Riddles of the Rebellion

2024 Wisconsin Clinical Laboratory Network Regional Meeting

Wisconsin Healthcare-Associated Infections (HAI) Prevention Program, Division of Public Health

September 2024

WISCONSIN DEPARTMENT of HEALTH SERVICES

Presenter

Anna Marciniak,
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Presenter

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Presenter

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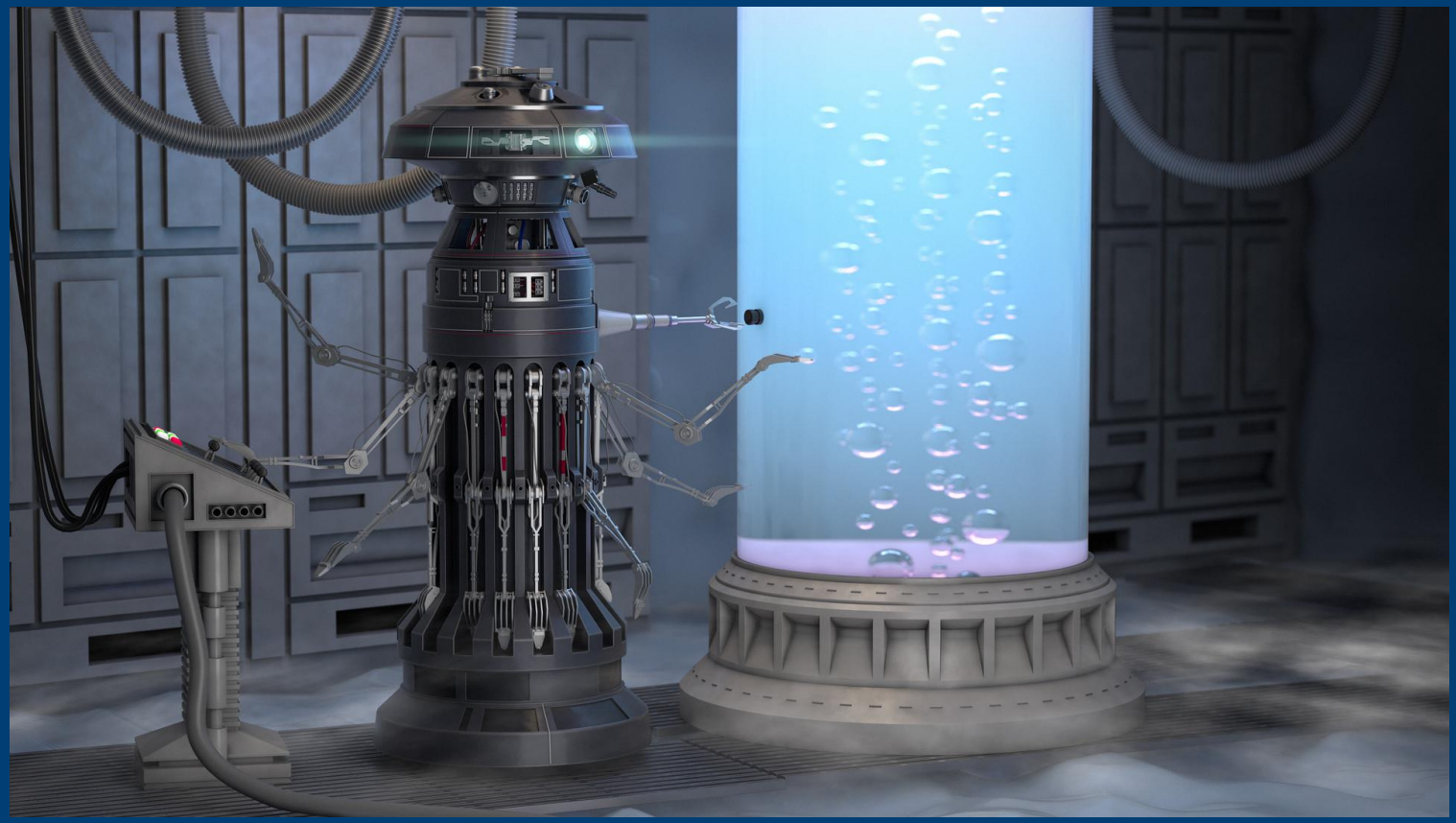
Outbreaks and Emerging Diseases Infection Preventionist

Disclaimer

- The Wisconsin HAI Prevention Program is non-regulatory.
- There is no affiliation with any facilities or products.
- All content is based on current guidance and best practices.

