

Georgia Division of Public Health

Vaccine Preventable Disease Epidemiology Unit

Mumps: Specimen Collection and Shipping Instructions

Mumps should be considered in the differential diagnosis of patients presenting with parotitis or swelling of the salivary glands, regardless of vaccination history. Serologic testing (including mumps IgM and acute and convalescent mumps IgG), viral culture, and polymerase chain reaction testing (PCR) are strongly recommended to support the clinical diagnosis.

The Georgia Division of Public Health strongly recommends the **collection of serum for mumps IgM/IgG antibody testing and collection of a buccal swab for viral isolation/PCR testing to confirm a mumps case**. To coordinate specimen collection and laboratory submission, call your District or County Health Department. **Please do not send specimens directly to the Georgia Public Health Laboratory (GPHL) or the Centers for Disease Control and Prevention (CDC).**

Specimen Collection Instructions:

Serologic Testing: Collect as soon as possible when mumps infection is suspected, preferably at the onset of parotid swelling.

- Collect 7-10 ml of blood in a red top or serum separator tube (SST).
Acute serum (IgM and first IgG): collect preferably 1-2 days after symptom onset
Convalescent serum (second IgG): collect within 2-5 weeks after symptom onset
- SST tubes must be centrifuged and the serum poured into a transport tube for shipment.
- Store specimens cold (using ice packs or dry ice) and ship by overnight service. Do not freeze serum samples.

Viral Testing: Collect a buccal swab* at the same time as serology. Virus is most frequently recovered within the first 3 days following the onset of symptoms. Samples may be positive in unvaccinated persons up to 10 days post onset, however among suspected cases that have received 1 or more doses of MMR, virus may clear much earlier.

* The buccal cavity is the space near the upper rear molars between the cheek and the teeth.

PCR Testing:

- Collect a buccal swab by asking the patient to massage the parotid gland area (buccal cavity) for about 30 seconds
- Use a **synthetic** swab from a **viral transport kit** (such as influenza or herpes simplex viral transport) to collect buccal secretions.
- Place swab in the tube containing 2-3 mls of viral transport medium (e.g., MEM or Hanks Balanced Salt Solution)
- Ship the viral specimens using ice packs or dry ice*. Avoid freeze-thaw cycles
- If there is more than 1 day delay in shipping the samples to the state lab or CDC for testing, the buccal swab or throat swab is best preserved at -70 degrees Celsius or -94 degrees Fahrenheit

Viral Isolation:

- Collect a buccal swab (see instructions above) or throat swab sample (up to 10 days after symptom onset)
- Use a **synthetic** swab from a **viral transport kit** (such as influenza or herpes simplex viral transport) to collect buccal secretions.
- Place swab in the tube containing 2-3 mls of viral transport medium (e.g., MEM or Hanks Balanced Salt Solution)

Georgia Division of Public Health

Vaccine Preventable Disease Epidemiology Unit

- Ship the viral specimens using ice packs or dry ice. Avoid freeze-thaw cycles.
- If there is more than 1 day delay in shipping the samples to the state lab or CDC for testing, the buccal swab or throat swab is best preserved at -70 degrees Celsius or -94 degrees Fahrenheit

*If the shipment contains both serum and viral specimens, ship together by overnight service on cold packs (do not freeze serum)

Laboratory Submission Instructions

- Notify County or District Public Health Office **immediately** for coordination.
- Label specimen transport tube with the patient name and date of birth
- **UNLABELED SPECIMENS WILL NOT BE TESTED)**
- Complete Immunology, Molecular Biology and Virology lab forms at:
<http://health.state.ga.us/pdfs/lab/manual/Immunology%20Form%203432.pdf>
<http://health.state.ga.us/pdfs/lab/manual/Molecular%20Form%203409.pdf>
<http://health.state.ga.us/pdfs/lab/manual/Virology%20Form%203595.pdf>
with the following information:
 - Submitter code (if known), address, phone number, and contact name
 - Patient name, address, date of birth, sex, race and ethnicity (if available)
 - Date of specimen collection, type of specimen, reason for testing, date of illness onset
 - Immunology Form: Under *Miscellaneous Serology* check *Mumps* and *Other*. (NOTE: Beside *Other*, specify *Mumps IgM and IgG*)
 - Molecular Biology Form: Test requested – *Mumps PCR*
 - Virology Form: Test requested – *Viral Culture/Identification* (NOTE: Specify *Mumps Culture*).
- Ship specimens to the following address :
Georgia Public Health Laboratory
1749 Clairmont Road
Decatur, GA 30033-4050
ATTN: Immunology and Molecular Biology Laboratories

Contact Information

- Specimen outfit requests: call the Georgia Public Health Laboratory at 404-327-7921
- Additional lab forms available at <http://health.state.ga.us/programs/lab/manual.asp> in Appendix B
- For questions related to specimen collection and transport contact local public health or the State Epidemiology Unit, 404-657-2588

Interpretation of Mumps Laboratory Test Results

- Serology
 - IgM: Mumps infection is confirmed using mumps IgM antibody testing of serum samples collected as soon as possible after symptom onset. A positive IgM test result indicates current/very recent infection or reinfection. As with any lab test, there can be false positive test results. If the suspected case has received one or more doses of MMR, the IgM response may be missing, delayed, or transient.

Georgia Division of Public Health

Vaccine Preventable Disease Epidemiology Unit

- IgG: IgG alone is not diagnostic unless you obtain both an acute (can be done as soon after onset as the patient is seen, but ideally four to five days after onset of symptoms) and convalescent (from two to four weeks after onset) blood specimen for serologic tests to determine if a four-fold rise in IgG antibody titer has occurred (e.g., from 1:40 to 1:320). In vaccinated persons it may not be possible to detect a four-fold rise in mumps IgG antibody titer in paired serum samples (acute and convalescent). In such persons, the existing IgG will begin to rise soon after exposure and infection. At the time of onset of symptoms and collection of the acute serum, the IgG may already be quite elevated, and obviate the four-fold rise observed in convalescent serum specimen.
- PCR
 - Mumps viral RNA may be detected from viral samples prior to onset of parotitis until 5-9 days after parotitis (1-4 days is optimal for virus collection). Among previously immunized suspected cases, mumps virus detection is an important method of confirming the case.
 - However, the interpretation of a positive RT-PCR result without demonstration of mumps growth in tissue culture must be interpreted carefully, particularly among persons whose symptoms do not meet the clinical definition of mumps
 - Sequence analysis of a RT-PCR product derived from a virus isolate or from clinical material confirms the presumptive positive PCR results and provides epidemiologically important information.
- Viral Culture
 - Isolation of mumps virus from any clinical specimen constitutes laboratory confirmation of mumps infection.