25-ID-09

Committee: Infectious Disease

Title: Update to Public Health Reporting and National Notification of Tularemia (*Francisella tularensis*)

☒Check this box if this position statement is an update to an existing standardized surveillance case definition and include the most recent position statement number here: 16-ID-11.

Synopsis:

- This position statement updates the standardized surveillance case definition for tularemia (position statement 16-ID-11).
- Updates include:
  - Clinical evidence updates
    - Delineates symptoms listed for specific tularemia clinical forms
    - Describes and includes rarer tularemia manifestations such as meningitis, septic arthritis, or endocarditis
  - Laboratory evidence updates
    - Includes detection of *F. tularensis* DNA by sequencing assays as presumptive laboratory criterion
    - Clarifies how to interpret and classify qualitative serologic results
  - Case classification updates
    - Incorporates epidemiologic criteria into confirmed and probable case classifications
    - Creates a suspect case classification

Table of Contents

I. Statement of the Problem

Cases of tularemia (*Francisella tularensis*) are currently notifiable to the Centers for Disease Control and Prevention (CDC) via the National Notifiable Disease Surveillance System (NNDSS). CSTE Position Statement 16-ID-11 last updated criteria for tularemia case reporting and classification in 2017. Since then, additional molecular assays have become available that are not reflected in the current laboratory criteria. Increasing use of more sensitive, qualitative serologic tests is increasing the burden of case investigations, and lack of clear language on interpretation of these tests impedes case classification.

A recent summary of United States (U.S.) surveillance data highlighted increasing incidence of tularemia, largely resulting from increased reporting of probable cases (1). In a review of tularemia laboratory reports and final case classification from 15 states during 2014-2023, a greater than 5-fold increase was observed in the number of positive, qualitative serologic tests (lacking quantitative titers) reported to health departments (2). Of the potential cases with qualitative serologic tests reported to participating health departments during this time, 69% were ultimately excluded as cases while only 4% were classified as confirmed and 27% as probable.

This position statement addresses these problems by updating laboratory criteria to enable easier interpretation of lab results and improve accuracy of case classification. It also delineates clinical criteria for specific clinical forms and rarer manifestations of tularemia.

II. Background and Justification

Tularemia is a zoonotic disease caused by the gram-negative coccobacillus *Francisella tularensis*. The disease occurs naturally throughout the northern hemisphere and has been reported from all U.S. states except Hawaii (1). Due to its low infectious dose, ability to cause severe disease, and history of use as a bioweapon, *F. tularensis* is classified as a Tier 1 Select Agent (3). Tularemia was removed from the list of nationally notifiable diseases in 1994, but concern about potential use of *F. tularensis* as a biological weapon led to its re-addition in 2000. A vaccine was previously available for military personnel and researchers; investigation into updated vaccine candidates is ongoing.

F. tularensis is broadly distributed in the environment, including in water, hundreds of animal species, and some arthropods. Human infection occurs through several routes: tick or deerfly bites; contact with infected animal tissues; consumption of contaminated food or water; or inhalation (4). The source of human infection is sometimes unclear. Occupational exposures might occur, particularly in outdoor, veterinary, wildlife biology, or laboratory settings. Tularemia is not known to spread from person to person except in very rare circumstances (4). While other *Francisella* species can cause human illness particularly among people with immunocompromise, they do not cause tularemia.

Tularemia characteristically presents as a febrile illness with various anatomically localizing signs or symptoms, depending on the route of infection. Common manifestations include ulceroglandular disease, characterized by regional lymphadenopathy and a cutaneous lesion; glandular disease, characterized by regional lymphadenopathy but without a cutaneous lesion; oculoglandular disease, characterized by conjunctivitis and lymphadenopathy in the head or neck; pharyngeal tularemia, characterized by pharyngitis and cervical lymphadenopathy; and pneumonic tularemia, characterized by pulmonary disease including pneumonia (4). Tularemia can also present as an acute febrile illness without localizing signs or symptoms. Rarer clinical manifestations include endocarditis, meningitis, and septic arthritis (5,6). Severity of illness depends on route of infection, dose, and infecting strain; if not promptly treated with appropriate antibiotics, tularemia can be fatal (4). Longer-term, subacute infection has been rarely described (7).