Do you know the name of this droid?



Agenda

- Review case study
- Pathogen background and Wisconsin update
- Highlight clinical laboratory partnerships

Case Study

Transmission

Clinical Presentation and Diagnosis

Thumb pain

Fever of 100.8 degrees

Swollen lymph node (right axilla)

Possible Suspects

- Pasteurella
- Bartonella
- Legionella
- Bordetella
- Francisella

WEDSS Lab Results

RESULT	VALUE	UNITS	REFERENCE RANGES	ABNORMAL	RESULT STATUS
ASP CULTURE	FRANCISELLA TULARENSIS			Abnormal	Correction to results
Bacteria XXX Cult	Francisella tularensis			Abnormal	Correction to results

Light Growth Francisella tularensis

Testing performed at Wisconsin State Lab of Hygiene, 2601 Agriculture Drive, Madison, WI 53718

Other - see scanned report

Updated result: Previously reported as Gram negative coccobacilli on 10/19/2022 at 1712 CDT.

Result has been updated to reportable.

TEST ORDERED:

This test was developed and its performance characteristics determined by the Wisconsin State Laboratory of Hygiene. It has not been approved or cleared by the U.S. Food and Drug Administration.

RESULT	VALUE	UNITS	REFERENCE RANGES	ABNORMAL	RESULT STATUS
F. TULARENSIS	Francisella tularensis DNA detected.			Abnormal	Final

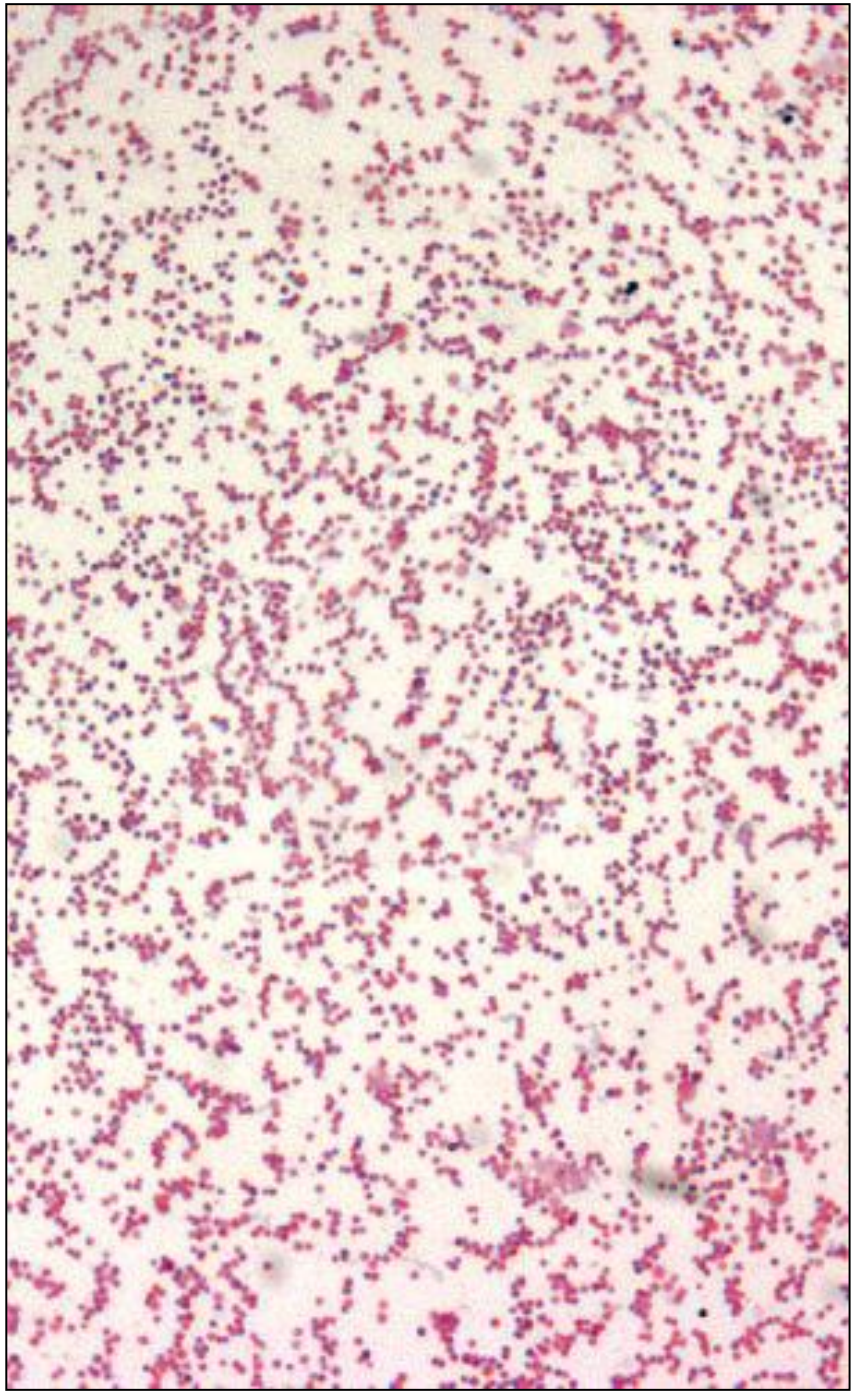
Performing Organization: Wisconsin State Laboratory of Hygiene
Performing Organization Address:

