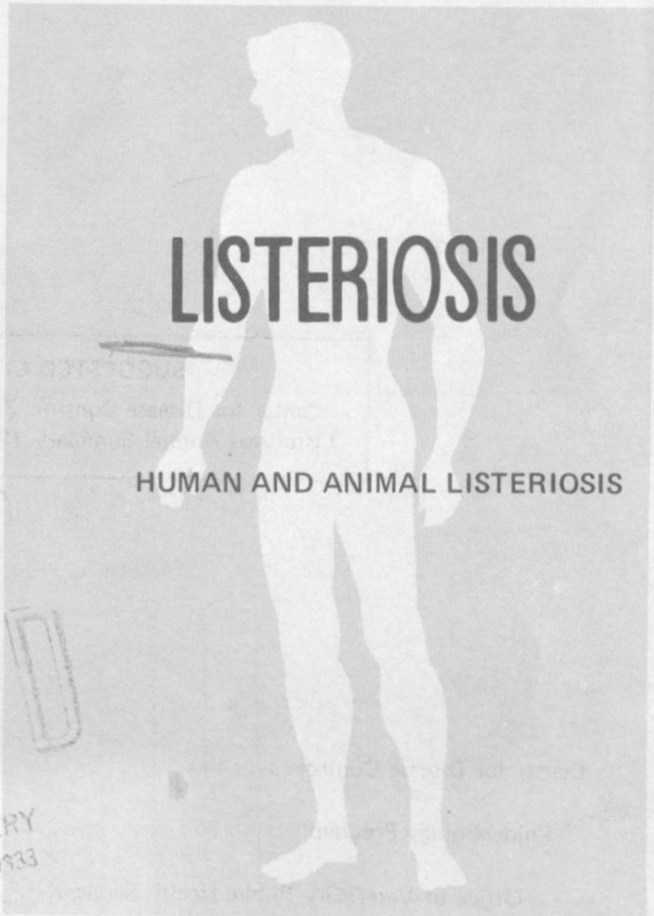
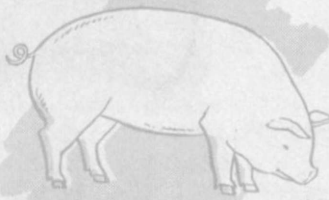
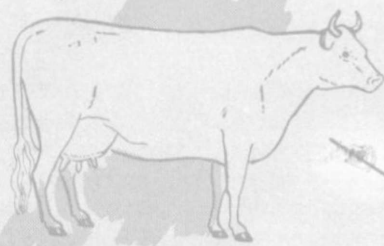


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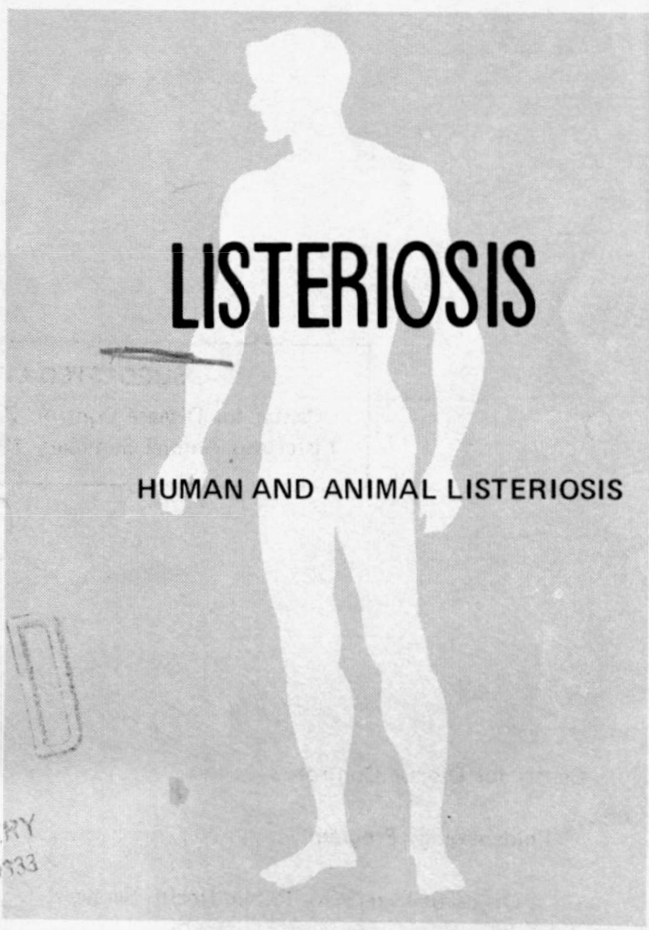
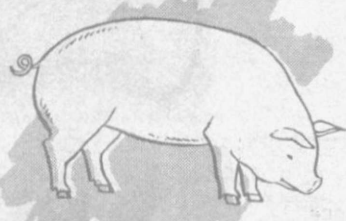
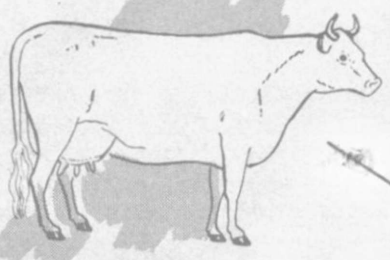
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LISTERIOSIS
ANNUAL SUMMARY 1971
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PREFACE

