

Q Fever in the United States: Experience of Infectious Disease Consultants and Comparison to National Reporting During 2000

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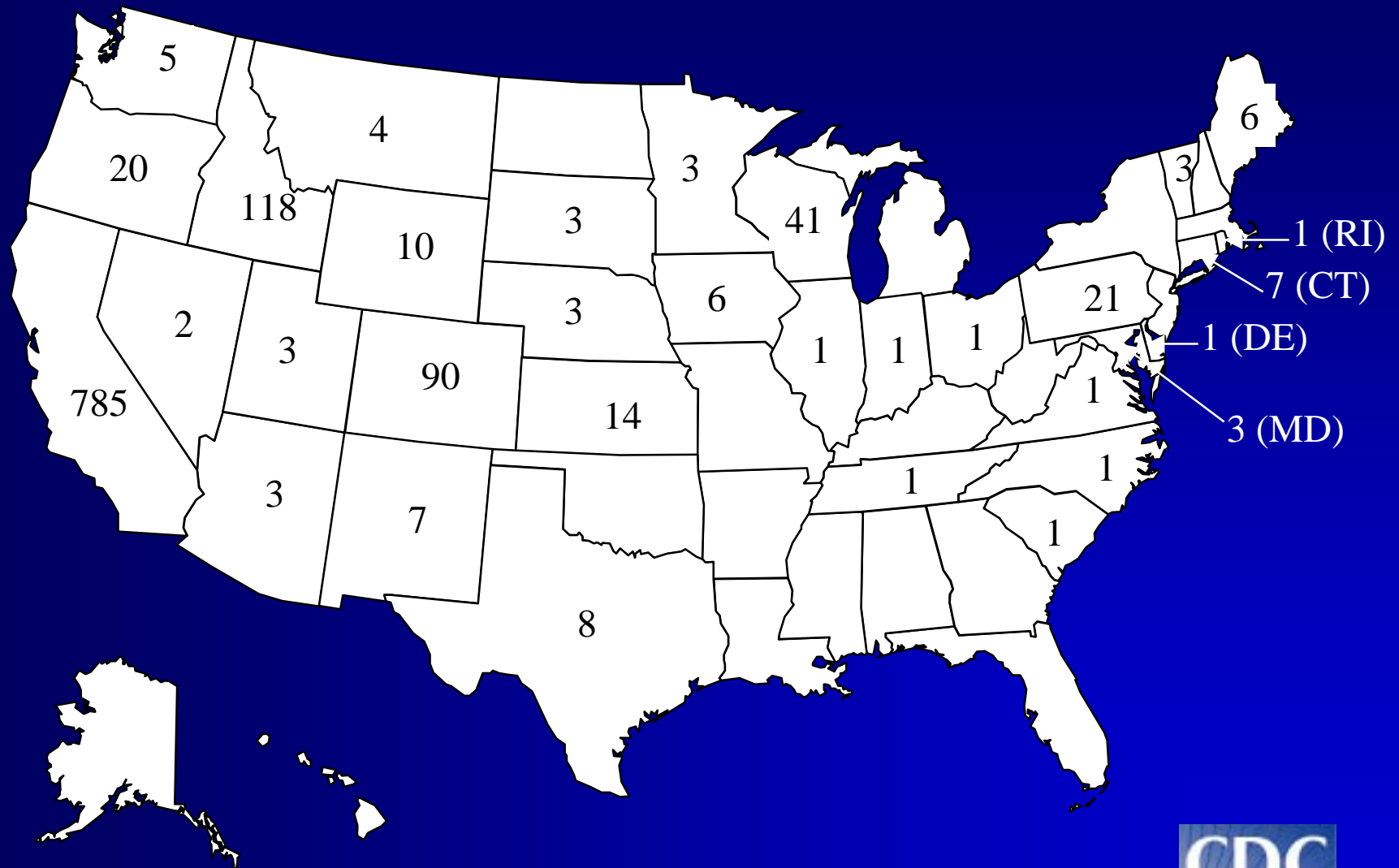


Q fever

- *Coxiella burnetii*
- Zoonosis, contact with livestock (sheep, cattle, goats)
- Category B Bioterrorism agent
 - inhalational route of transmission
 - long-lived in the environment
- Little current information on Q fever incidence or geographic distribution in the United States
- Made nationally notifiable in 1999
 - believed to be under-diagnosed and under-reported



Reported Human Q fever Cases, 1948-1977



Q fever

Acute Infection

- Incubation period: 1-4 weeks
- Nonspecific clinical signs
 - fever, headache, myalgias
- Pneumonia (20-40%)
- Hepatitis (20-40%)

Chronic Infection

- Culture-negative endocarditis
- Occurs years to decades after exposure

How many cases with compatible syndromes and unknown etiology can be attributed to *C. burnetii*?

