MLS Laboratory Update: Tularemia cases increasing in Minnesota

JULY 24, 2025

Purpose of this Message:

Over the past two years there has been a significant increase in laboratory-confirmed cases of tularemia in companion animals as well as multiple human cases throughout the state. Laboratorians are reminded about the Laboratory Response Network (LRN) Sentinel Laboratory resources for referring Francisella tularensis isolates and specimens.

Action Item:

1. Remain vigilant for potential *F. tularensis* cases as the 2025 testing season progresses.

2. Review the MDH-PHL algorithm for rule-out and referral of *Francisella tularensis*.

Details:

- If *Francisella tularensis* cannot be ruled out during routine testing (or a clinical provider requests testing), submit an isolate or obtain specimens for identification/confirmation and send to the MDH Public Health Laboratory (MDH-PHL). Laboratories **MUST** call 612-282-3723 before submitting an isolate or specimen for testing.
- Please see the MDH-PHL rule-out algorithm for information on how to rule out and refer *F. tularensis* for definitive identification.
    - *F. tularensis* poses a risk for laboratory-acquired infection: **perform all work in a Class II Biosafety cabinet (BSC) if you have an organism that is slow-growing with a gram stain morphology of tiny, gram-negative coccobaccilli.** Do not work with cultures on the open bench or test suspected *F. tularensis* isolates on MALDI-TOF or other commercial identification systems.
    - For more information, please see the ASM Sentinel Laboratory Guidelines for F. tularensis and the APHL bench cards (https://www.aphl.org/aboutAPHL/publications/Documents/2018_BiothreatAgents_SentinelLab_BenchCards_WEB.pdf).
- Contact the MDH-PHL BT on-call line (612-282-3723) for urgent laboratory consultations (available 24/7/365). For non-urgent laboratory questions, please call Dr. Aaron Barnes at 651-201-4184 or email aaron.m.t.barnes@state.mn.us. For epidemiological questions,

please contact the MDH Epi on-call (651-204-5414) or Maria Bye, Zoonotic Epidemiologist (maria.bye@state.mn.us).

Background:

- Historically, Minnesota sees a small number of animal cases (mean: 7 cases/year) and human cases have been uncommon (<1/year). Over the past several years, however, animal case numbers have been trending up:
    - 2023: 20 positive animal cases (19 cats, 1 dog)
    - 2024: 27 positive animal cases (21 cats, 5 dogs, 1 other)
    - 2025 (to 7/21): 15 positive animal cases (13 cats, 2 dogs)
    - In addition, there were five laboratory confirmed human cases in 2024 and four human cases in Minnesota since April 2025.
    - These increases in both animal and human cases are not unique to Minnesota; numerous other states have also reported increases in tularemia over the same time period.
- Tularemia is a potentially serious illness caused by the bacterium *Francisella tularensis* (FT). FT occurs naturally throughout the United States, particularly in wildlife (primarily rabbits, squirrels, and other rodents), though companion animals are also known vectors. Humans are usually infected through the bites of ticks or deer flies, contact with infected animals (especially cats), or inhalation of contaminated material. Mowing over sick or dead animals can lead to respiratory exposures. Tularemia is not directly transmitted from person-to-person.
- Though there are a variety of clinical forms, tularemia typically presents with the sudden onset of fever. Additional acute signs and symptoms may include skin wound or ulcer, regional lymphadenopathy, headache, chills, joint and muscle pain, or nausea; a non-productive cough and dyspnea is common in pulmonic and typhoidal forms. The incubation period for tularemia is generally 3–5 days (range: 1–21 days).
- Diagnosis of tularemia is confirmed via culture of *F. tularensis* from blood or affected tissues (e.g., wound exudate or lymph node tissue) or paired acute and convalescent serologies. **Healthcare providers should alert laboratories to the suspicion for tularemia before specimen submission so that appropriate precautions are taken to avoid occupational laboratory exposure.** Specimens from suspect cases collected prior to initiation of antibiotics are most helpful in establishing a definitive diagnosis.

Additional Information:

- MDH: Tularemia Fact Sheet (https://www.health.state.mn.us/diseases/tularemia/tularemiafs.html)
- CDC: About Tularemia (https://www.cdc.gov/tularemia/about/index.html)

- Bye M, Mandli J, Barnes A, Schiffman E, Smith K, Holzbauer S. Notes from the Field: Increase in Human and Animal Tularemia Cases - Minnesota, 2024 (https://www.cdc.gov/mmwr/volumes/74/wr/mm7413a3.htm?s_cid=mm7413a3_w).
- ASM Laboratory Response Network (LRN) Sentinel Level Clinical Laboratory Protocols (https://asm.org/articles/cphmc/laboratory-response-network-lrn-sentinel-level-c)
- Submission Forms for the Infectious Disease Laboratory (https://www.health.state.mn.us/diseases/idlab/forms.html)

Questions:

- Please contact: Dr. Aaron Barnes, EPR Laboratory Supervisor, aaron.m.t.barnes@state.mn.us, 651-201-4184