Information summarized in this report is intended primarily for those responsible for disease control activities. Anyone desiring to quote this report should verify the data at its original source for accuracy and interpretation.

Contributions to the Surveillance Report are most welcome. Please address to:

Center for Disease Control
Attn: Office of Veterinary Public Health Services
Epidemiology Program
Atlanta, Georgia 30333

SUGGESTED CITATION

Center for Disease Control: Zoonoses Surveillance,
Listeriosis Annual Summary 1971, issued August 1972

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I. INTRODUCTION

In 1971, 104 cases of listeriosis were reported to the Center for Disease Control by 31 states. However, listeriosis is not one of the diseases reported by State and Territorial Epidemiologists to CDC. Information on the cases summarized in this report was obtained from several sources, including State Health Departments that elect to report cases of listeriosis to the CDC, and by reports of isolates of Listeria monocytogenes received for confirmation and serotyping by the Bacterial Immunology Unit, Laboratory Division, CDC. In addition, the various State Health Departments were contacted and asked to report the number of isolates of L. monocytogenes from humans obtained by their laboratory in 1971.

L. monocytogenes was isolated from all persons included as cases in this report, but information regarding the nature and severity of symptoms and signs is lacking in some cases.

II. DISTRIBUTION BY STATES (Table I)

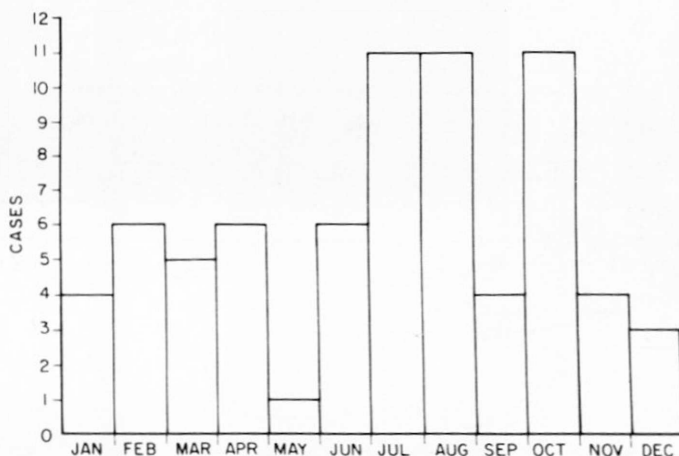
In 1971, the greatest number of cases (10) were reported from California, followed by New York with 8, and Illinois and Tennessee with 7 each.

Since reporting began in 1967, 39 states, the District of Columbia and Puerto Rico have reported 472 cases of listeriosis. No cases have been reported from 11 states since collection of data began in 1967. New York (44), California (41), Texas (35), Illinois (31), and Louisiana (31) accounted for 182 of the 472 cases recorded (39%).

III. TEMPORAL DISTRIBUTION (Figures 1 and 2)

The month of onset or the month in which culture was taken was reported for 72 of the 1971 cases. The largest number of cases by month (11) were reported in July, August, and October; the 37 cases that occurred from July through October accounted for 51 percent of the cases for which onsets were known. As noted in previous years the higher percentage of cases occurred in summer and fall; of the 296 cases for the period 1968-1971 for which the onset date was given, 132 (45%) occurred from July through October.

