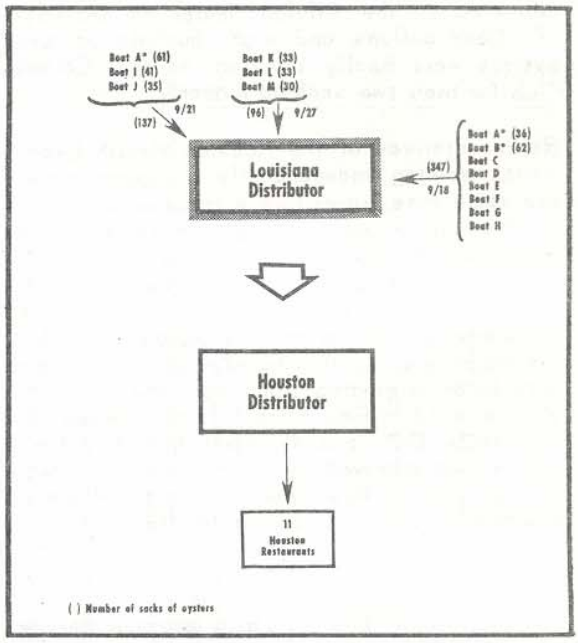


Figure 2

ORIGIN OF OYSTERS SUPPLIED BY THE HOUSTON DISTRIBUTOR TO HOUSTON RESTUARANTS IN SEPTEMBER AND EARLY OCTOBER



Were these Two Outbreaks Related?

Since 1955, when Swedish investigators first recognized shellfish as a potential vehicle for transmission of infectious hepatitis, only a handful of documented outbreaks of shell fish associated hepatitis have been reported (the exact number for this country is 4 such outbreaks). Therefore, in view of their rarity it would be unlikely for two outbreaks of oyster associated hepatitis to occur simultaneously in 1973 on the basis of mere coincidence. When one takes into account a known common source for the oysters consumed in both outbreaks (See below) such a coincidental association becomes even more improbable.

How Was the Common Source Identified?

Representatives of the Georgia Department of Human Resources met with members of the club involved in the Calhoun outbreak. They learned that oysters served by the lodge on September 21 and 22 had been obtained from an Atlanta seafood dealer. Further investigation revealed that these had originated as a shipment of 79