Diagnostic testing for tularemia may consist of direct detection, such as culture or PCR tests, or indirect detection, using serology. The Laboratory Response Network (LRN) provides direct detection tests using standardized testing protocols[1]. Outside the LRN, molecular sequencing and pathogen-agnostic diagnostic techniques, such as

[1] *https://www.cdc.gov/laboratory-response-network/php/biological/index.html*

microbial cell-free DNA testing, have increasingly identified human *F. tularensis* infections in recent years. Although some molecular technologies are highly specific, others, including 16S sequencing and some PCR tests, do not distinguish *F. tularensis* from the closely related opportunistic pathogens *F. novicida* and *F. hispaniensis*. Due to U.S. select agent regulations, confirmatory testing of *F. tularensis* cultures is only available in LRN laboratories.

Serologic testing for tularemia detects the immune response to infection. Antibodies to *F. tularensis* are usually detectable within 2-3 weeks after infection, with IgM and IgG antibodies typically rising simultaneously (8). Historically, agglutination tests were most commonly used for serologic diagnosis of tularemia. These tests detect total anti-*F. tularensis* antibodies without differentiating between IgM and IgG. Results are typically provided in the form of a titer with an interpretation (negative or positive). In recent years, several commercial laboratories have transitioned to offering enzyme-linked immunosorbent assays (ELISAs), which are less specific and more sensitive than agglutination tests. These tests yield results (negative, equivocal or borderline, or positive) separately for IgM and IgG antibodies and do not produce titered results.

This position statement: 1) more clearly delineates symptoms associated with common clinical manifestations of tularemia; 2) recognizes rare clinical manifestations of tularemia; 3) reflects changes in available laboratory testing; 4) creates epidemiologic linkage criteria and integrates into case classification; and 5) links confirmatory laboratory evidence to LRN methods to minimize need for case definition updates as laboratory criteria evolve.

III. Statement of the Desired Action(s) to be Taken

CSTE recommends the following actions:

1. Implement a standardized surveillance case definition for **tularemia**.

    A. Utilize recommended reporting* sources for case ascertainment for **tularemia**. Surveillance for **tularemia** should use the recommended sources of data to the extent of coverage presented in Section V.

    B. Utilize standardized criteria for case ascertainment for **tularemia** presented in Section VI and Table VI in Technical Supplement.

    C. Utilize standardized criteria for case classification for **tularemia** presented in Section VII and Table VII in Technical Supplement.

2. Utilize standardized criteria for case ascertainment and classification (based on Sections VI and VII and Technical Supplement) for **tularemia** and **update tularemia** on the *Nationally Notifiable Condition List* using the following notification** timeframe:
    - ☒ Immediately notifiable, extremely urgent (within 4 hours) - If the source of the infection is not recognized or is recognized as one of BT or potential mass exposure
    - ☐ Immediately notifiable, urgent (within 24 hours)
    - ☒ Routinely notifiable - If the source of infection can be attributed to a naturally-occurring exposure
    - ☐ No longer notifiable

3. CSTE recommends that all States and Territories enact laws (statute or rule/regulation as appropriate) to make this disease or condition reportable in their jurisdiction. Jurisdictions (e.g., States and Territories) conducting surveillance (according to these methods) should submit case notifications to CDC.

4. CSTE recommends that all jurisdictions (e.g., States, Localities, or Territories) with legal authority should conduct public health surveillance and use the case classifications included in this position statement.

5. Expectations for Message Mapping Guide (MMG) development for a newly notifiable condition: the National Notifiable Diseases Surveillance System (NNDSS) is transitioning to HL7-based messages for case notifications; the specifications for these messages are presented in MMGs. When CSTE recommends a new condition be made nationally notifiable, CDC must obtain Office of Management and Budget Paperwork Reduction Act (OMB PRA) approval prior to accepting case notifications for the new condition. Under anticipated timelines, notification using the Generic V2 MMG would support transmission of the basic demographic and epidemiologic information common to all cases and could begin with the new MMWR year following the CSTE annual conference. Input from CDC programs and CSTE would prioritize development of a disease-specific MMG for the new condition among other conditions waiting for MMGs.

