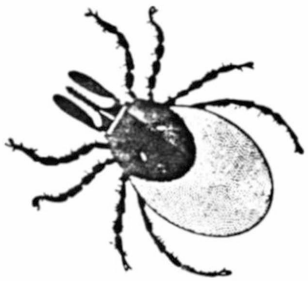
LYME DISEASE SURVEILLANCE SUMMARY



BACTERIAL ZOONOSES BRANCH
DIVISION OF VECTOR-BORNE
INFECTIOUS DISEASES
CENTER FOR INFECTIOUS DISEASES
CENTERS FOR DISEASE CONTROL

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Inaugural Issue.

This is the first issue of Lyme Disease Surveillance Summary. It is intended to serve State and local Epidemiologists, Laboratory Directors, Vector Control Specialists and others who have public health responsibilities for Lyme Disease.

Each issue will present tabular data on reported Lyme disease cases by State, and an updated listing of endemic counties. In addition to these core data, we will publish selected short articles of scientific interest to the public health community. All surveillance data will be reported as provisional until certified as final for publication in the MMWR.

National Lyme Disease Case Definition

A new Lyme disease epidemiologic case definition was written by a group of experts called together by CDC in November 1989. After several revisions, it was unanimously adopted at the Annual Council of State and Territorial Epidemiologists (CSTE) Meeting in New York in April 1990. In a related resolution, CSTE members voted unanimously to add Lyme disease to the list of nationally reportable diseases. The complete text of the 1990 case definition follows.

LYME DISEASE NATIONAL SURVEILLANCE CASE DEFINITION

Lyme disease is a systemic, tick-borne disease with protean manifestations, including dermatologic, rheumatologic, neurologic, and cardiac abnormalities. The best clinical marker for the disease is the initial skin lesion, erythema migrans (EM), that occurs in 60% to 80% of patients.

A case of Lyme disease is defined as follows:

A person with erythema migrans; or

A person with at least one late manifestation and laboratory confirmation of infection.

NOTE: It should be emphasized that this is an epidemiologic case definition intended for surveillance purposes only.

General clinical epidemiologic definitions:

1. Erythema migrans (EM):
For purposes of surveillance, EM is a skin lesion that typically begins as a red macule or papule and expands over a period of days or weeks to form a large round lesion, often with partial central clearing. A solitary lesion must reach at least 5 cm in size. Secondary lesions may also occur. Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and do not qualify as EM. In most patients, the expanding EM lesion is accompanied by other acute symptoms, particularly fatigue, fever, headache, mild stiff neck, arthralgias, or myalgias. These symptoms are typically intermittent. The diagnosis of EM must be made by a physician. Laboratory confirmation is recommended for persons with no known exposure.

2. Late manifestations:
These include any of the following when an alternate explanation is not found.

   a. Musculoskeletal system:
   Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints sometimes followed by chronic arthritis in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgias, myalgias, or fibromyalgia syndromes alone are not accepted as criteria for musculoskeletal involvement.

   b. Nervous system:
   Lymphocytic meningitis, cranial neuritis, particularly facial palsy (may be bilateral), radiculoneuropathy or rarely, encephalomyelitis alone or in combination. Encephalomyelitis must be confirmed by showing antibody production against B. burgdorferi in the cerebrospinal fluid (SCF), demonstrated by a higher titer of antibody in CSF than in serum. Headache, fatigue, paresthesias, or mild stiff neck alone are not accepted as criteria for neurologic involvement.

   c. Cardiovascular system:
   Acute onset, high grade (2nd or 3rd degree) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bradycardia, bundle branch block, or myocarditis alone are not accepted as criteria for cardiovascular involvement.

3. Exposure:
Exposure is defined as having been in wooded, brushy, or grassy areas (potential tick habitats) in an endemic county no more than 30 days prior to the onset of EM. A history of tick bite is not required.

4. Endemic county:
An endemic county is one in which at least 2 definite cases have been previously acquired or a county in which a tick vector has been shown to be infected with B. burgdorferi.

