ALBERTA PRECISION LABORATORIES
Leaders in Laboratory Medicine

Laboratory Bulletin

DATE:	21 July 2025
TO:	All Healthcare Providers
FROM:	Alberta Precision Laboratories (APL) – Public Health Laboratory
RE:	***Anaplasma Phagocytophilum* – Change in Serology and Molecular Testing Process**

PLEASE POST OR DISTRIBUTE AS WIDELY AS APPROPRIATE

Key Message

- Effective July 21, 2025, there will be a change in the acceptance criteria for serology and molecular (PCR/NAT) testing for *Anaplasma phagocytophilum,* performed by the National Microbiology Laboratory (NML), Winnipeg, as described below.
    - Serology testing:
        - Both acute (collected within 8 to 12 days of onset of symptoms) and convalescent (collected 2 to 3 weeks later) sera must be submitted. Single serum samples collected at random timepoints will no longer be accepted
        - The acute sample will be stored until the convalescent serum is received at the ProvLab, when both samples will be sent to the NML for testing
        - If a convalescent blood is not received at the ProvLab within 4 weeks of receipt of the acute blood the request will be cancelled and the acute blood discarded
        - Dates of symptom onset and tick exposure location must be provided in Connect Care or on the accompanying Zoonotic Serology requisition: https://www.albertahealthservices.ca/frm-20087.pdf
    - Molecular (NAT/PCR) testing
        - Unspun EDTA whole blood is the ONLY acceptable sample; plasma and serum will not be tested
        - Molecular testing requires a consult with the Public Health Microbiologist-on-Call for approval
        - Acute samples collected within the first 8 days after symptom onset have the highest sensitivity

Background

- *Anaplasma phagocyophilum* (human granulocytic anaplasmosis), a tick-borne infection, is transmitted by the nymphal and adult stages of the *Ixodes ricinus* tick complex. In Canada and the USA, these are *Ixodes scapularis* and *I. pacificus*, whereas in Europe & Asia, *Ixodes ricinus* and *I. persulcatus* are the permissive vectors.
- In Canada, areas where Anaplasma infections have been reported from approximate to those where Lyme disease is endemic, as the tick vector for the latter can be co-infected with both agents (https://www.canada.ca/en/public-health/services/diseases/lyme-disease/surveillance-lyme-disease.html#a4).
- The infected tick should be attached for at least 24 hours before transmission of the organism to the person occurs. The incubation period is between 5 to 14 days and the early onset of symptoms/signs is non-specific and include fever, malaise, myalgia, headache and anorexia. A CBC may show a leukopaenia, thrombocytopaenia, and mild anaemia in conjunction with elevated hepatic transaminases (1).

- Laboratory confirmation of anaplasmosis should include both molecular and serologic testing in persons with a high suspicion for the infection especially in the acute phase of the illness. On average, antibodies to *A. phagocyophilum* become detectable around 12 days after symptom onset (2), and 99.2% of infected persons will seroconvert after 4 weeks after infection (4). A single positive titre result cannot distinguish between a current and past infection, therefore acute and convalescent samples are recommended for confirmation of the infection.

Action Required

- Persons who are asymptomatic in the incubation period following a tick bite should not be tested
- Based upon when the patient was bitten and the onset of symptoms refer to the Table below to assess if BOTH molecular and serology testing are required or ONLY serology testing should be requested
- If molecular testing is indicated by symptoms, then FIRST consult with the Public Health Laboratory Microbiologist/Virologist-on-Call (Calgary 403-944-1110, Edmonton 780-407-8822)
- If just serology testing is required the patient should be told that both acute and convalescent bloods must be collected for testing to be performed
- Complete the Zoonotic Serology requisition providing the date of the tick bite, date of onset of illness and pertinent symptoms

Duration of Symptoms	**Samples & Orderable**		
Less than 8 days	• EDTA whole blood (unspun) AND • Serum (SST Gold top)	Order *A. phagocytophilum* NAT* [LAB9501] AND *A.phagocytophilum* serology [LAB9569]	Also collect convalescent serology 2-3 weeks after acute blood
More than 8 days	Serum (SST Gold top)	Order *A.phagocytophilum* serology [LAB9569]	Order *A.phagocytophilum* serology [LAB9569]

***Consult with the** Public Health Laboratory Microbiologist/Virologist-on-Call (Calgary 403-944-1110, Edmonton 780-407-8822) for PCR/NAT test

Questions/Concerns

- Dr. Kevin Fonseca, Clinical Virologist, APL - Public Health Microbiology (kevin.fonseca@albertaprecisionlabs.ca)

Approved by

- Dr. Kevin Fonseca for Dr. Graham Tipples, Medical-Scientific Director, Public Health, APL