6. CDC should publish data on tularemia as appropriate (see Section IX).
   CSTE recommends the following case statuses be included in the CDC Print Criteria:
   - ☒Confirmed
   - ☒Probable
   - ☐Suspect
   - ☐Unknown

** Reporting: process of a healthcare provider, laboratory, or other entity submitting a report (case information) of a condition under public health surveillance to local, state, or territorial public health.*
*** Notification: process of a local or state public health authority submitting a report (case information) of a condition on the* Nationally Notifiable Conditions List *to CDC.*

IV. Goals of Surveillance

The objective of public health surveillance for tularemia is to understand the geographic, seasonal, patient demographic, and exposure characteristics to 1) facilitate prevention and early recognition and 2) provide information of the epidemiology of naturally occurring disease to facilitate rapid detection of intentional release.

V. Recommended Data Sources and Methods for Surveillance

Surveillance for tularemia should use the following recommended sources of data and/or methodologies and the extent of coverage listed in Table V.

Table V. Recommended Sources of Data, Surveillance Methods, and Extent of Coverage for Ascertainment of Cases of Tularemia.

Source of Data/Methodology for Case Ascertainment	Coverage	
	Population-Wide	Sentinel Sites
Clinician reporting	X	
Laboratory reporting	X	
Reporting by other entities, specify: Hospitals	X	
Death certificates	X	
Hospital discharge or outpatient records	X	
Data from electronic medical records	X	
Telephone or online survey		
School-based survey		
Other, specify: Syndromic surveillance	X	

VI. Criteria for Case Ascertainment

Case ascertainment is the process through which public health identifies potential cases of a disease or condition using data reported or provided to public health by healthcare, laboratories, and other reporting entities. This public health reporting is triggered by the case ascertainment criteria (a single criterion or a combination of criteria) included in this position statement, and each initial report sent to public health should include common data elements and disease-specific data elements. Case ascertainment criteria are not intended to be used for clinical diagnosis purposes.

A. Narrative: A description of suggested criteria for case ascertainment of a specific condition and recommended reporting procedures.

- All suspected cases of tularemia should be reported to public health authorities
- Reporting should be ongoing
- Reporting should be immediate

Report to public health authorities any of the following:

A1. Clinical Criteria for Reporting
- Clinical suspicion of tularemia.

A2. Laboratory Criteria for Reporting
- Positive result on *F. tularensis* serum antibody assay, **OR**
- Isolation or detection of *F. tularensis* in a clinical or autopsy specimen.

A3. Epidemiologic Linkage Criteria for Reporting
- Known contact (including potential aerosol exposure) with an animal with confirmed or presumptive laboratory evidence for tularemia, **OR**
- Known handling of an *F. tularensis* isolate in a laboratory setting.

A4. Vital Records Criteria for Reporting
- A person whose death certificate lists tularemia as a cause of death or a significant condition contributing to death.

A5. Healthcare Record Criteria for Reporting
- A person whose healthcare record contains a diagnosis of tularemia.

B. Disease-Specific Data Elements to be Included in the Initial Report

Disease-specific data elements should be included in addition to the common data elements that are to be reported for all initial individual case reports (see CSTE Position Statement 09-SI-01 "Common Core Data Elements for Case Reporting and Laboratory Result Reporting" https://cdn.ymaws.com/www.cste.org/resource/resmgr/PS/09-SI-01.pdf). Public health authorities do not expect that an initial report will contain all the information necessary for case investigation and case classification.

- Known contact (including potential aerosol exposure) with an animal with confirmed or presumptive laboratory evidence for tularemia
- Known handling of an *F. tularensis* isolate in a laboratory setting
- History of a known or suspected tick or deerfly bite
- Contact with an animal that is sick, dead, or suspected to have tularemia (e.g., hunting or veterinary care)
- Activities with potential for aerosol-generating exposure (e.g., landscaping, mowing, or high-pressure spraying)
- Consumption of material potentially contaminated with *F. tularensis*
- Shared exposure with another confirmed or probable tularemia case (i.e., part of a cluster)
- Other activities in occupational or recreational settings that could be linked to *F. tularensis* exposure

VII. Case Definition for Case Classification

This case definition for case classification is intended solely for public health surveillance purposes and does not recommend criteria for clinical diagnosis purposes. Once a public health agency has ascertained data on potential cases of a disease or condition from reporting entities, the public health agency assigns case statuses based on the case classifications included within this position statement.