5. Laboratory confirmation:
Laboratory confirmation of infection with B. burgdorferi is established when a laboratory isolates the spirochete from tissue or body fluid, detects diagnostic levels of IgM or IgG antibodies to the spirochete in serum or CSF, or detects a significant change in antibody levels in paired acute and convalescent serum samples. States may determine the criteria for laboratory confirmation and diagnostic levels of antibody. Syphilis and other known causes of biologic false positive serologic test results, should be excluded as appropriate, when laboratory confirmation has been based on serologic testing alone.

National Standardized Lyme Disease Testing

A high priority is being given by CDC to the development of a standardized and reliable serologic test for Lyme disease. Critical issues related to this include the following: 1) the need for a "gold standard" reference test; 2) the need for a National Reference Collection of well characterized isolates and sera; 3) an assessment of the specificity and sensitivity of commercial Lyme disease test kits; and, 4) continuing assessment of the proficiency of laboratories performing diagnostic tests. The CDC and FDA are working to assure the future quality of commercial Lyme disease test kits. A quality assessment of available kits was recently initiated.

The National Study of Lyme Disease Testing Quality was conceived in 1989 and a funding grant was awarded by CDC to the Association of State and Territorial Public Health Laboratory Directors (ASTPHLD). ASTPHLD solicited research proposals and budgetary requests from State Laboratories, and four States were awarded contracts. A panel of 150 sera from clinically characterized cases was put together by CDC and blind Elisa and Western blot testing has been done by CDC and 2 independent laboratories.

The State awardees will each test a panel of approximately 150 coded specimens using 10 selected commercial kits. The test panel will include: 1) sera positive for Lyme disease, from weakly to strongly reactive; 2) sera negative for Lyme disease; 3) potentially cross-reactive sera; and, 4) repeats of the above sera to check for internal consistency. Results of these studies will be available in late 1990.

Lyme Disease in the United States 1982-1989

Reported cases of Lyme disease from 1982 through 1989 are shown in Table 1. The 1989 figure of 7400+ cases is provisional. Using the provisional figure, reported cases increased 60% over 1988. Please report your final figures for 1989 as soon as possible, so that we may complete a summary of these data for the MMWR. A graphic representation of data 1982-1989 is shown in Figure 1.

Table 1

STATE	REG	82	83	84	85	86	87	88	89	TO
Alabama	ESC	0	0	0	0	1	1	1	11	
Alaska	PAC	0	0	0	0	0	0	0	0	
Arizona	MT	0	0	0	0	0	0	0	0	
Arkansas	WSC	0	1	4	0	1	2	12	6	
California	PAC	0	11	24	70	107	182	0	253	
Colorado	MT	0	0	0	0	0	0	2	1	
Connecticut	NE	135	73	483	699	0	215	362	754	
Delaware	SA	1	4	1	0	0	6	4	26	
DC	SA	0	0	0	0	0	0	0	0	
Florida	SA	0	0	1	1	1	1	1	1	
Georgia	SA	0	0	1	1	2	4	53	715	
Hawaii	PAC	0	0	0	0	0	0	0	0	
Idaho	MT	0	0	0	0	0	0	1	24	
Illinois	ENC	0	0	0	2	0	6	5	79	
Indiana	ENC	0	0	1	0	1	3	0	2	
Iowa	WNC	0	0	0	1	1	4	15	27	
Kansas	WNC	0	0	0	0	0	1	0	14	
Kentucky	ESC	0	0	0	0	0	3	5	22	
Louisiana	WSC	0	0	0	0	0	0	2	2	
Maine	NE	0	0	0	1	4	0	1	3	
Maryland	SA	1	5	12	21	14	19	5	105	
Massachusetts	NE	15	13	33	69	163	95	80	129	
Michigan	ENC	0	1	0	1	0	4	21	103	
Minnesota	WNC	22	55	86	64	94	94	67	93	
Mississippi	ESC	0	0	0	0	0	0	6	7	
Missouri	WNC	0	0	0	2	0	0	0	39	
Montana	MT	0	0	0	0	0	0	0	0	
Nebraska	WNC	0	0	0	0	0	0	0	0	
Nevada	MT	0	0	0	0	0	0	0	6	
New Hampshire	NE	0	1	0	0	7	0	8	0	
New Jersey	MA	57	70	155	175	219	257	500	649	
New Mexico	MT	0	0	0	0	0	0	0	5	
New York	NA	170	267	466	1235	482	877	2637	2916	
North Carolina	SA	0	1	16	14	6	2	12	44	
North Dakota	WNC	0	0	0	0	0	0	1	5	
Ohio	ENC	0	0	1	1	1	3	7	35	
Oklahoma	WSC	0	0	0	0	2	2	4	17	
Oregon	PAC	0	1	10	5	10	19	4	5	
Pennsylvania	MA	2	0	5	29	31	65	306	585	
Rhode Island	NE	29	20	20	41	57	74	121	183	
South Carolina	SA	0	0	1	3	3	3	10	18	
South Dakota	WNC	0	0	0	0	0	2	2	4	
Tennessee	ESC	0	1	1	4	1	1	13	29	
Texas	WSC	0	1	18	172	8	33	18	96	
Utah	MT	1	1	0	0	1	0	2	3	
Vermont	NE	0	0	0	0	0	0	1	1	
Virginia	SA	0	0	1	2	7	27	25	54	
Washington	PAC	0	0	0	0	0	8	9	27	
West Virginia	SA	0	0	0	0	0	0	5	20	
Wisconsin	ENC	58	69	176	135	162	358	246	278	
Wyoming	MT	0	0	0	0	0	0	0	6	
TOTAL	--	491	595	1516	2748	1386	2371	4574	7402	2