Figure 1 HUMAN LISTERIOSIS, BY MONTH OF ONSET,* UNITED STATES, 1971



* MONTH OF CULTURE USED IF ONSET DATE WAS NOT GIVEN
 MONTH OF ONSET OR CULTURE WAS REPORTED FOR 72 CASES

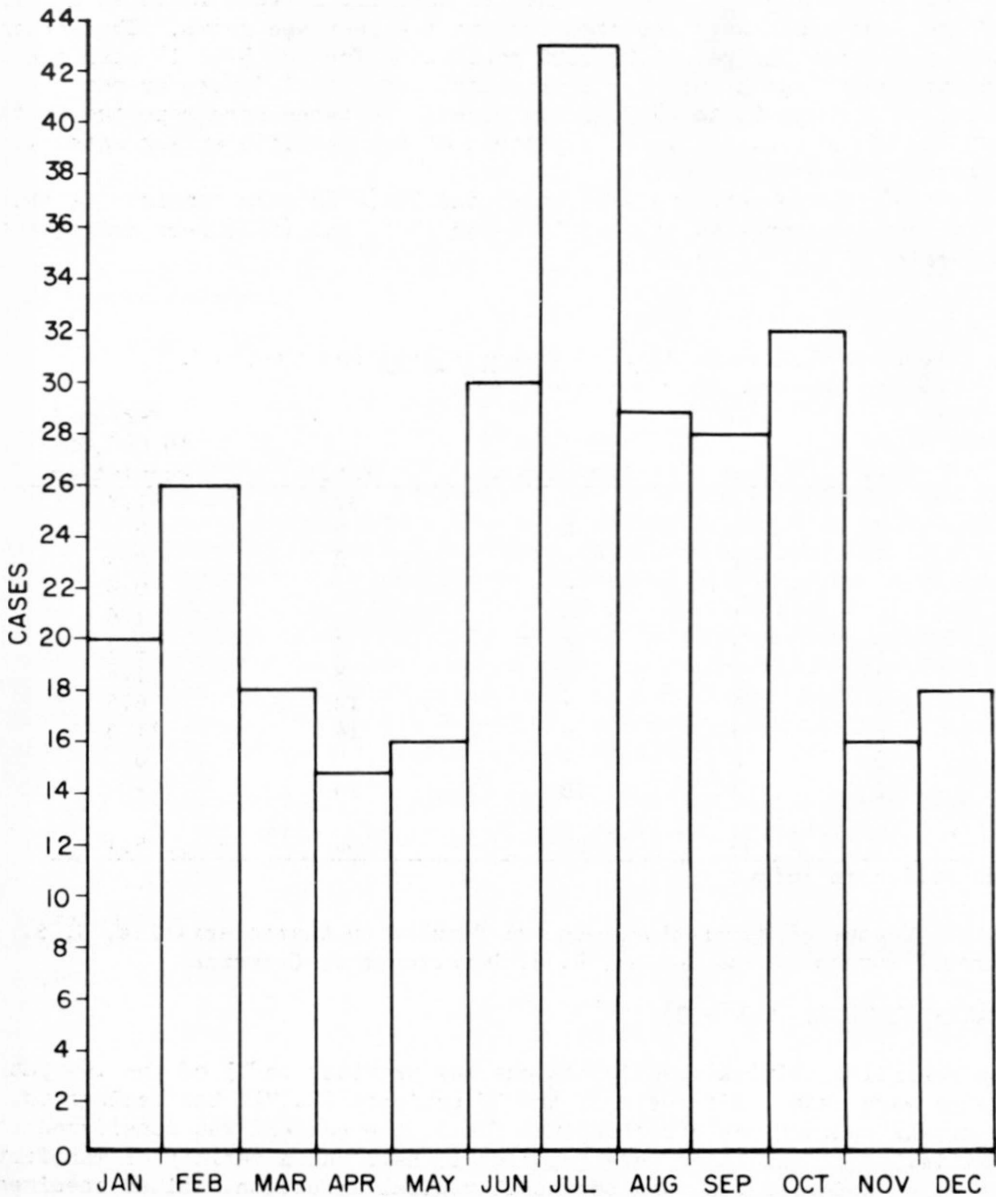
TABLE 1
HUMAN LISTERIOSIS, UNITED STATES, 1967-1971