A. Narrative: A description of criteria to determine how public health should classify a case of tularemia.

A1. Clinical Criteria

In the absence of another more likely etiology, a person with any of the following clinical manifestations, often accompanied by fever:

- Regional lymphadenopathy in absence of cutaneous ulcer (**glandular tularemia**), **OR**
- Regional lymphadenopathy with cutaneous ulcer (**ulceroglandular tularemia**), **OR**
- Conjunctivitis AND lymphadenopathy in the head or neck (**oculoglandular tularemia**), **OR**
- Cervical lymphadenopathy AND pharyngitis, tonsilitis, or stomatitis (**oropharyngeal tularemia), OR**
- Pulmonary disease such as pleural effusion, hilar adenopathy, pulmonary nodule, or pneumonia (**pneumonic tularemia**), **OR**
- Acute illness lacking localized signs and symptoms, characterized by fever (subjective or objective) **AND** one or more non-specific symptoms such as headache, myalgia, fatigue/malaise, or gastrointestinal illness (**typhoidal tularemia**), **OR**
- Other rare clinical manifestation(s) known to be associated with tularemia such as meningitis, septic arthritis, or endocarditis

A2. Laboratory Criteria**

Confirmatory Laboratory Evidence:

- Culture and identification of *F. tularensis* confirmed by a Laboratory Response Network (LRN) laboratory, **OR**
- Fourfold or greater change in serum antibody titer between acute and convalescent specimens[2], **OR**
- Change from a negative IgG AND a negative IgM serologic test result to *F. tularensis* antigen on an acute specimen to either a positive IgG, a positive IgM, or both on a convalescent specimen [2, 3, 4]

Presumptive Laboratory Evidence:

- Detection of *F. tularensis* DNA directly from a clinical or autopsy specimen by molecular testing (e.g., PCR or sequencing assay), **OR**
- Demonstration of *F. tularensis* antigen in tissue (e.g., by immunohistochemical staining)

Supportive Laboratory Evidence:

- Positive IgG and/or IgM serologic test detecting antibodies to *F. tularensis* antigen (**without documented fourfold or greater change or without prior negative result**) in a patient with no history of tularemia vaccination[3]

*** Note: The categorical labels used here to stratify laboratory evidence are intended to support the standardization of case classifications for public health surveillance. The categorical labels should not be used to interpret the utility or validity of any laboratory test methodology.*

[2]To ensure consistency in laboratory methodologies, it is recommended that testing of paired sera for the purposes of confirmatory classification be conducted within the same laboratory. It is recommended that paired sera are collected 2-4 weeks apart but can be collected outside the range if clinically compatible or epidemiologic evidence is highly suggestive of tularemia.
[3]For surveillance purposes, a borderline or equivocal serologic result is not considered as positive or negative.
[4]A change from both negative IgG and IgM to positive results for both IgG and IgM is the strongest serologic evidence of tularemia infection; however, change to a positive result for only IgG or IgM may still indicate a true case of tularemia.

A3. Epidemiologic Linkage Criteria

Within 21 days of illness onset or, when clinical information is not available, within 21 days of specimen collection:

Tier 1

- Known contact (including potential aerosol exposure) with an animal with direct laboratory detection or isolation of *F. tularensis* **OR**
- Known handling of an *F. tularensis* isolate in a laboratory setting

Tier 2

- History of a known or suspected tick or deerfly bite, **OR**
- Contact with an animal suspected to have tularemia (e.g., hunting or veterinary care), **OR**
- Activities with potential for aerosol-generating exposure (e.g., landscaping, mowing, or high-pressure spraying), **OR**
- Consumption of material potentially contaminated with *F. tularensis*, **OR**
- Shared exposure with another confirmed or probable tularemia case (i.e., part of a cluster), **OR**
- Other activities in occupational or recreational settings that could be linked to *F. tularensis* exposure

A4. Vital Records Criteria

- A person whose death certificate lists tularemia as a cause of death or a significant condition contributing to death.