Table 1 (continued)

STATE	REG	82	83	84	85	86	87	88	89	TOTAL
NE Subtotal	NE	179	107	536	810	231	384	573	1070	3890
MA Subtotal	MA	229	337	626	1439	732	1199	3443	4150	12155
ENC Subtotal	ENC	58	70	178	139	164	374	279	497	1759
WNC Subtotal	WNC	22	55	86	67	95	101	85	182	693
PAC Subtotal	PAC	0	12	34	75	117	209	13	285	745
SA Subtotal	SA	2	10	33	42	33	62	115	983	1280
WSC Subtotal	WSC	0	2	22	172	11	37	36	121	401
ESC Subtotal	ESC	0	1	1	4	2	5	25	69	107

Laboratory Progress in Lyme Disease at Fort Collins and Request for Submissions to the International Reference Collection for Lyme disease

Studies are in progress at Fort Collins evaluating antigen sequences which will hopefully elicit antibody responses that are specific to Borrelia burgdorferi and eventually lead to a reference diagnostic test with high specificity and sensitivity. This research plus our commitment to improved quality of national Lyme disease testing requires a large Reference Collection of B. burgdorferi clinical isolates and sera with antibodies to B. burgdorferi from patients with carefully documented clinical histories.

We are also collecting large volume, antibody positive serum donations collected by plasmapheresis. If you are aware of physicians who diagnose and treat Lyme disease cases, please refer their names to Dr. Tom Quan, Dr. Leonard Mayer or Dr. Bob Craven at CDC, Fort Collins. We are able to compensate serum donors, their physicians who supply clinical data, and blood banks performing plasmapheresis. These International Reference Sera will play a critical role in the evaluation of commercial test kits and the proficiency of laboratories offering Lyme disease diagnostic testing. We are particularly interested in obtaining both the isolate and sera with antibody to that isolate from patients from whom both are available.

National Lyme Disease Hotline

To deal more efficiently with the large volume of national public inquiries about Lyme disease, a National Lyme Disease Hotline will be made available this summer. This service will give callers touch-tone interactive access to recorded information on the most frequent questions we receive. When this service is available, we will publish specific information on its use.

Interaction with Lyme Disease Surveillance

Lyme Disease Surveillance is edited by Drs. Bob Craven and Gayle Miller. If you wish to submit data for inclusion, or add your name to (or remove it from) the mailing list, or comment on material or format, please contact us at the address or phone number below.