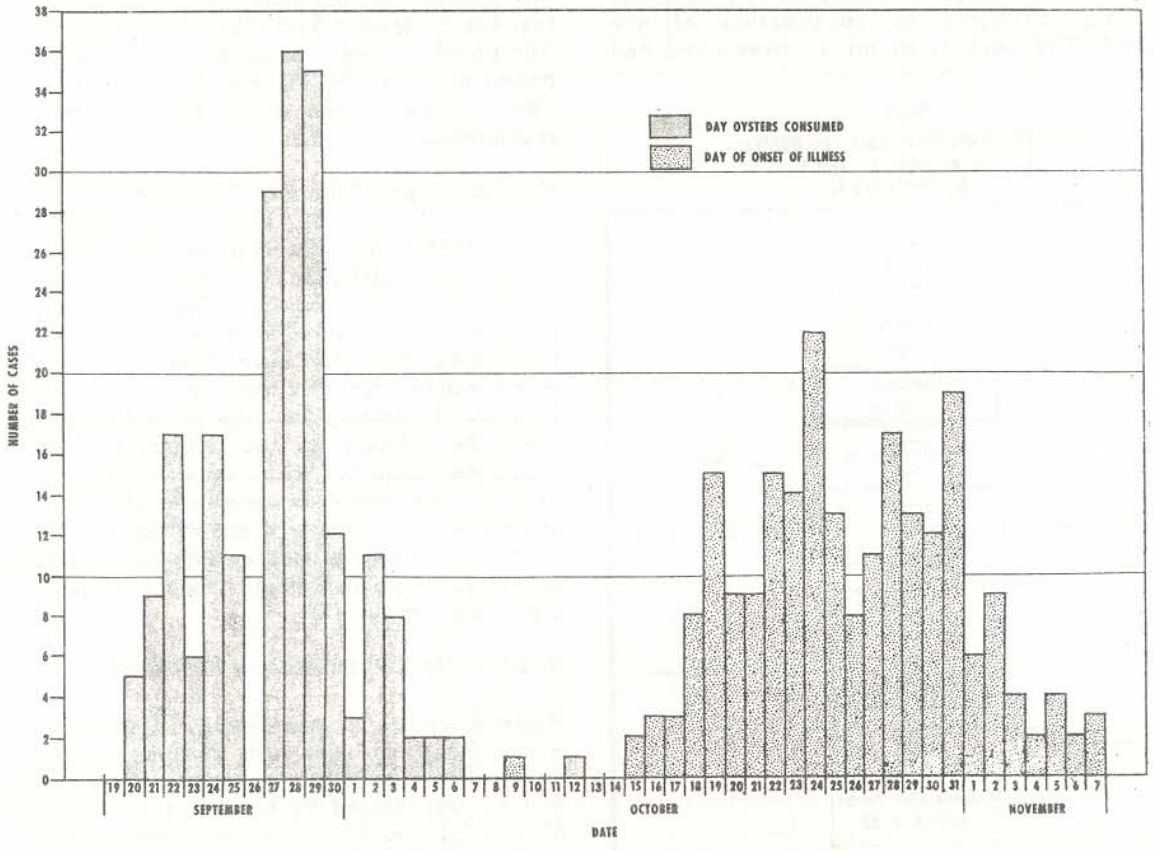
sacks of oysters delivered by a Louisiana distributor on September 16 to an intermediary distributor in Alabama (See Figure 1). Seventy-one sacks of these oysters were shucked and sold by the gallon. Thirteen of these gallons plus the eight unshucked sacks of oysters were delivered to the Atlanta dealer on September 17. Four gallons and eight bushels of these oysters were finally supplied to the Calhoun Club for their two seafood dinners.

Representatives of the Houston Health Department, working independently at approximately the same time, identified a Houston distributor as the sole supplier of oysters served by the implicated Houston restaurant. During the period September 19 through October 1 (essentially the period of time during which hepatitis cases had consumed oysters at this restaurant, (Graph 1) the majority of oysters handled by this Houston distributor originated from the same Louisiana distributor identified in the Atlanta outbreak (See Figure 2). Only one shipment from a different dealer was received by the Houston distributor during this critical period. This shipment, however, arrived two days after the first cases had consumed oysters (See Graph 1). Furthermore, the Houston distributor's records indicated that none of these oysters (which are larger, more expensive oysters) were sold to the Houston restaurants. Instead, these were shucked and sold as gallon stock to other Texas suppliers.

Investigators in Louisiana carefully reviewed sales records of the Louisiana distributor and have been able to confirm, by date as well as number of sacks, all shipments identified by Georgia and Texas investigators in their epidemiologic studies. In addition to this, they have been able to show that three crucial shipments (September 16, 18, and 21) from this distributor included oysters harvested by two boats, Boat A and Boat B (See Figures 1 and 2) and that these two boats worked closely (essentially as a single unit) during this period of time. The owners of these boats have participated in intensive interviews by members of this agency and have identified the source of the oysters making up these 3 critical shipments as certain approved waters East of the Mississippi River. The Engineering Division of the LHSRSA, after an intensive investigation of