A5. Case Classifications

Confirmed:

- Meets confirmatory laboratory evidence **AND** meets clinical criteria, **OR**
- Meets confirmatory laboratory evidence **AND** meets Tier 1 or Tier 2 epidemiologic linkage criteria.

Probable:

- Meets presumptive laboratory evidence **AND** meets the clinical criteria, **OR**
- Meets presumptive laboratory evidence **AND** meets Tier 1 or Tier 2 epidemiologic linkage criteria, **OR**
- Meets supportive laboratory evidence **AND** meets clinical criteria **AND** meets Tier 2 epidemiologic linkage criteria, **OR**
- Meets supportive laboratory evidence **AND** meets Tier 1 epidemiologic linkage criteria, **OR**
- Meets clinical criteria **AND** meets Tier 1 epidemiologic linkage criteria.

Suspect:

- Meets confirmatory laboratory evidence **OR** presumptive laboratory evidence **OR** supportive laboratory evidence, **OR**
- Meets clinical criteria **AND** meets Tier 2 epidemiologic linkage evidence, **OR**
- Meets vital records criteria.

B. Criteria to Distinguish a New Case of Tularemia from Reports or Notifications which Should Not be Enumerated as a New Case for Surveillance

A person with a previously reported confirmed or probable case of tularemia may be enumerated as a new case when there is evidence of new clinically compatible acute illness after completing treatment for previous infection AND new laboratory evidence. As duration of antibodies to *F. tularensis* is not known, a person with persistently positive serologic tests in absence of new clinical or epidemiologic linkage criteria should not be enumerated as a new case.

VIII. Period of Surveillance

This surveillance should be ongoing and routine.

IX. Data Sharing/Release and Print Criteria

CSTE recommends the following case statuses* be included in the 'case' count released outside of the public health agency:

☒Confirmed
☒Probable
☐Suspect
☐Unknown

**Which case statuses are included in case counts constitute the "print criteria."*

Jurisdictions (e.g., States and Territories) conducting surveillance under this case definition can voluntarily submit de-identified case information to CDC, if requested and in a mutually agreed upon format.

Production of national data summaries and national data re-release for non-NNCs:

- Prior to release of national data summaries CDC should follow the CDC/ATSDR Policy on Releasing & Sharing Data, issued on April 16, 2003 and referenced in 11-SI-01 and custodians of such data should consult the CDC-CSTE Intergovernmental Data Release Guidelines Working Group report (www.cste2.org/webpdfs/drgwgreport.pdf) which contains data release guidelines and procedures for CDC programs re-releasing state, local, or territorial-provided data.
- CDC programs have a responsibility, in collaboration with states, localities, and territories, to ensure that CDC program-specific data re-release procedures meet the needs of those responsible for protecting data in the states and territories.

X. Revision History

Position Statement ID	Section of Document	Revision Description
25-ID-09	V. Goals of surveillance	Shifted focus to routine surveillance
25-ID-09	VI.A. Criteria for case ascertainment	Updated to current position statement format. Added epidemiologic linkage criteria for reporting.
25-ID-09	VI.B. Disease-specific data elements	Broadened potential exposures that should be included on an initial report
25-ID-09	VII.A1. Clinical criteria for case classification	• Added "in the absence of another more likely etiology" to make clinical criteria more specific • Listed additional specific symptoms in each clinical form to help give epidemiologists more detailed information about possible clinical presentations • Added "Other clinical manifestation(s) known to be rarely caused by tularemia such as meningitis, joint infection, or endocarditis" to capture rare, but increasingly identified, focal tularemia infections
25-ID-09	VII.A2. Laboratory criteria for case classification	• Addressed changes in titered serologic reporting and the industry-wide shift to qualitative serology • Provide additional details to guide convalescent serology draws • Broaden LRN confirmatory methods to future-proof for tests that will be adopted in the future. • Provide guidance on interpreting changes in IgG and IgM interpretation, as well as interpreting borderline/equivocal serology • Expand presumptive lab criteria to include molecular techniques
25-ID-09	VII.A3. Epidemiologic linkage criteria for case classification	• Broaden exposures to animals to cover any contact with animals confirmed or suspected to have tularemia • Added occupational exposures, including lab exposures • Include a cluster option, which could be used in outbreak or intentional release situations