STATE	1967	1968	1969	1970	1971	TOTAL
Alabama	2	1	2	0	0	5
Alaska	1	0	0	0	0	1
Arizona	2	0	0	0	5	7
Arkansas	1	2	0	1	1	5
California	11	8	0	12	10	41
Colorado	2	2	3	2	5	14
Connecticut	0	2	0	3	4	9
Delaware	0	0	2	0	1	3
District of Columbia	0	0	1	0	1	2
Florida	0	3	10	7	4	24
Georgia	2	4	4	5	5	20
Hawaii	0	1	1	0	1	3
Idaho	0	0	0	0	0	0
Illinois	3	14	3	4	7	31
Indiana	0	3	0	3	1	7
Iowa	0	1	0	0	0	1
Kansas	1	0	0	1	0	2
Kentucky	1	2	0	2	2	7
Louisiana	4	3	6	14	4	31
Maine	0	1	0	0	0	1
Maryland	0	1	0	0	2	3
Massachusetts	1	7	3	2	3	16
Michigan	0	8	8	5	3	24
Minnesota	1	5	5	6	1	18
Mississippi	0	0	0	0	0	0
Missouri	0	2	0	1	0	3
Montana	0	0	0	0	1	1
Nebraska	0	0	0	0	0	0
Nevada	0	0	0	0	0	0
New Hampshire	0	0	0	0	0	0
New Jersey	1	3	3	5	1	13
New Mexico	0	0	0	0	0	0
New York	4	4	11	17	8	44
North Carolina	4	4	1	0	0	9
North Dakota	1	0	0	1	0	2
Ohio	2	5	2	3	5	17
Oklahoma	0	0	0	1	1	2
Oregon	1	1	2	2	1	7
Pennsylvania	6	4	3	2	6	21
Puerto Rico	0	0	4	0	0	4
Rhode Island	0	0	0	0	0	0
South Carolina	1	0	0	0	0	1
South Dakota	0	0	0	0	0	0
Tennessee	1	2	0	0	7	10
Texas	5	10	10	6	4	35
Utah	0	0	0	0	0	0
Vermont	0	0	0	0	0	0
Virginia	0	0	0	3	1	4
Washington	0	2	2	2	3	9
West Virginia	0	0	0	0	2	2
Wisconsin	2	0	3	3	4	12
Wyoming	0	0	0	0	0	0
Totals	60	105	90•	113	104	472•

•Includes 1 case where the state was unknown.

Source: Case information submitted to CDC .

Figure 2 HUMAN LISTERIOSIS, BY MONTH OF ONSET,
UNITED STATES, 1968-1971*



* MONTH OF CULTURE USED IF ONSET DATE WAS NOT GIVEN.

IV. AGE AND SEX DISTRIBUTION (Table 2)

In 1971 the highest attack rate was in persons under 1 year of age (infants), 91.8 per 10,000,000 population. Of the 32 cases in infants, 27 were in infants less than 1 month of age. No cases were reported for the 1-4 year age group. The attack rate increased from 0.5 persons per 10,000,000 population for the 5 to 14 year age group with each subsequent age group to a peak attack rate of 11.3 persons per 10,000,000 population for the 55 to 64 year age group. No cases were reported in the 75 year and over age group (Table 2). This pattern of age specific attack rates is similar to the pattern of previous years.

In 1971, 44 (53%) of the patients were male, and 39 (47%) were female. Of the 285 cases for whom sex was reported between 1968 and 1971, 151 (53%) were males, and 134 (47%) were females.

Table 2 Persons from whom Listeria monocytogenes was isolated, by age and sex, United States, 1971

Age Group (years)	Male	Female	Sex Unknown	Total	Persons/ 10,000,000 Population
<1	14	15*	3	32	91.8
1-4	0	0	0	0	0
5-14	1	1	-	2	0.5
15-24	1	1	-	2	0.6
25-34	3	1	-	4	1.6
35-44	2	3	-	5	2.2
45-54	5	3	-	8	3.4
55-64	8	4	-	12	6.5
65-74	8	6	-	14	11.3
75 and over	0	0	-	0	0
Age Unknown	2	5	18	25	-
TOTAL	44	39	21	104	5.1