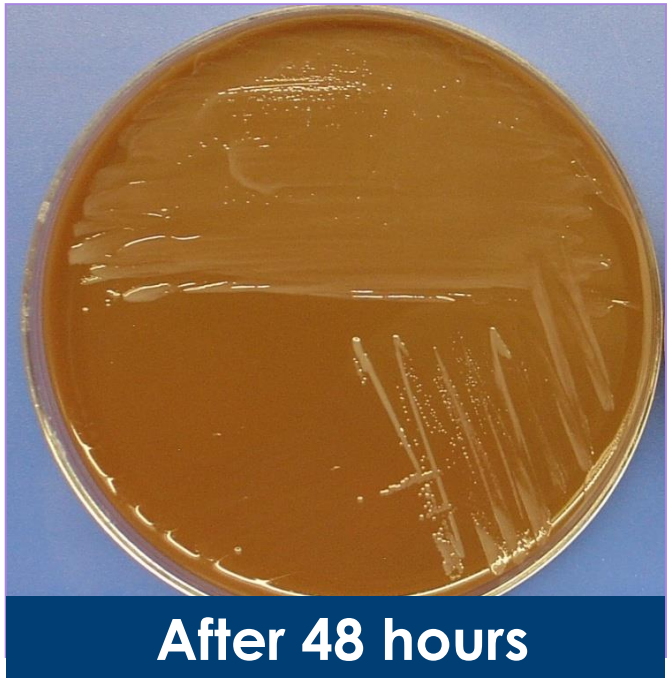
Pause: Let's review Tularemia

Tularemia Background and Wisconsin Updates

Francisella tularensis

Photo source: Wisconsin State Laboratory of Hygiene – University of Wisconsin





After 48 hours

After 48 hours

Modes of Transmission

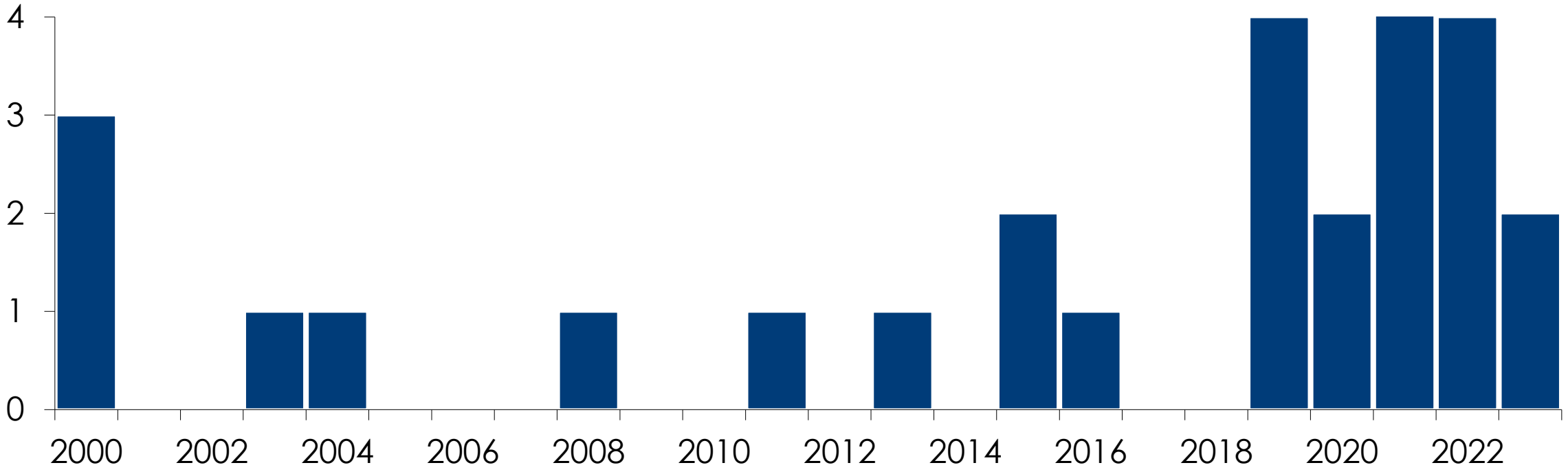
- Arthropod bites
- Handling infected animal tissues
- Bite from an infected animal
- Ingesting contaminated meat, water, or soil
- Agricultural dusts
- Laboratory exposures
- Mowing over rabbit nests

Clinical Presentation in Humans

- **Incubation**: 3–5 days (range: 1–14 days)
- **Febrile illness** that may also include:
  - Chills
  - Headache
  - Myalgia
  - Fatigue
  - Sore throat
  - Cough
  - Shortness of breath
  - Vomiting
  - Diarrhea
- **Prominent lymphadenopathy typical**

Reported Tularemia Cases in Wisconsin, 2000–2023

27 cases in 24 years



Source: Wisconsin Department of Health Services (DHS)