25-ID-09	VII.A5. Case classification	• Updated format to current template, which is focused on the categories of evidence (clinical, laboratory, etc.) • Expanded probable case classifications • Added suspect case classification • Confirmed: one classification now requires epi linkage criteria
25-ID-09	VII.B. Criteria to distinguish a new case	• Updated the criteria and added additional context for interpreting repeat serologic testing
16-ID-11	Case Classification	Adds probable case status for PCR
1999-ID-6	09-ID-66	Completes the standardized case definition for tularemia based on new CSTE templates; continues to recommend national notifiability
N/A	1999-ID-6	Reinstated tularemia as a nationally notifiable condition.

XI. References

1. Rich SN, Hinckley AF, Earley A, Petersen JM, Mead PS, Kugeler KJ. Tularemia — United States, 2011–2022. MMWR Morb Mortal Wkly Rep 2025;73:1152–1156. DOI: http://dx.doi.org/10.15585/mmwr.mm735152a1.
2. Platt L, et al. Laboratory Testing Patterns and Case Investigation Outcomes for Tularemia in Fifteen U.S. States. Presentation at *Epidemic Intelligence Service Conference;* April 25, 2025; Atlanta, GA.
3. Nelson CA, Sjöstedt A, Tularemia: A Storied History, An Ongoing Threat, *Clinical Infectious Diseases*, Volume 78, Issue Supplement_1, 15 February 2024, Pages S1–S3, https://doi.org/10.1093/cid/ciad681
4. Nelson CA, Winberg J, Bostic TD, Davis KM, Fleck-Derderian S. Systematic Review: Clinical Features, Antimicrobial Treatment, and Outcomes of Human Tularemia, 1993-2023. Clin Infect Dis. 2024 Jan 31;78(Suppl 1):S15-S28. doi: 10.1093/cid/ciad736. PMID: 38294108.
5. Cash-Goldwasser S, Beeson A, Marzec N, Ho DY, Hogan CA, Budvytiene I, Banaei N, Born DE, Gephart MH, Patel J, Dietrich EA, Nelson CA. Neuroinvasive Francisella tularensis Infection: Report of 2 Cases and Review of the Literature. Clin Infect Dis. 2024 Jan 31;78(Suppl 1):S55-S63. doi: 10.1093/cid/ciad719. PMID: 38294117.
6. Beeson AM, Baker M, Dell B, Schnitzler H, Oltean HN, Woodall T, Riedo F, Schwartz A, Petersen J, Hinckley AF, Marx GE. Francisella tularensis Bone and Joint Infections: United States, 2004-2023. Clin Infect Dis. 2024 Jan 31;78(Suppl 1):S67-S70. doi: 10.1093/cid/ciad688. PMID: 38294110.
7. Birn R, Hamik J, Dayne L, Frederick J, Bartling A, Iwen PC, Wells A, Donahue M. Confirmed Case of Longstanding Respiratory Francisella tularensis holarctica Infection: Nebraska, 2022. Clin Infect Dis. 2024 Jan 31;78(Suppl 1):S64-S66. doi: 10.1093/cid/ciad669. PMID: 38294112; PMCID: PMC10828931.
8. Maurin M. Francisella tularensis, Tularemia and Serological Diagnosis. Front Cell Infect Microbiol. 2020;10:512090. doi:10.3389/fcimb.2020.512090

XII. Coordination

Subject Matter Expert (SME) Consultants:

PRIMARY SME

(1) Kiersten Kugeler, PhD, MPH
Epidemiologist
Centers for Disease Control and Prevention, Division of Vector-Borne Diseases
970-566-6680
kkugeler@cdc.gov

ADDITIONAL SMEs

(2) Laura Platt, MD
Epidemic Intelligence Service Officer
Centers for Disease Control and Prevention, Division of Vector-Borne Diseases
970.232.6318
lplatt@cdc.gov