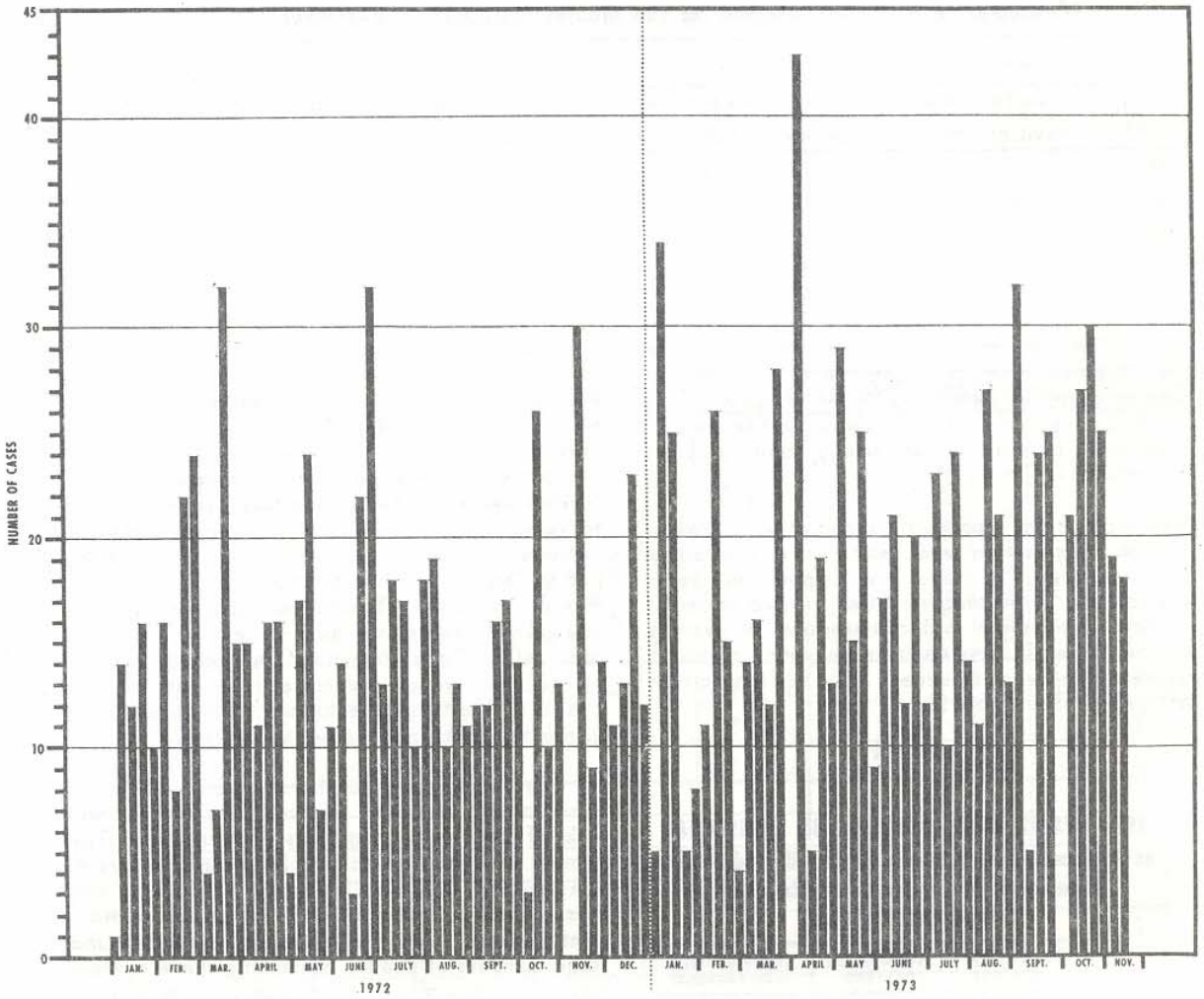
Graph 1

CASES OF INFECTIOUS HEPATITIS RELATED TO RAW OYSTER CONSUMPTION
HOUSTON, TEXAS, 1973



Graph 2

REPORTED CASES OF HEPATITIS IN LOUISIANA
BY WEEK OF REPORT
JANUARY 1972 - NOVEMBER 24, 1973



these waters, has been unable to identify any evidence of significant pollution in these areas.

The Extent of the Outbreak

To the best of our knowledge only Texas and Georgia have outbreaks of hepatitis that have been associated with consumption of Louisiana oysters. The Georgia outbreak appears to be limited to the 15 reported from Calhoun County. Texas, on the other hand, is experiencing a more extensive outbreak in size as well as geographic distribution. In addition to the 250+ cases of hepatitis attributed to consumption of Louisiana oysters at Houston restaurants, at least 10 additional cases (occurring in various areas of Texas) have been attributed to oysters supplied by Louisiana oyster dealers.