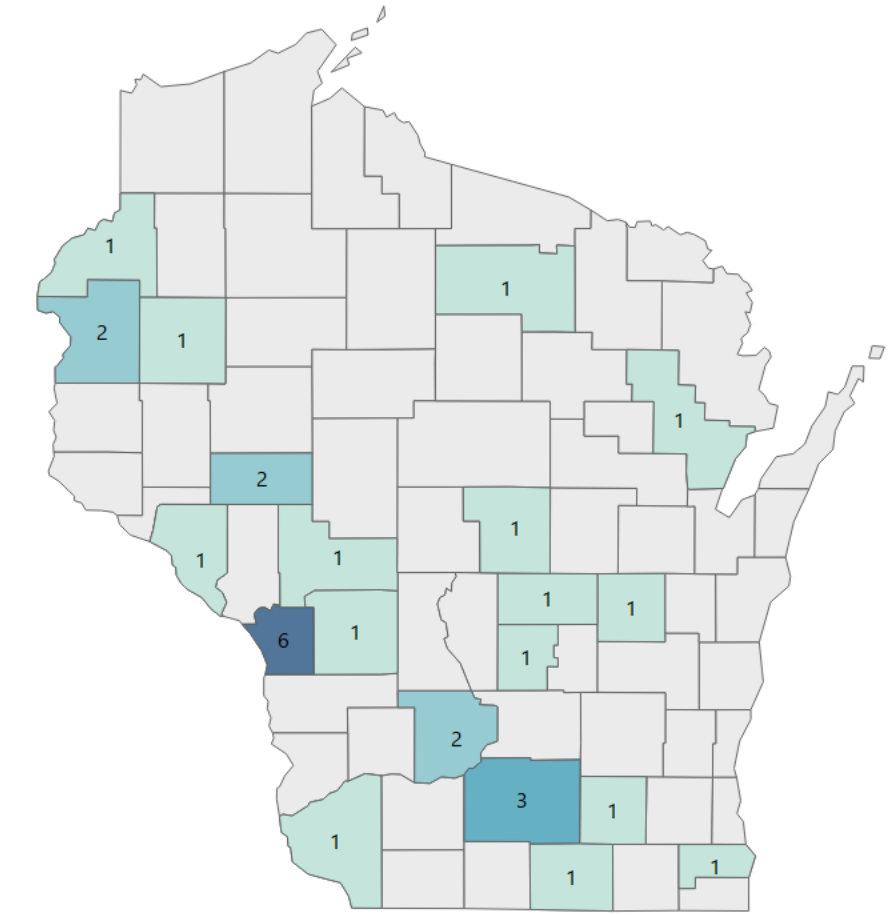
Wisconsin Tularemia Cases, 2000-2023

Cases	
Confirmed	20
Probable	10

Sex distribution	
Female	9
Male	20

Age distribution	
18-29 years	7
30-39 years	3
40-49 years	5
50-59 years	5
60-69 years	5
70-79 years	4
80+ years	1

Source: DHS



Diagnosis

Confirmatory

- Culture
- Serology

Other presumptive diagnostic options

- PCR
- Direct fluorescent antibody (DFA)
- Immunohistochemical staining

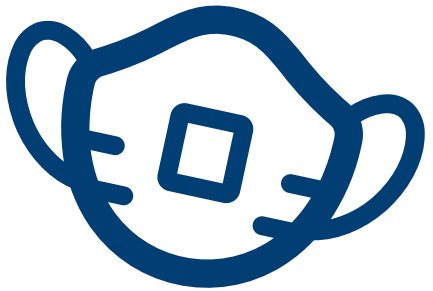
Back to the case study…

Recommendations Provided to Hospital

