



# Georgia Epidemiology Report

## Tickborne Disease Surveillance in Georgia, 2007

Six tickborne diseases are notifiable in Georgia: Rocky Mountain spotted fever (RMSF), human monocytic ehrlichiosis (HME), human granulocytic anaplasmosis (HGA), Lyme disease, Q fever, and tularemia.

Eleven confirmed and 49 probable cases of RMSF were reported to the Georgia Division of Public Health in 2007. All cases met laboratory and clinical criteria, as required by the CDC national case definition. Of the 60 cases of probable and confirmed RMSF in Georgia during 2007, one probable case, in an 8 year old boy from north Georgia, was fatal. Seventy-seven percent of cases were in males, and the median age was 45 years (range 6-76 years). Of 43 cases where both race and ethnicity were known, 39 (91%) were in non-Hispanic whites. Eighty-seven percent of cases had onsets during April-September. Health Districts with the most confirmed and probable cases were East Metro (13), LaGrange (11), North Central (9), and Northwest (8). Eighty-nine percent of cases were in persons who resided north of the Piedmont Fall Line (the dividing line between the Piedmont and the Coastal Plain stretching across the state roughly from Columbus to Macon to Augusta).

Surveillance for ehrlichiosis in 2007 detected 4 confirmed and 9 probable cases of HME, and 1 confirmed case of HGA, all of which met CDC's national case definition. There were no deaths. All HME cases occurred during April-October, and the HGA case occurred in September. The median age of persons with HME cases was 55 years, with

a range of 16-84 years. Six of the 13 cases (46%) were in males. Of 10 cases for which both race and ethnicity were known, 9 (90%) were in non-Hispanic whites. Of the 18 Georgia Health Districts, the LaGrange District reported the most cases (3). The HGA case was in a resident of Gwinnett County, who was exposed while hiking in western Georgia.

Eleven cases of Lyme disease were reported to GDPH in 2007 that fit the CDC surveillance case definition. The median age of persons with cases was 32 (range 4-66) and 6 (55%) cases were in females. For the 7 cases where both race and ethnicity were known, 6 were in non-Hispanic whites. None were hospitalized, and there were no deaths. Of 9 persons with a known exposure history, 5 (56%) were exposed outside of Georgia in a Lyme-endemic state.

Two cases of Q fever were reported to GDPH in 2007. One case of confirmed chronic Q fever was in a Pierce County resident, and one case of probable acute Q fever was in a Cobb County resident. No cases of tularemia were reported to GDPH in 2007.

Personal prevention measures such as wearing tick repellent, long pants, and long sleeves, as well as performing full body tick checks can help prevent tickborne diseases. For more information about prevention, see our website at <http://www.health.state.ga.us/epi/vbd/tick.asp>.

## Changes in the National Surveillance Case Definitions for Tickborne Diseases

The Council of State and Territorial Epidemiologists (CSTE) and the Centers for Disease Control and Prevention (CDC) have updated the national surveillance case definitions for certain notifiable tickborne diseases. These new case definitions went into effect on January 1, 2008. Surveillance case definitions are tools used by Public Health to capture actual cases of disease while excluding as many non-cases as possible. Reported cases that meet the surveillance case definitions are included in Public Health case counts and statistics, which serve to

educate healthcare providers and the general public alike regarding the incidence of notifiable diseases. Surveillance case definitions establish uniform criteria for disease reporting and are not intended to be used as the sole criteria for making clinical diagnoses or determining the care necessary for a particular patient. Use of additional clinical, epidemiologic, and laboratory data may enable a physician to diagnose a disease even though the formal surveillance case definition may not be met.

