Mumps- diagnostic testing

Frequently asked questions

What testing is available for mumps?

Mumps PCR testing is available on a fee-for-service basis at the CDPHE laboratory and is also available at some commercial laboratories. PCR testing at the CDPHE lab typically has quicker turnaround then PCR at commercial labs.

Mumps serology testing is widely available commercially and can also be requested from the CDC. The CDPHE laboratory does not perform mumps serology testing.

Viral culture is available at some commercial laboratories but has a long turnaround time and is generally not recommended by CDPHE.

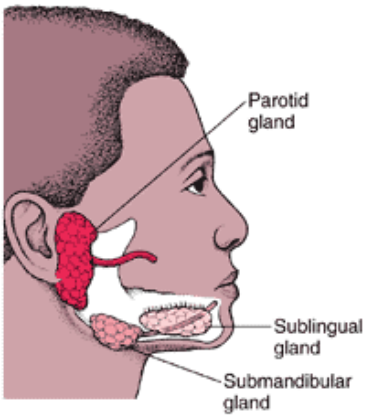
What specimens should be collected for mumps testing?

Clinicians are strongly encouraged to collect **both** a buccal swab for mumps PCR and a serum specimen for serology testing in patients with otherwise unexplained parotitis. Buccal swab specimens collected 1 to 3 days after onset of symptoms (usually parotitis) have the best chance of having a positive result by RT-PCR.

At the initial visit, collect a serum specimen in a red-top or serum separator tube (SST) to test for mumps IgM and IgG antibodies.

How do I collect a buccal swab?

Instructions for collecting a buccal swab are located on CDC's website: http://www.cdc.gov/mumps/lab/detection-mumps.html . Briefly:



- Wash hands before and after touching the patient and after contact with respiratory secretions and contaminated objections/materials.
- Don personal protective equipment consistent with droplet precautions (e.g. gloves and a face mask; if substantial spraying of respiratory fluids is likely, gloves, a gown and goggles or face shield should be worn).
- Massage the parotid gland area (see link above for detailed instructions) for 30 seconds prior to swabbing the area around parotid duct.
- Use a commercial product designed for the collection of throat specimens or a flocked polyester fiber swab. Synthetic swabs are preferred over cotton swabs, which may contain substances that inhibit enzymes used in PCR testing. Flocked synthetic swabs appear to be more absorbent and elute samples more efficiently.

How do I store the buccal swab?

Swabs should be placed in 2 ml of standard viral transport medium (VTM). Allow the swab to remain in VTM for at least 1 hour (4°C). Ream the swab around the rim of the tube to retain cells and fluid in the tube. The swab can be broken off and left in the tube or discarded.

If no viral transport medium is available, use one of the following: Universal Transport Medium, cell culture medium (minimal essential medium or Hanks' balanced salt solution) or other sterile isotonic solution (e.g. phosphate buffered saline) can be used. The presence of protein, for example 1% bovine albumin, 0.5% gelatin, or 2% serum, stabilizes the virus. Samples without a source of protein in the medium will lose 90%–99% infectivity within 2 hours at 4°C.

Samples should be maintained at 4°C (in a refrigerator) and shipped on cold packs (4°C) within 24 hours.

Call CDPHE at 303-692-2700 to arrange for PCR testing.

What about serology testing?

Serum should be drawn at the same time a buccal swab is collected.

CDPHE recommends both IgG and IgM testing for mumps at the time of the initial visit or diagnosis.

Serum specimens should be stored at 4°C and shipped on wet ice packs to a routine clinical commercial laboratory for mumps-specific IgG and IgM testing. CDPHE laboratory cannot perform mumps serology testing.

What else is important to know about mumps testing?

The interpretation of laboratory test results for persons suspected of having mumps may not be clear-cut, especially in previously vaccinated persons. Mumps IgM test results may be negative; IgG test results may be positive at initial blood draw and viral detection in RT-PCR or culture may have low yield in persons having previous contact with mumps virus either through vaccination (particularly with 2 doses) or natural infection.

Therefore, clinically compatible mumps cases may not be ruled out by negative laboratory results and additional testing may be needed.

Other resources

- CDC Questions and answers about lab testing.
- CDC Illustration of parotid gland and instructions for collection of buccal fluid.