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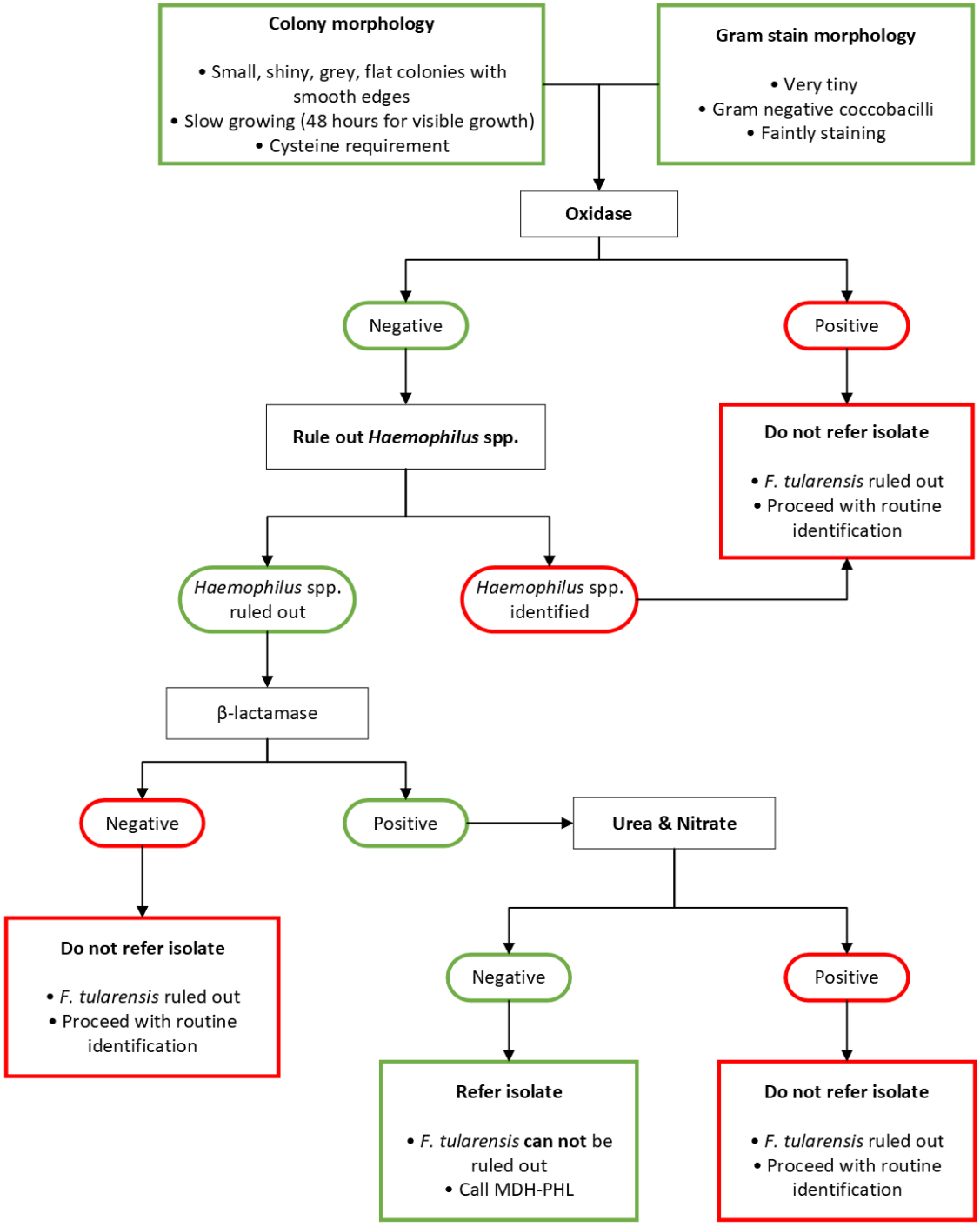
To obtain this information in a different format, call: 651-201-5200.

Sentinel Lab rule out algorithm for *F. tularensis* culture



Sentinel Lab rule out algorithm for *F. tularensis* culture

Colony morphology or gram stain morphology

- Colon morphology:
    - Small, shiny, grey, flat colonies with smooth edges
    - Slow growing (48 hours for visible growth)
    - Cysteine requirement
- Gram stain morphology:
    - Very tiny
    - Gram negative coccobacilli
    - Faintly staining

Rule out algorithm:

- Oxidase Positive
    - Do not refer isolate
    - *F. tularensis* ruled out
    - Proceed with routine identification. End here.
- Oxidase Negative
    - Rule out Haemophilus spp.
        - Haemophilus spp. Identified
            - Do not refer isolate
            - *F. tularensis* ruled out
            - Proceed with routine identification. End here.
        - Haemophilus spp. ruled out
            - Beta Lactamase Negative
                - Do not refer isolate
                - *F. tularensis* ruled out
                - Proceed with routine identification. End here.
            - Beta Lactamase Positive
                - Urea and Nitrate Negative
                    - Refer Isolate
                    - *F. tularensis* **can not** be ruled out
                    - Call MDH-PHL. End here.
                - Urea and Nitrate Positive
                    - Do not refer isolate
                    - *F. tularensis* ruled out
                    - Proceed with routine identification. End here.