* includes one stillborn infant

Population Data : 1970 Census of Population, General Population Characteristics, U. S. Summary, PC(D-B1 Series) Bureau of the Census, U. S. Department of Commerce

V. CLINICAL MANIFESTATIONS (Table 3)

Information regarding clinical manifestations was provided on 75 of the 104 patients from whom isolates were made. Fifty-six of the 75 patients (74.7%) had meningitis. (If the source of the culture was cerebrospinal fluid, the patient was considered to have had meningitis.) The remainder were reported to have had a variety of manifestations including septicemia, endocarditis, and perinatal vaginal infection. Blood specimens from 25 additional persons on whom no clinical information was provided yielded L. monocytogenes on culture.

One patient, a veterinarian, developed a maculopapular skin rash on his arms several days after delivering a stillborn calf. The patient developed no other symptoms and recovered following treatment with antibiotics. This was the only case reported in which contact with an animal with symptoms of listeriosis was indicated, but exposure history was often incomplete. Other cases of cutaneous listeriosis associated with exposure during bovine obstetrical procedures have been reported in the literature (1, 2).

Table 3 Clinical Manifestations in 75 Patients from Whom Listeria monocytogenes was Isolated*, United States, 1971

Manifestation	No. of Patients	Manifestation	No. of Patients
Meningitis	56	Brain abscess	1
Vaginal infection	4	Stillbirth	1
Pneumonitis	3	Premature labor	1
Pharyngitis	3	Abortion	1
Pleuritis	2	Uterine infection	1
Endocarditis	2	Acute pancreatitis	1
Septicemia	2	Skin rash	1
Cholecystitis	1	Peritonitis	1
Hepatic abscess	1	Gastrointestinal bleeding	1

*No information available on 29 patients. Six patients had more than one clinical manifestation.

VI. UNDERLYING ILLNESSES (Table 4)

Of the persons on whom information was obtained regarding the status of health prior to the onset of listeriosis, the majority of cases were in infants in the first 4 weeks of life or in persons who had a serious underlying illness. Of the 77 cases in persons not known to be neonates, 31 occurred in persons reported to have at least one underlying illness. Of the 31 patients reporting underlying illnesses, nine had malignancies, seven had undergone renal transplants, and four had diabetes mellitus. Two persons were reported to be in good health prior to the onset of listeriosis, and no information was provided on the remaining 44.

Although reports of therapy for associated illnesses were incomplete, fourteen persons were reported to have received steroids, ten persons cytotoxic agents, and three persons radiation therapy prior to or at the time of becoming ill with listeriosis. Five patients with underlying illnesses were reported not to have received steroids, cytotoxic agents, or radiation therapy.

Table 4 Underlying Illnesses Reported in 33* Persons From Whom Listeria monocytogenes was Isolated, United States, 1971**

Malignancy	9	Coccidioidomycosis	1
Breast carcinoma	3	Pulmonary fibrosis	1
Lymphosarcoma		Starr-Edwards aortic valve	
(including Hodgkins)	3	insufficiency	1
Leukemias	2	Renal failure	1
Pancreatic carcinoma	1	Osler-Weber-Rendu Syndrome	1
Renal transplant	7	Systemic lupus	1
Diabetes mellitus	4	Emphysema	1
Atherosclerotic heart disease	3	Polymyositis	1
Cirrhosis or alcohol abuse	3	Chronic bronchitis	1
meningitis	2	Congenital biliary atresia	1

* Multiple underlying illnesses were reported in some patients.

** Not included are 27 neonates in whom no underlying illnesses were reported and 44 persons on whom no information was available.

VII. BACTERIOLOGY (Tables 5, 6, 7)

Of the 125 isolates of L. monocytogenes from 99 patients for whom the source of culture was reported, 47 were from blood and 52 from cerebrospinal fluid. Cultures from 12 patients yielded L. monocytogenes from both blood and cerebrospinal fluid. L. monocytogenes was isolated from uterus, vagina, vaginal lochia, or placenta in seven cases. For one infant L. monocytogenes was isolated from blood, liver, umbilical cord, maternal and fetal placenta, and for another infant cultures from blood, CSF, gastric contents, throat and ear yielded L. monocytogenes.