(3) Grace Marx, MD, MPH
Medical Officer
Centers for Disease Control and Prevention, Division of Vector-Borne Diseases
970.568.6523
gmarx@cdc.gov

Agencies for Response:

(1) Centers for Disease Control and Prevention
Susan Monarez, PhD
Director
1600 Clifton Road, NE
Atlanta, GA 30329
404-639-7000
director@cdc.gov

Agencies for Information:

N/A

XIII. Author Information

Submitting and Presenting Author:

(1) Maria Bye, MPH (Active Member)
Senior Epidemiologist
Minnesota Department of Health
625 Robert Street N. PO Box 64975
St. Paul, MN 55164
651-201-4575
maria.bye@state.mn.us

Co-Authors:

(1) Laura Rothfeldt (Active Member)
State Public Health Veterinarian
Arkansas Department of Health
4815 W. Markham Street
Little Rock, AR 72205
501-280-4351
laura.rothfeldt@arkansas.gov

(2) Stephen D. Hedges (Active Member)
Zoonotic Disease Epidemiologist
Arkansas Department of Health
4815 W. Markham Street
Little Rock, AR 72205
501-614-5294
Stephen.Hedges@arkansas.gov

(3) Kira Richardson (Active Member)
Vector-Borne and Zoonotic Disease Epidemiologist
Indiana Department of Health
2 N. Meridian Street
Indianapolis, IN 46204
317-234-9727
kirrichardson@health.in.gov

(4) Jordan Mandli, PhD, MPH
Epidemiologist Intermediate
Minnesota Department of Health
625 Robert Street N. PO Box 64975
St. Paul, MN 55164
651-201-4292
jordan.mandli@state.mn.us

(5) Jennifer L. White, MPH (Active Member)
Director, Vector-borne Disease Program
New York State Department of Health
Corning Tower, Rm. 651
Empire State Plaza
Albany, NY 12237
518-473-4439
Jennifer.white@health.ny.gov

Technical Supplement

Table VI. Table of criteria to determine whether a case should be reported to public health authorities.

Criterion	Tularemia
Clinical Criteria for Reporting	
Clinical suspicion of tularemia	S
Laboratory Criteria for Reporting	
Positive result on *F. tularensis* serum antibody assay	S
Isolation or detection of *F. tularensis* in a clinical or autopsy specimen	S
Epidemiologic Linkage Criteria for Reporting	
Known contact (including potential aerosol exposure) with an animal with confirmed or presumptive laboratory evidence for tularemia	S
Known handling of an *F. tularensis* isolate in a laboratory setting	S
Vital Record Criteria for Reporting	
A person whose death certificate lists tularemia as a cause of death or a significant condition contributing to death.	S
Healthcare Record Criteria for Reporting	
A person whose healthcare record contains a diagnosis of tularemia.	S

Notes:
S = This criterion alone is SUFFICIENT to report a case.

[*intentionally left blank*]

Table VII.A. Classification Table: Criteria for defining a case of tularemia

Criterion	Confirmed						Probable																		Suspect						
Clinical Evidence																															
In the absence of another more likely etiology	N	N	N	N	N		N	N	N	N	N		N	N	N	N	N		N	N	N	N	N		N	N	N	N	N		
Regional lymphadenopathy with cutaneous ulcer	O						O						O						O						O						
Regional lymphadenopathy without cutaneous ulcer	O						O						O						O						O						
Conjunctivitis		N						N						N						N						N					
Lymphadenopathy in the head or neck		N						N						N						N						N					
Cervical lymphadenopathy			N						N						N						N						N				
Pharyngitis			O						O						O						O						O				
Tonsilitis			O						O						O						O						O				
Stomatitis			O						O						O						O						O				
Pulmonary disease such as pleural effusion, hilar adenopathy, pulmonary nodule, or pneumonia				N						N						N						N						N			
Fever (objective or subjective)					N						N						N						N						N		
Acute illness with no localizing signs and symptoms					N						N						N						N						N		
At least one of the following non-specific symptoms: • Headache • Myalgia • Fatigue/malaise • Gastrointestinal illness					N						N						N						N						N		
Meningitis	O						O						O						O						O						
Septic arthritis	O						O						O						O						O						
Endocarditis	O						O						O						O						O						
Laboratory Evidence																															
Culture and identification of *F. tularensis* confirmed by a Laboratory Response Network (LRN) laboratory	O	O	O	O	O	O																			S						
Fourfold or greater change in serum antibody titer between acute and convalescent specimens*	O	O	O	O	O	O																			S						