Louisiana's own experience is much more difficult to evaluate. One might judge from the number of cases currently being reported, that at least no outbreak of major proportion is occurring at this time. (See Graph 2). On the other hand a disturbingly high percentage of cases reported during September, October, and November have histories of oyster consumption during a 2 month period prior to onset of their illness. These 27% (29 of 106 cases from whom information was available) are in marked contrast to the 7.5% of randomly selected families who reported consumption of oysters during the months of September through November (See Table 1).

This survey was conducted by the Epidemiology Section to determine to what extent Louisiana's

Table 1

OYSTER CONSUMPTION SURVEY

(Consumption Histories Obtained for the Months September - November, 1973)

	NEW ORLEANS		ALEXANDRIA		SHREVEPORT		ST. FRANCISVILLE		TOTAL	
ATE OYSTERS	NUMBER OF FAMILIES	NUMBER OF PERSONS	NUMBER OF FAMILIES	NUMBER OF PERSONS	NUMBER OF FAMILIES	NUMBER OF PERSONS	NUMBER OF FAMILIES	NUMBER OF PERSONS	NUMBER OF FAMILIES	NUMBER OF PERSONS
YES	6	11	1	2	1	1	0	0	8	14
NO	27	112	22	69	24	63	25	88	98	332
TOTAL	33	173	23	71	25	64	25	88	106	346
PERCENT	18.8	8.9	4.3	2.8	4.0	1.6	0.0	0.0	7.5	4.0

population consumes oysters so that this might be compared with the frequency of consumption among cases of hepatitis. In no instance could we find a frequency of consumption in the general population as high as that among reported cases of hepatitis.

Although this apparent association between oyster consumption and hepatitis in Louisiana is disturbing, it does not appear to be a particularly large problem when viewed in terms of total production and consumption of oysters in the state. During an average year Louisiana oystermen harvest in excess of ½ million barrels of oysters (See Table 2).

Table 2

1971 OYSTER YIELD (BARRELS) IN LOUISIANA as Determined by a Survey of the United States Department of Commerce and Industry (Marketing Division)

	RAW STOCK OYSTERS	STEAM STOCK OYSTERS	AVERAGE YIELD (LBS/BARRELS)
JANUARY	33,103	41,521	16.40
FEBRUARY	38,069	43,126	16.43
MARCH	48,622	67,453	16.51
APRIL	47,383	57,614	16.31
MAY	34,203	34,180	15.89
JUNE	26,733	↑	13.98
JULY	25,158	Not Harvested	12.34
AUGUST	31,444	↓	11.33
SEPTEMBER	49,059		10.53
OCTOBER	36,140	4,960	10.90
NOVEMBER	30,011	2,983	13.05
DECEMBER	33,868		14.01

These data do not include many additional barrels which are harvested and shipped out-of-state as sack oysters. Although no good information is available as to the number of barrels of raw stock oysters that are consumed raw within the state, this number is in all probability quite high, particularly in the southern areas of the state where these are most readily accessable.

Plaquemines Parish, for example, is a major producer of Louisiana oysters which also consumes raw oysters in quantities as large as any parish in the state. For this reason a careful investigation has been undertaken in this parish to determine the extent of its recent hepatitis activity. All of the practicing physicians in the parish have been contacted by Plaquemines Parish Health Department personnel and questioned regarding any cases of hepatitis they might have diagnosed during the months of August through November. To date only 3 cases of hepatitis are known to have occurred in the parish during this period of time.

In light of these data there appears to be an association between oyster consumption and risk of developing hepatitis in our state. The number of cases which can be related to oyster consumption, however, is small. Therefore, one must conclude that either the supply of oysters contaminated with hepatitis is small or the large numbers of people consuming these oysters have an unusually high degree of immunity to hepatitis.