Serotype 4b was isolated most frequently accounting for 38 percent of the 74 isolates typed. The second most frequent serotype identified was 1b, accounting for an additional 31 percent. These two serotypes, 4b and 1b, have been the most frequently reported since 1967 when reporting began.

Table 5 Human Listeriosis Cases, by Type of Material Cultured, United States, 1971 **

Material Cultured	Number	Percent
Blood	47	37.9
CSF	52	41.9
Female Reproductive Tract or placenta	7	5.6
Throat	3	2.4
Pleural Fluid	2	1.6
Skin	2	1.6
Other*	11	8.9
TOTAL	124	99.9

* Includes isolations from tracheal aspirate, umbilical cord, brain, lung, liver, gastric contents, ear, stool, heart and pericardium.

** 99 cases where source of culture was noted of 104 cases reported; multiple isolations were made from 31 patients.

Source: Case information submitted to CDC

Table 6 Human Listeriosis Cases by Infecting Serotype, United States, 1971

Infecting Serotype	No. of Cases	Percent of Total
1*	3	4.1
1a	12	16.2
1b	23	31.1
3b	1	1.4
4*	7	9.5
4b	28	37.8
TOTAL	74	100.1

* Reported by states, subtypes not indicated

Source: Case information submitted to CDC, isolates from 64 of the patients were serotyped by Bacterial Immunology Unit, Laboratory Division, CDC

Table 7 Human Listeriosis Cases by Infecting Serotype, United States, 1967-1971

Infecting Serotype	No. of Cases	Percent of Total
1*	12	3.5
1a	68	19.9
1b	115	33.7
2	2	0.6
3b	7	2.1
4*	15	4.4
4a	2	0.6
4b	111	32.6
4c	1	0.3
4d	7	2.1
5	1	0.3
TOTAL	341	100.1

* No further classification reported

VIII. ANIMAL LISTERIOSIS (Table 8 and Figure 3)

In 1971, the U. S. Department of Agriculture reported 231 cases of cattle listeriosis in 154 herds from 20 states and 125 cases in sheep and goats in 48 herds from 18 states, In addition, four states reported 18 cases of listeriosis in dogs. The cases in cattle, sheep and goats were reported more frequently in the spring (Figure 3), the period when human listeriosis was less frequently reported. The inverse seasonal relationship between the occurrence of animal and human cases has been reported from other countries. For the period 1950-1966 in Germany, Seeliger, *et al.* reported a distinct spring peak in the number of animal infections and a June-September peak in the number of human cases (3).