- Risk to exposed health care providers is poorly defined
- May take extra precautions such as:
  - Use of a **negative pressure room**
  - Utilization of a **higher level of respiratory protection** (N95 respirator) if an aerosol generating procedure is performed

Hospitalization and Interventions

- Wound debridement necessary
- Staff concerned about proper personal protective equipment (PPE) for procedure



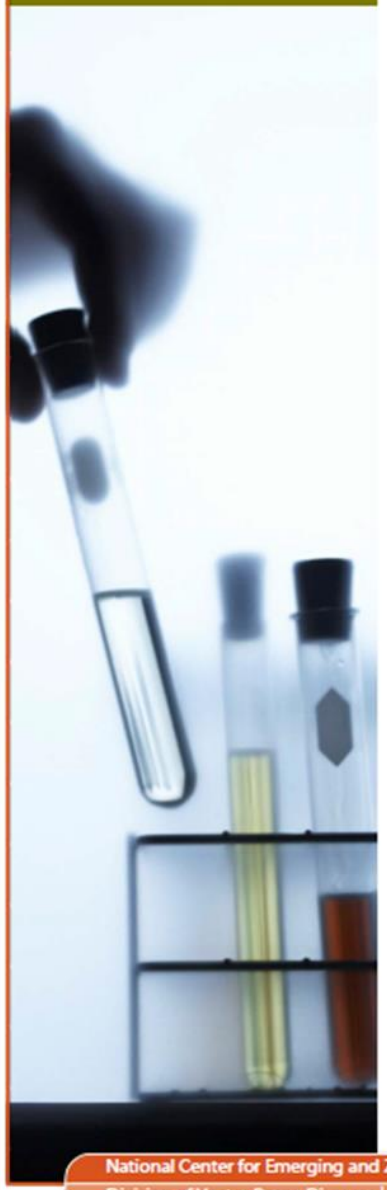
Right Thumb Wound

Exposure Review

[CDC Exposure Fact Sheet]