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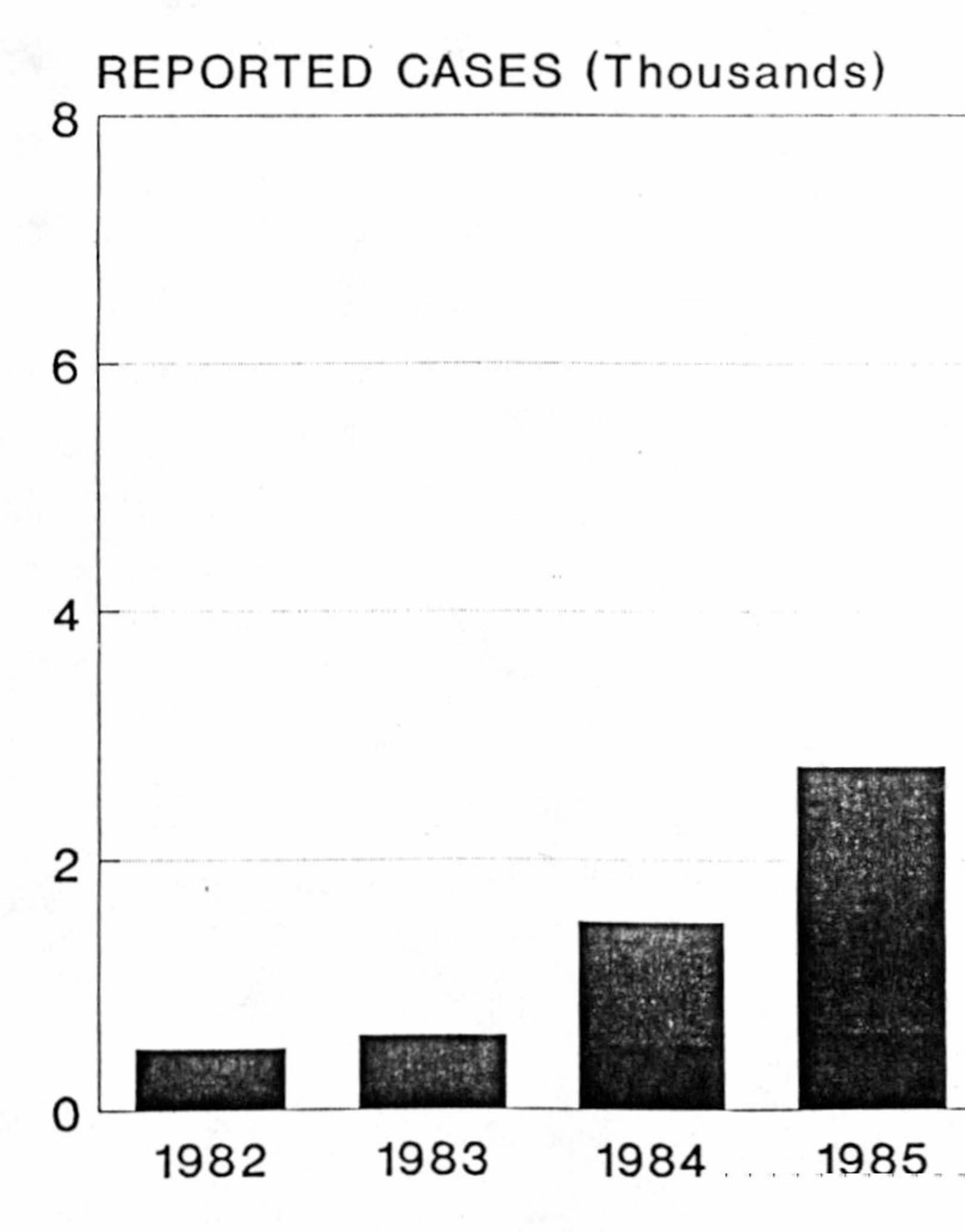