- 5% of pneumonia cases of unknown etiology due to *C. burnetii* (Switzerland; Medicine 2001 80(2): 75-87)
- ~1% of all community-acquired pneumonia cases due to *C. burnetii* (UK; Thorax 2001 56(4); 296-301) (Eur J Clin Microbiol Infect Dis 1999; 18:852-8.)
- 8% of culture-negative endocarditis cases due to *C. burnetii* (France; CID 1995; 20:501-6)
- Hepatitis - ???



Diagnosis

- Clinical diagnosis difficult due to nonspecific signs and symptoms
 - physicians must suspect Q fever and order appropriate diagnostic tests
- Serology: four-fold change in antibody titer in paired sera, or single high titer

Survey

- Sent to members of the IDSA Emerging Infections Network (EIN) in 2001
 - 784 members, primarily United States infectious disease physicians and consultants
 - email network
- Queried regarding experiences with Q fever during 2000
- Queried regarding experiences with pneumonia, hepatitis, and endocarditis of unknown etiology
- Queried regarding commonly used laboratory tests



EIN Survey Response

Region	# EIN Members	# Responding
New England	66	37 (56%)
Mid Atlantic	133	66 (50%)
EN Central	99	58 (59%)
WN Central	41	23 (56%)
S Atlantic	151	72 (48%)
ES Central	44	26 (59%)
WS Central	70	43 (61%)
Mountain	50	29 (58%)
Pacific	114	65 (57%)
US Territories	6	0 (0%)
Canada	9	3 (33%)
Chili	1	1 (100%)
Total	784	423* (54%)

* 4 members provided incomplete data, so 419 used in final analysis

EIN Survey Results: Q Fever Cases Diagnosed During 2000

State	# Acute Cases	# Chronic Cases	Total
AZ	0	1	1
CA	3	0	3
CT	0	1	1
KS	4	2	6
KY	1	0	1
LA	2	0	2
NM	1	0	1
NY	0	1	1
OR	1	1	2
RI	0	2	2
TN	2	0	2
TX	2	0	2
Total	16	8	24

EIN Survey Results: Q Fever Cases Diagnosed During 2000

- 24 cases from 16 EIN members (4%) in 12 states.
- Respondents indicated they used serology to confirm all cases of Q fever.
- 5 respondents (31%) thought the cases had been reported to the state health department.



EIN Survey Results

- 370 (88%) reported seeing an estimated 3117-4492+ patients with atypical pneumonia of unknown etiology
 - 75% reported testing only 0-5% of patients for Q fever
- 290 (69%) reported seeing 1010-1918+ patients with hepatitis of unknown etiology
 - 76% reported testing only 0-5% of patients for Q fever
- 156 (37%) reported seeing 437 cases of culture-negative endocarditis
 - 87 (20%) cases required valve replacement
 - 280 (64%) tested for Q fever



EIN Survey Results – Laboratory Tests Available to EIN Members

- Serology most common laboratory test
- Most (>50%) used commercial laboratories for testing rather than health department or hospital labs

Lab Tests	Commercial	Health Dept	Hospital/ Med School	Don't Know
Phase II Serology	219 (52%)	34 (8%)	32 (8%)	126 (30%)
Phase I Serology	206 (49%)	30 (7%)	30 (7%)	127 (30%)
PCR	68 (16%)	10 (2%)	18 (4%)	213 (51%)
IHC	29 (7%)	6 (1%)	27 (6%)	218 (52%)

National Surveillance for Q Fever

CDC, NETSS - 2000

State	# Cases
CA	8
CO	3
ID	1
KS	1
MN	1
NE	1
NV	1
OR	4
UT	1
Total	21

Assessment of Unreported Cases

State	# Cases EIN	# Cases NETSS	# Unreported
AZ	1	---	1
CA	3	8	---
CO	---	3	---
CT	1	---	1
ID	---	1	---
KS	6	1	5
KY	1	---	1
LA	2	---	2
MN	---	1	---
NE	---	1	---
NM	1	---	1
NV	---	1	---
NY	1	---	1
OR	2	4	---
RI	2	---	2
TN	2	---	2
TX	2	---	2
UT	---	1	---
Total	24	21	18 (75%)

Conclusions

- Q fever may be under-diagnosed in the United States
 - 75% of physicians rarely test atypical pneumonia or hepatitis cases of unknown etiology for Q fever
 - 36% of culture-negative endocarditis cases are not tested for Q fever.
- Q fever is under-reported in the United States
 - During 2000, 75% of physician-diagnosed cases were unreported at the national level.
- Improved recognition and reporting of Q fever by physicians will be important to assist with national bioterrorism preparedness goals.



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