Tularemia Fact Sheet

For more information about tularemia, visit http://www.cdc.gov/tularemia/



Managing potential laboratory exposures to *Francisella tularensis*

Francisella tularensis is highly infectious when grown in culture, and laboratory-acquired infections have been documented. The isolation of *F. tularensis* from clinical specimens, especially if unanticipated, can generate concern among laboratory workers about possible exposure.

Management options for potentially exposed workers include a "fever watch" or antimicrobial prophylaxis. During a fever watch, the worker monitors their temperature with instructions to seek immediate treatment for tularemia if they develop a fever (usually defined as a single oral temperature greater than 101 °F or 38.5 °C).

There are no set criteria for determining who should be managed by fever watch and who would benefit from immediate prophylaxis. Factors to consider when making this decision include:

- **Nature of the exposure**—Workers who report sniffing a culture plate or conducting procedures that generate aerosols are likely at greater risk than those who simply worked with the organism on the bench.
- **Incubation period**—The typical incubation period for tularemia is 3-7 days (range 1-14 days). Much of this period may have passed by the time the organism is positively identified, in which case, the remaining risk of infection is low.
- **Level of concern**—Some laboratory workers may be very anxious regarding their risk of infection, while others may be more concerned about taking medications unnecessarily.

Doxycycline (100 mg orally BID X 14 days) is generally recommended for prophylaxis in adults. Ciprofloxacin (500 mg orally BID) is not FDA-approved for prophylaxis of tularemia but has demonstrated efficacy in various studies, and may be an alternative for patients unable to take doxycycline.

For more information please contact Centers for Disease Control and Prevention:
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-63548
Email: cdcinfo@cdc.gov Web: www.cdc.gov

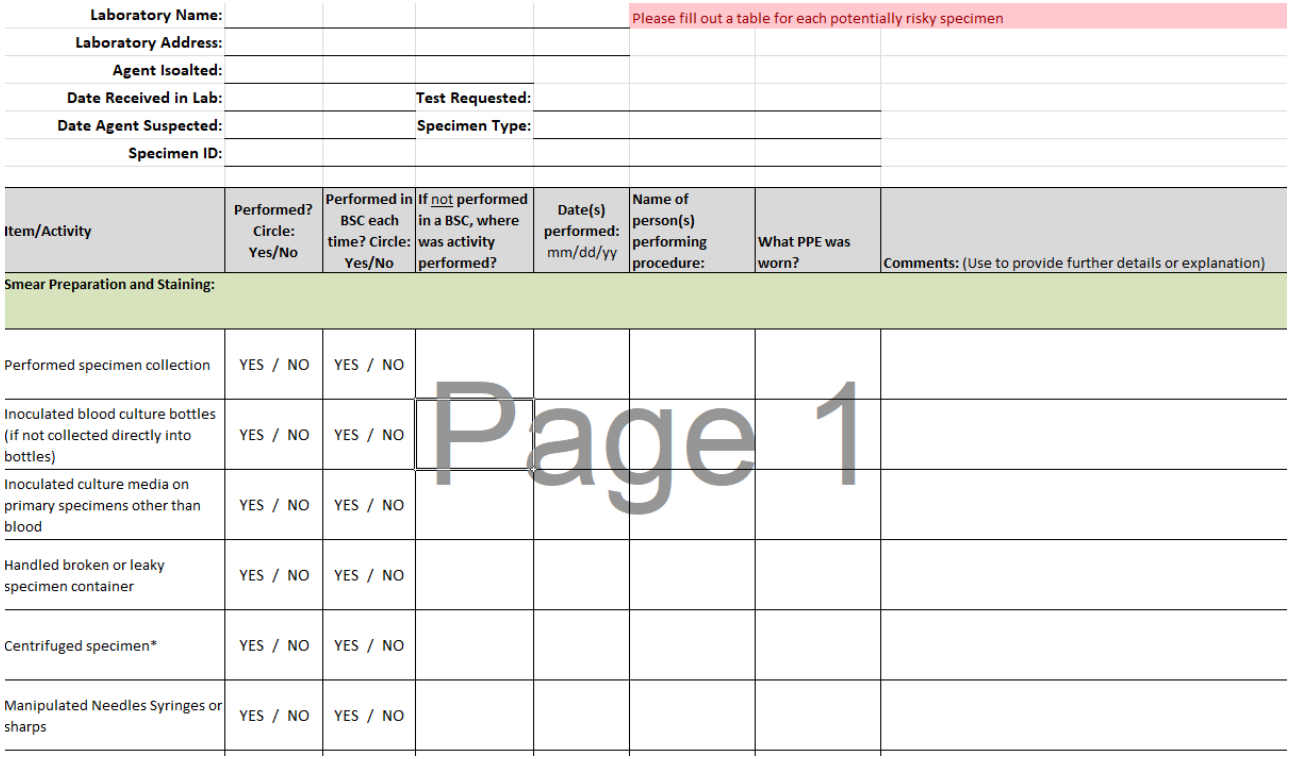
National Center for Emerging and Zoonotic Infectious Diseases
Division of Vector Borne Diseases | Bacterial Diseases Branch