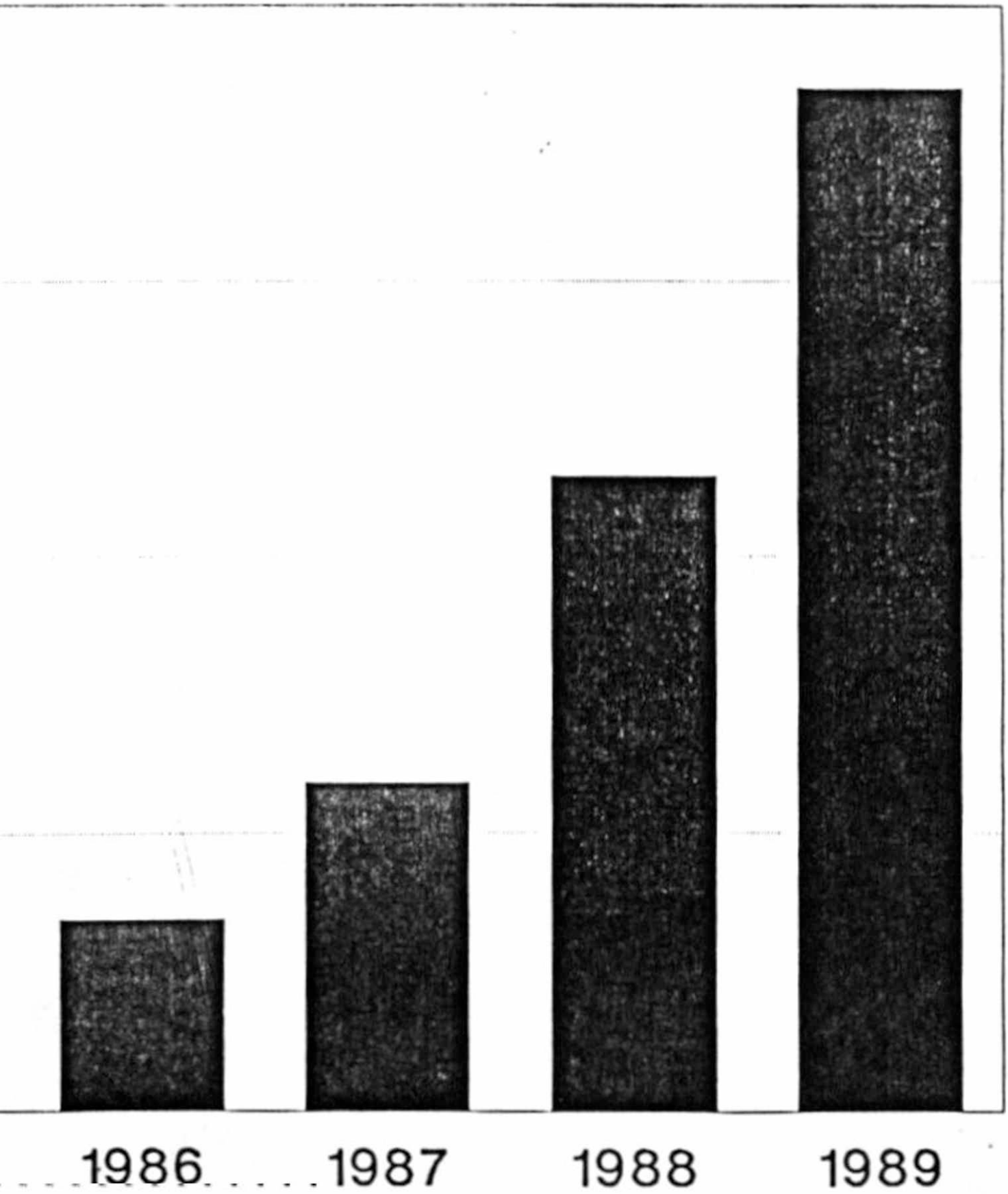

REPORTED CASES (Thousands)
8
6
4
2
0
1982
1983
1984
1985


1986
1987
1988
1989