Rocky Mountain spotted fever ( <i>Rickettsia rickettsii</i> infection)		
Clinical Criteria: Any reported fever PLUS one or more of the following: rash, headache, myalgia, anemia, thrombocytopenia, or any hepatic transaminase elevation.		
Confirmed	Probable	Suspect
<p>A <b>confirmed</b> case meets the clinical criteria and the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>Serologic evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer reactive with <i>Rickettsia rickettsii</i> antigen by IFA between paired serum specimens (one taken in the first week of illness and a second 2-4 weeks later), <b>or</b></li> <li>Detection of <i>R. rickettsii</i> DNA in a clinical specimen by PCR assay, <b>or</b></li> <li>Demonstration of spotted fever group antigen in a skin lesion (biopsy) or organ tissue (autopsy) specimen by IHC, <b>or</b></li> <li>Isolation of <i>R. rickettsii</i> from a clinical specimen in cell culture.</li> </ul>	<p>A <b>probable</b> case meets the clinical criteria and has serologic evidence of elevated IgG or IgM antibody reactive with <i>R. rickettsii</i> antigen by IFA, ELISA, dot-ELISA, or latex agglutination.</p>	<p>A <b>suspect</b> case has laboratory evidence of past or present infection but no clinical information available (e.g. a laboratory report).</p>
<p><b>Comments:</b> For a detailed description of diagnostic testing for RMSF, please see: Garrison, L.E. and Nicholson, W.L. Diagnostic testing for Rocky Mountain spotted fever: unraveling the uncertainty. Georgia Epidemiology Report, April 2007. Available at <a href="http://www.health.state.ga.us/pdfs/epi/gers/Apr07GER.pdf">http://www.health.state.ga.us/pdfs/epi/gers/Apr07GER.pdf</a>.</p>		