Laboratory Exposures: *F. tularensis*

- No set criteria
- Risk assessment
  - Fever watch (typically recommend for anyone with a potential exposure), or
  - Fever watch and antibiotic prophylaxis

Wisconsin Clinical Lab Network (WCLN) Lab Assessment Tool

Each laboratory should thoroughly review their lab records to re-create the workflow for the specimen.



Laboratory Name:					Please fill out a table for each potentially risky specimen		
Laboratory Address:							
Agent Isoalted:							
Date Received in Lab:			**Test Requested:**				
Date Agent Suspected:			**Specimen Type:**				
Specimen ID:							
Item/Activity	**Performed? Circle: Yes/No**	**Performed in BSC each time? Circle: Yes/No**	**If not performed in a BSC, where was activity performed?**	**Date(s) performed:** mm/dd/yy	**Name of person(s) performing procedure:**	**What PPE was worn?**	**Comments:** (Use to provide further details or explanation)
Smear Preparation and Staining:							
Performed specimen collection	YES / NO	YES / NO					
Inoculated blood culture bottles (if not collected directly into bottles)	YES / NO	YES / NO					
Inoculated culture media on primary specimens other than blood	YES / NO	YES / NO					
Handled broken or leaky specimen container	YES / NO	YES / NO					
Centrifuged specimen*	YES / NO	YES / NO					
Manipulated Needles Syringes or sharps	YES / NO	YES / NO					

Conclusion: No Further Transmission

- None of the exposed staff at the humane society developed symptoms
- Laboratory staff remained asymptomatic

Starts with the Clinical Lab, then…

WSLH	Multiple local and Tribal health departments	State public health vet	Infection disease epidemiologist
Hospital or clinic infection prevention	Infectious disease physician	Clinical team	Humane society staff

Wisconsin Healthcare-Associated Infections (HAI) Prevention Program

- **Acts as a liaison** with experts at Bureau of Communicable Diseases, WSLH, CDC, and other agencies.
- **Provides risk assessments** to employee occupational heath, clinical laboratories, and clinical staff.
- **Ensures safety of laboratory and clinical staff** by proper use of PPE and post exposure review.
- **Facilitates conference calls** or other means to share information, ask questions, and discuss the situation.

Clinical labs are a vital public health partner for surveillance and prevention of infectious diseases within the communities they serve.

Questions?

Thank you!

HAI Prevention Program Contacts

Email: dhswihaipreventionprogram@dhs.wisconsin.gov

Phone: 608-267-7711

Website: www.dhs.wisconsin.gov/hai/contacts.htm