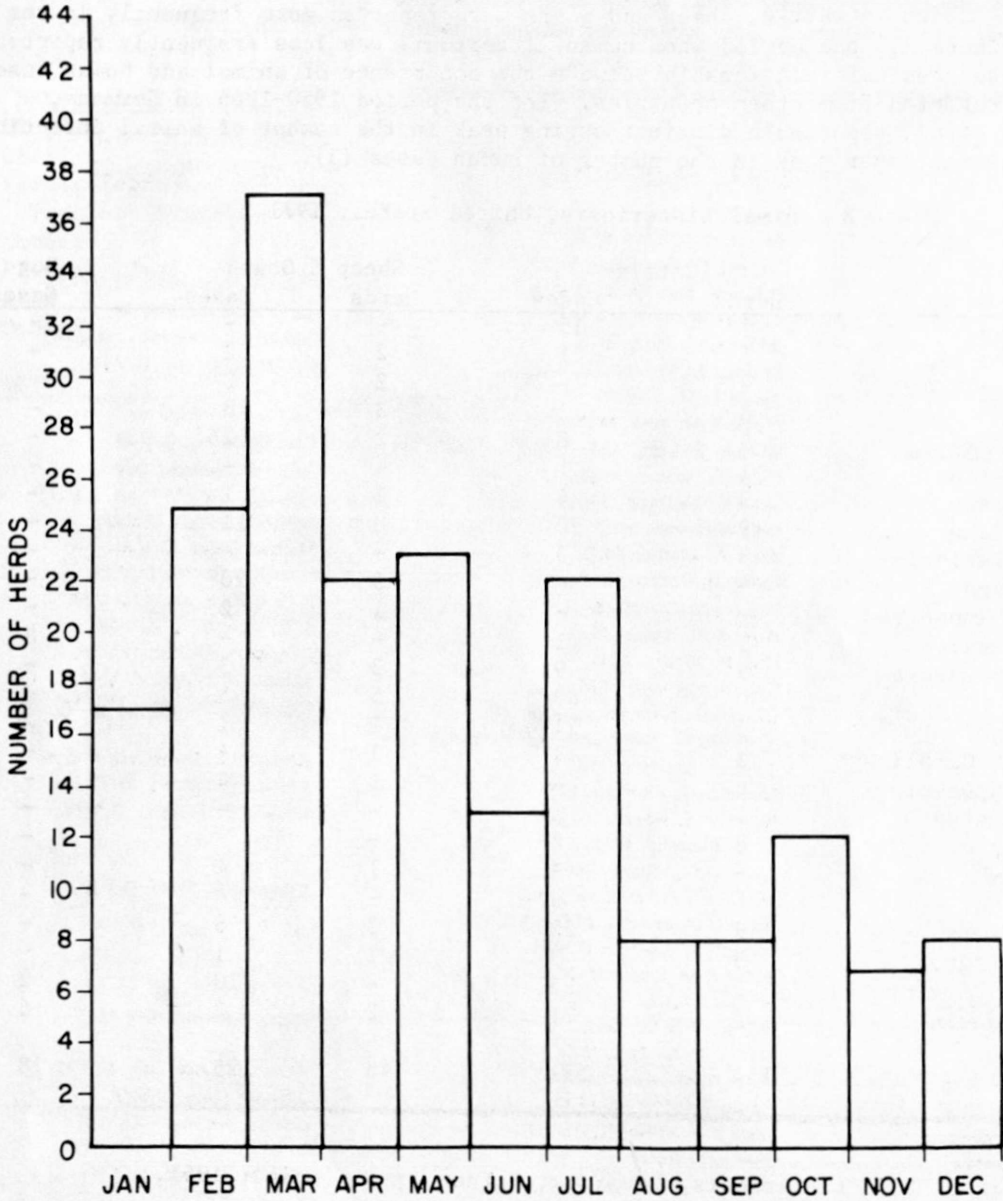
Table 8 Animal Listeriosis, United States, 1971

State*	Cattle		Sheep & Goats		Dog Cases
	Herds	Cases	Herds	Cases	
Arizona	2	15	-	-	-
California	1	1	2	2	-
Connecticut	-	-	2	2	-
Idaho	5	11	3	48	-
Kentucky	5	8	2	2	-
Louisiana	1	1	-	-	-
Maryland	3	4	1	1	-
Michigan	19	20	8	11	-
Mississippi	5	5	-	-	-
Montana	-	-	3	20	-
New Hampshire	-	-	1	2	-
New Mexico	1	1	-	-	8
North Dakota	9	9	3	3	-
Ohio	39	43	5	5	-
Oregon	3	21	1	1	2
South Carolina	3	4	1	4	-
South Dakota	-	-	1	4	-
Tennessee	1	1	-	-	-
Texas	8	8	-	-	-
Utah	-	-	1	1	-
Vermont	6	6	-	-	-
Virginia	8	22	3	6	-
Washington	3	3	1	1	-
West Virginia	25	27	8	10	2
Wisconsin	7	21	2	2	6
TOTAL	154	231	48	125	18

References:

1. Seeliger HPR: Listeriosis, New York, Hafner, pp. 159-161, 1961.
2. Mouton RP, Kampelmacher EH: Listeria infection of the human skin. In Proceedings of the Third International Symposium on Listeriosis, Bilthoven, 13-16 July 1966.
3. Seeliger HPR, Emmerling P, Emmerling H: Listeriosis in Germany. German Medical Monthly 14 No. 4: 157-163, 1969.

Figure 3 LISTERIOSIS IN CATTLE, SHEEP, AND GOATS BY MONTH OF REPORT, 1971



**STATE EPIDEMIOLOGISTS AND
STATE PUBLIC HEALTH VETERINARIANS**

Key to all disease surveillance activities are the State Epidemiologists, who are responsible for collecting, interpreting, and transmitting data and epidemiologic information from their individual States. Their contributions to this report are gratefully acknowledged. In addition, valuable contributions to zoonoses surveillance reports are made by State Public Health Veterinarians.

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