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<b><i>Ehrlichia chaffeensis</i> infection (i.e. human monocytic ehrlichiosis, or HME)</b>		
<b>Clinical Criteria:</b> Any reported fever PLUS one or more of the following: rash, headache, myalgia, anemia, leukopenia, thrombocytopenia, or any hepatic transaminase elevation.		
<b>Confirmed</b>	<b>Probable</b>	<b>Suspect</b>
<p>A <b>confirmed</b> case meets the clinical criteria and the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>▪ Serologic evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer to <i>E. chaffeensis</i> antigen by IFA between paired serum specimens (one taken in the first week of illness and a second 2-4 weeks later), <b>or</b></li> <li>▪ Detection of <i>E. chaffeensis</i> DNA in a clinical specimen by PCR assay, <b>or</b></li> <li>▪ Demonstration of ehrlichial antigen in a skin lesion (biopsy) or organ tissue (autopsy) specimen by IHC, <b>or</b></li> <li>▪ Isolation of <i>E. chaffeensis</i> from a clinical specimen in cell culture.</li> </ul>	<p>A <b>probable</b> case meets the clinical criteria and the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>▪ Serologic evidence of elevated IgG or IgM antibody reactive with <i>E. chaffeensis</i> antigen by IFA, ELISA, dot-ELISA, or assays in other formats, <b>or</b></li> <li>▪ Identification of morulae in the cytoplasm of monocytes or macrophages by microscopic examination.</li> </ul>	<p>A <b>suspect</b> case has laboratory evidence of past or present infection but no clinical information available (e.g. a laboratory report).</p>
<b><i>Anaplasma phagocytophilum</i> infection (i.e. human granulocytic anaplasmosis, or HGA)</b>		
<b>Clinical Criteria:</b> Any reported fever PLUS one or more of the following: rash, headache, myalgia, anemia, leukopenia, thrombocytopenia, or any hepatic transaminase elevation.		
<b>Confirmed</b>	<b>Probable</b>	<b>Suspect</b>
<p>A <b>confirmed</b> case meets the clinical criteria and the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>▪ Serologic evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer to <i>A. phagocytophilum</i> antigen by IFA between paired serum specimens (one taken in the first week of illness and a second 2-4 weeks later), <b>or</b></li> <li>▪ Detection of <i>A. phagocytophilum</i> DNA in a clinical specimen by PCR assay, <b>or</b></li> <li>▪ Demonstration of anaplasma antigen in a skin lesion (biopsy) or organ tissue (autopsy) specimen by IHC, <b>or</b></li> <li>▪ Isolation of <i>A. phagocytophilum</i> from a clinical specimen in cell culture.</li> </ul>	<p>A <b>probable</b> case meets the clinical criteria and the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>▪ Serologic evidence of elevated IgG or IgM antibody reactive with <i>A. phagocytophilum</i> antigen by IFA, ELISA, dot-ELISA, or assays in other formats, <b>or</b></li> <li>▪ Identification of morulae in the cytoplasm of neutrophils or eosinophils by microscopic examination.</li> </ul>	<p>A <b>suspect</b> case has laboratory evidence of past or present infection but no clinical information available (e.g. a laboratory report).</p>
<b>Lyme disease (<i>Borrelia burgdorferi</i> infection)</b>		
<p><b>Erythema migrans (EM):</b> For surveillance purposes, EM is defined as a skin lesion that typically begins as a red macule or papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach greater than or equal to 5 cm in size across its largest diameter. Secondary lesions also may occur. <b>Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and do not qualify as EM.</b> For most patients, the expanding EM lesion is accompanied by other acute symptoms, particularly fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. These symptoms are typically intermittent. The diagnosis of EM must be made by a physician.</p>		
<p><b>Late manifestations:</b> For surveillance purposes, late manifestations include any of the following when an alternate explanation is not found:</p> <ul style="list-style-type: none"> <li>▪ <u>Musculoskeletal system.</u> Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints, sometimes followed by chronic arthritis in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgia, myalgia, or fibromyalgia syndromes alone are not criteria for musculoskeletal involvement.</li> <li>▪ <u>Nervous system.</u> Any of the following, alone or in combination: lymphocytic meningitis; cranial neuritis, particularly facial palsy (may be bilateral); radiculoneuropathy; or, rarely, encephalomyelitis. Encephalomyelitis must be confirmed by demonstration of antibody production against <i>Borrelia burgdorferi</i> in the cerebrospinal fluid (CSF), evidenced by a higher titer of antibody in CSF than in serum. Headache, fatigue, paresthesia, or mildly stiff neck alone are not criteria for neurologic involvement.</li> <li>▪ <u>Cardiovascular system.</u> Acute onset of high-grade (2nd-degree or 3rd-degree) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bradycardia, bundle branch block, or myocarditis alone are not criteria for cardiovascular involvement.</li> </ul>		
<p><b>Laboratory evidence</b> is defined as follows for surveillance purposes:</p> <ul style="list-style-type: none"> <li>▪ Positive two-tier testing using a sensitive EIA or IFA followed by a Western immunoblot, <b>or</b></li> <li>▪ A positive IgG Western immunoblot, <b>or</b></li> <li>▪ A positive culture for <i>B. burgdorferi</i>.</li> </ul>		