Criterion (continued)	Confirmed						Probable																Suspect						
Change from a negative IgG AND a negative IgM serologic test result to *F. tularensis* antigen on an acute specimen to either a positive IgG, a positive IgM, or both on a convalescent specimen*, **	O	O	O	O	O	O																	S						
Detection of *F. tularensis* DNA directly from a clinical or autopsy specimen by molecular testing (e.g., PCR or sequencing assay)							O	O	O	O	O	O											S						
Demonstration of *F. tularensis* antigen in tissue (e.g. by immunohistochemical staining)							O	O	O	O	O	O											S						
Positive IgG and/or IgM serologic test detecting antibodies to *F. tularensis* antigen (**without documented fourfold or greater change or without prior negative result**) in a patient with no history of tularemia vaccination													N	N	N	N	N	N					S						
Epidemiologic Linkage Evidence																													
Exposure within the 21 days of illness onset or, when clinical information is not available, within 21 days of specimen collection						N						N	N	N	N	N	N	N	N	N	N	N		N	N	N	N	N	
Known contact (including potential aerosol exposure) with an animal with direct laboratory detection or isolation of *F. tularensis*						O						O						O	O	O	O	O							
Known handling of an *F. tularensis* isolate in a laboratory setting						O						O						O	O	O	O	O							
History of a known or suspected tick or deerfly bite						O						O	O	O	O	O	O							O	O	O	O	O	
Contact with an animal suspected to have tularemia (e.g., hunting or veterinary care)						O						O	O	O	O	O	O							O	O	O	O	O	

Criterion (continued)	Confirmed						Probable																Suspect						
Activities with potential for aerosol-generating exposure (e.g., landscaping, mowing, or high-pressure spraying)						O						O	O	O	O	O	O							O	O	O	O	O	
Consumption of material potentially contaminated with *F. tularensis*						O						O	O	O	O	O	O							O	O	O	O	O	
Shared exposure with another confirmed or probable tularemia case (i.e., part of a cluster)						O						O	O	O	O	O	O							O	O	O	O	O	
Other activities in occupational or recreational settings that could be linked to *F. tularensis* exposure						O						O	O	O	O	O	O							O	O	O	O	O	
Vital Records Evidence																													
A person whose death certificate lists tularemia as a cause of death or a significant condition contributing to death																													S

Notes:
S = This criterion alone is SUFFICIENT to classify a case.
N = All "N" criteria in the same column are NECESSARY to classify a case.
O = At least one of these "O" (ONE OR MORE) criteria in each category (categories=clinical evidence, laboratory evidence, and epidemiologic evidence) in the same column—in conjunction with all "N" criteria in the same column—is required to classify a case.
** To ensure consistency in laboratory methodologies, it is recommended that testing of paired sera for the purposes of confirmatory classification be conducted within the same laboratory. It is recommended that paired sera are collected 2-4 weeks apart but can be collected outside the range if clinically compatible or epidemiologic evidence is highly suggestive of tularemia.*
*** For surveillance purposes, a borderline or equivocal serologic result is not considered as positive or negative.*

Table VII.B. Classification Table: Criteria to distinguish a new case of tularemia from reports or notifications which should not be enumerated as a new case for surveillance.

Criterion	Confirmed	Probable	Suspect
Criteria to distinguish a new case			
Completed treatment for previous *F. tularensis* infection	N	N	N
Newly meets clinical evidence	N	N	N
Newly meets confirmatory laboratory evidence^	N		
Newly meets presumptive laboratory evidence		N	
Newly meets supportive laboratory evidence^			N

Notes:
N = All "N" criteria in the same column are NECESSARY to enumerate as a new case.
^ As duration of antibodies to *F. tularensis* is not known, a person with persistently positive serologic tests in absence of new clinical or epidemiologic linkage criteria should not be enumerated as a new case.