References

1. MacQueen D, Centellas F. Human Granulocytic Anaplasmosis. Infect Dis Clin North Am. 2022 Sep;36(3):639-654. doi: 10.1016/j.idc.2022.02.008. PMID: 36116840.
2. Schotthoefer AM, Meece JK, Ivacic LC, Bertz PD, Zhang K, Weiler T, Uphoff TS, Fritsche TR. Comparison of a real-time PCR method with serology and blood smear analysis for diagnosis of human anaplasmosis: importance of infection time course for optimal test utilization. J Clin Microbiol. 2013 Jul;51(7):2147-53. doi: 10.1128/JCM.00347-13. Epub 2013 May 1. PMID: 23637292; PMCID: PMC3697711.
3. Hansmann Y, Jaulhac B, Kieffer P, Martinot M, Wurtz E, Dukic R, Boess G, Michel A, Strady C, Sagez JF, Lefebvre N, Talagrand-Reboul E, Argemi X, De Martino S. Value of PCR, Serology, and Blood Smears for Human Granulocytic Anaplasmosis Diagnosis, France. Emerg Infect Dis. 2019 May;25(5):996-998. doi: 10.3201/eid2505.171751. PMID: 31002073; PMCID: PMC6478229.
4. Bakken JS, Haller I, Riddell D, Walls JJ, Dumler JS. The serological response of patients infected with the agent of human granulocytic ehrlichiosis. Clin Infect Dis. 2002 Jan 1;34(1):22-7. doi: 10.1086/323811. Epub 2001 Nov 21. PMID: 117

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Provincial Laboratory for Public Health

Zoonotic Testing Requisition

Edmonton Site 8440-112 St. NW T6G 2J2
Phone 780.407.7121
Fax 780.407.3864
Virologist/Microbiologist-on-call
780.407.8822

Calgary Site 3030 Hospital Dr NW T2N 4W4
Phone 403.944.1200
Fax 403.270.2216
Virologist/Microbiologist-on-call
403.944.1200

Scanning Label or Accession # *(lab only)*

Patient

PHN Expiry: _____	Date of Birth *(dd-Mon-yyyy)*			
Legal Last Name	Legal First Name	Middle Name		
Alternate Identifier	Preferred Name	☐ Male ☐ Female ☐ Non-binary ☐ Prefer not to disclose	Phone	
Address	City/Town	Prov	Postal Code	

Provider(s)

Authorizing Provider Name *(last, first, middle)*		Copy to Name *(last, first, middle)*	Copy to Name *(last, first, middle)*	
Address	Phone	Address	Address	
CC Provider ID	CC Submitter ID / Legacy ID	Phone	Phone	
Clinic Name		Clinic Name	Clinic Name	

Collection

Date *(dd-Mon-yyyy)*	Time *(24 hr)*	Location	Collector ID

Specimen Type ☐ Blood ☐ Urine ☐ Other: _____

Mandatory Clinical History ***(testing will NOT be performed if left blank)***

Check Primary Symptoms/Manifestations

☐ Rash *(specify)* _____
☐ Fever *(specify)* _____
☐ Neurologic *(specify)* _____
☐ Respiratory
☐ Polyarthritis
☐ Gastrointestinal
☐ Other *(specify)* _____

Countries/provinces/regions visited within past 3 months before onset of symptoms

_____

Date of return *(dd-Mon-yyyy)* _____

Date of onset symptoms *(dd-Mon-yyyy)* _____

Antibiotic treatment? ☐ No ☐ Yes ☐ N/A

Pregnant? ☐ No ☐ Yes , Gestational age _____

Must contact Microbiologist/Virologist-on-Call before collecting and submitting samples for Viral haemorrhagic fevers, *e.g., Ebola, Marburg, Lassa fever*

Mosquito Borne Diseases

☐ West Nile virus LAB1269
☐ Dengue virus LAB1388
☐ Chikungunya virus LAB1388
☐ Other *(specify)* _____

Tick Borne Diseases

☐ Lyme Disease LAB788
☐ Anaplasma phagocytophilium LAB9569
☐ Spotted fever rickettsiosis LAB1264
☐ Typhus group rickettsiosis LAB1265
☐ Scrub typhus (O.tsutsugamushi) LAB10057
☐ Other *(specify)* _____

Other Infections

☐ Rabies immunity ONLY LAB9938
Occupation/reason ***(required)*** _____
Date of Vaccination *(dd-Mon-yyyy)* _____ ☐ N/A
For exposure to Rabies FIRST contact zone MOH for management

☐ Hantavirus LAB9515
contact/source *(specify)* _____
(e.g. mouse droppings/urine)
Date of contact *(dd-Mon-yyyy)* _____ ☐ Unknown

☐ *Bartonella henselae/quintana* LAB785
contact/source *(specify)* _____
Date of contact *(dd-Mon-yyyy)* _____ ☐ Unknown

☐ Brucella LAB6003
contact/source *(specify)* _____
Date of contact *(dd-Mon-yyyy)* _____ ☐ Unknown

☐ Q fever *(Coxiella burnetii)* LAB1209
contact/source *(specify)* _____
Date of contact *(dd-Mon-yyyy)* _____ ☐ Unknown

☐ Mpox *(formerly Monkeypox)* LAB5209
Location of lesions *(specify)* _____
Date of onset *(dd-Mon-yyyy)* _____
Vaccinated: ☐ No ☐ Yes ☐ Unknown

☐ Other *(specify)* _____