Confirmed	Probable	Suspect
<p>A <b>confirmed</b> case of Lyme disease <u>with exposure in Georgia or another non-endemic area</u> is defined as:</p> <ul style="list-style-type: none"> <li>A case of EM with laboratory evidence of infection, <b>or</b></li> <li>A case with at least one late manifestation that has laboratory evidence of infection.</li> </ul>	<p>A <b>probable</b> case is any other case of physician-diagnosed Lyme disease that has laboratory evidence of infection.</p>	<p>A <b>suspect</b> case <u>with exposure in Georgia or another non-endemic area</u> is defined as:</p> <ul style="list-style-type: none"> <li>A case of EM with no laboratory evidence of infection, <b>or</b></li> <li>A case with laboratory evidence of infection but no clinical information available (e.g. a laboratory report).</li> </ul>
<p><b>Comments:</b> Cases with exposure to tick habitats in an endemic area (i.e. the Northeast, upper Midwest, or California) can be confirmed by clinical diagnosis of EM only (no laboratory evidence is needed). Please report exposure county and state.</p>		
<p><b>Q fever (<i>Coxiella burnetii</i> infection)</b></p>		
<p><b>Acute Q fever clinical criteria:</b> Acute fever PLUS one or more of the following: rigors, severe retrobulbar headache, acute hepatitis, pneumonia, or elevated liver enzyme levels.</p>		
Confirmed Acute	Probable Acute	
<p>A <b>confirmed</b> case of <b>acute</b> Q fever is defined as a case that: a.) meets the clinical criteria of acute Q fever <b>or</b> is epidemiologically linked to a lab confirmed case; <b>and</b> b.) meets the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>Serologic evidence of a fourfold change in IgG-specific antibody titer to <i>Coxiella burnetii</i> phase II antigen by IFA between paired serum specimens (one taken in the first week of illness and a second 3-6 weeks later, phase I titers may be elevated as well), <b>or</b></li> <li>Detection of <i>C. burnetii</i> DNA in a clinical specimen by PCR assay, <b>or</b></li> <li>Demonstration of <i>C. burnetii</i> antigen in a clinical specimen by IHC, <b>or</b></li> <li>Isolation of <i>C. burnetii</i> from a clinical specimen by culture.</li> </ul>	<p>A <b>probable</b> case of <b>acute</b> Q fever is defined as a case that: a.) meets the clinical criteria of acute Q fever <b>and</b> b.) meets the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>Has a single supportive IFA IgG titer of <math>\geq 1:128</math> to phase II antigen (phase I titers may be elevated as well), <b>or</b></li> <li>Has serologic evidence of elevated IgG or IgM antibody reactive with <i>C. burnetii</i> antigen by ELISA, dot-ELISA, or latex agglutination.</li> </ul>	
<p><b>Chronic Q fever clinical criteria:</b> Newly recognized, culture-negative endocarditis, particularly in a patient with previous valvulopathy or compromised immune system, suspected infection of a vascular aneurysm or vascular prosthesis, or chronic hepatitis, osteomyelitis, osteoarthritis, or pneumonitis in the absence of other known etiology.</p>		
Confirmed Chronic	Probable Chronic	
<p>A <b>confirmed</b> case of <b>chronic</b> Q fever is defined as a case that: a.) meets the clinical criteria of chronic Q fever; <b>and</b> b.) meets the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>Serologic evidence of IgG antibody to <i>C. burnetii</i> phase I antigen <math>\geq 1:800</math> by IFA (while phase II IgG titer will be elevated as well, phase I titer is higher than the phase II titer), <b>or</b></li> <li>Detection of <i>C. burnetii</i> DNA in a clinical specimen via amplification of a specific target by PCR assay, <b>or</b></li> <li>Demonstration of <i>C. burnetii</i> antigen in a clinical specimen by IHC, <b>or</b></li> <li>Isolation of <i>C. burnetii</i> from a clinical specimen by culture.</li> </ul>	<p>A <b>probable</b> case of <b>chronic</b> Q fever is defined as a case that: a.) meets the clinical criteria of chronic Q fever <b>and</b> b.) meets the following laboratory criteria:</p> <ul style="list-style-type: none"> <li>Has an antibody titer to <i>C. burnetii</i> phase I IgG antigen <math>\geq 1:128</math> and <math>&lt; 1:800</math> by IFA.</li> </ul>	
<p><b>Abbreviations:</b> IFA—indirect immunofluorescence assay, PCR—polymerase chain reaction, EIA—enzyme-linked immunosorbent assay. Adapted from: CDC. Case definitions for infectious diseases under public health surveillance. Available at: <a href="http://www.cdc.gov/ncphi/diss/nndss/casedef/case_definitions.htm">http://www.cdc.gov/ncphi/diss/nndss/casedef/case_definitions.htm</a>.</p>		


The case definition for tularemia is unchanged and can be found at [http://www.cdc.gov/ncphi/diss/nndss/casedef/tularemia\\_current.htm](http://www.cdc.gov/ncphi/diss/nndss/casedef/tularemia_current.htm).

## Recommended Reading

- Garrison, L.E. and Nicholson, W.L. Diagnostic testing for Rocky Mountain spotted fever: unraveling the uncertainty. Georgia Epidemiology Report, April 2007. Available at: <http://www.health.state.ga.us/pdfs/epi/gers/Apr07GER.pdf>.
- CDC. Case definitions for infectious diseases under public health surveillance. Available at: [http://www.cdc.gov/ncphi/diss/nndss/casedef/case\\_definitions.htm](http://www.cdc.gov/ncphi/diss/nndss/casedef/case_definitions.htm).

- CDC. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichioses, and anaplasmosis—United States: a practical guide for physicians and other health-care and public health professionals. MMWR 2006;55 (No. RR-4).

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**Reported Cases of Selected Notifiable Diseases in Georgia, Profile\* for December 2007**

Selected Notifiable Diseases	Total Reported for December 2007	Previous 3 Months Total Ending in December			Previous 12 Months Total Ending in December		
	2007	2005	2006	2007	2005	2006	2007
Campylobacteriosis	37	110	129	143	591	579	692
<i>Chlamydia trachomatis</i>	14	8180	9270	90	33276	40010	31946
Cryptosporidiosis	14	46	81	52	155	281	248
<i>E. coli</i> O157:H7	2	7	6	12	31	43	47
Giardiasis	46	209	173	187	757	677	688
Gonorrhea	6	3974	4611	38	15707	20402	13173
<i>Haemophilus influenzae</i> (invasive)	14	26	35	30	113	123	122
Hepatitis A (acute)	3	20	12	12	124	56	67
Hepatitis B (acute)	15	42	45	33	202	202	140
Legionellosis	5	14	14	16	39	38	43
Lyme Disease	1	1	1	3	6	8	11
Meningococcal Disease (invasive)	1	4	6	5	18	20	24
Mumps	0	1	0	0	2	4	0
Pertussis	1	7	7	3	48	31	15
Rubella	0	0	0	0	0	0	0
Salmonellosis	129	551	458	617	1936	1839	2048
Shigellosis	135	258	597	455	675	1382	1657
Syphilis - Primary	1	35	30	12	137	124	85
Syphilis - Secondary	29	137	130	102	539	482	515
Syphilis - Early Latent	17	110	93	60	411	385	352
Syphilis - Other**	43	223	236	164	973	1019	976
Syphilis - Congenital	0	1	3	0	2	10	8
Tuberculosis	40	135	126	116	502	507	473

\* The cumulative numbers in the above table reflect the date the disease was first diagnosed rather than the date the report was received at the state office, and therefore are subject to change over time due to late reporting. The 3 month delay in the disease profile for a given month is designed to minimize any changes that may occur. This method of summarizing data is expected to provide a better overall measure of disease trends and patterns in Georgia.

\*\* Other syphilis includes latent (unknown duration), late latent, late with symptomatic manifestations, and neurosyphilis.

**AIDS Profile Update**

Report Period	Disease Classification	Total Cases Reported*			Percent Female	Risk Group Distribution						Race Distribution			
		<13yrs	>=13yrs	Total		MSM	IDU	MSM&IDU	HS	Unknown	Perinatal	White	Black	Hispanic	Other
Latest 12 Months**:	HIV, non-AIDS	32	3,134	3,166	26	21	2	1	5	71	<1	22	72	4	2
2/06-1/07	AIDS	7	1,520	1,527	26	25	3	1	7	64	<1	21	70	6	3
Five Years Ago:	HIV, non-AIDS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/02-1/03	AIDS	7	1,805	1,812	27	36	7	2	16	38	<1	19	75	5	1
Cumulative:	HIV, non-AIDS	218	11,219	11,437	32	27	6	2	11	52	2	21	74	3	2
07/81-1/07	AIDS	239	32,047	32,286	20	44	15	5	14	22	<1	30	66	3	1

**Yrs - Age at diagnosis in years**      **MSM - Men having sex with men**      **IDU - Injection drug users**      **HS - Heterosexual**

\* Case totals are accumulated by date of report to the Epidemiology Section \*\* Due to a change in the surveillance system, case counts may be artificially low during this time period

\*\*\*HIV, non-AIDS was not collected until 12/31/2003