

Laboratory Testing for Mumps

Background:

Mumps is an acute infectious disease spread by respiratory droplets and contact with saliva or fomites from an infected person. Parotitis, either unilateral or bilateral, is a common manifestation, although up to 30% of infections can be subclinical.

While immunized individuals can get infected the more severe sequelae of mumps, such as deafness and meningitis are rare, and the duration of viral shedding is shorter.

Note: Mumps is a notifiable disease and all suspected cases must be reported immediately to the zone Medical Officer of Health.

Clinical presentation:

Testing should be considered for persons presenting with:

- Acute onset of unilateral or bilateral tender, self-limited swelling of one or more salivary glands, lasting >2 days, especially in persons with:
 - recent travel to areas where mumps activity is occurring
 - recent exposure to a probable mumps case
 - compatible symptoms without travel or exposure to a probable mumps case
- Meningitis, encephalitis or neurological symptoms with epidemiological links through travel or contact with probable or confirmed cases

Note: Other causes of unilateral parotitis include bacterial infections, EBV or “mono”, influenza, parainfluenza, and blocked ducts, and should be considered part of the differential diagnosis if there is no contact with a mumps case.

Laboratory Testing:

Recommended mumps testing based on symptom onset and immunization status, see Table below:

Onset of parotitis ^a before testing	Immunization status	Test request and sample
Day 3 and before	Not applicable	Order mumps NAT on buccal swab
> 3 to ≤ 5 days	Not immunized or unknown status	Order mumps NAT on buccal swab Order mumps IgM & IgG serology
	Immunized (1 or 2 doses)	Order mumps IgM & IgG serology after day 5
After day 5	Not applicable	Order mumps IgM & IgG serology
With orchitis/ oophoritis and/or meningitis (onset at any time)	Not applicable	Order mumps NAT on buccal swab AND urine Order mumps IgM & IgG serology
^a Although parotitis is the most common manifestation, if not present, other mumps compatible symptoms can be used as a guide to testing		
Buccal swab in Universal Transport medium: saliva collected from the buccal cavity (space between the cheek and back teeth adjacent to the swollen gland) with a Dacron swab on a plastic shaft. Gently massage the affected gland area for about 30 seconds prior to collecting the saliva that accumulates in the buccal cavity with a swab. In cases of bilateral parotitis, separate swabs from each side are encouraged.		
Urine: 10 mL in a sterile container; should preferably be the first micturition of the day (morning sample)		

Samples for molecular testing (NAT) in the first 3 days after onset are strongly encouraged as infected vaccinated individuals have either a delayed or no serologic response in 13-45% of cases, but shed the virus and are thus, infectious. Therefore, collecting blood after day 5 and up to 10 days after onset of parotitis has been shown to increase the IgM positive rate to 70%. In unvaccinated individuals the IgM response is nearly always detected at 3 to 5 days after the onset of parotitis. A buccal swab is still preferred for genotyping of mumps virus if the sample tests positive.

From patients with orchitis, oophoritis, and meningitis, a urine sample should also be collected to maximize virus detection.

Universal Transport medium for transport of the buccal swabs, maintains the sample and virus integrity, is available from the Provincial Laboratory, your local laboratory, and some public health units.

Patient information:

- **Complete the ProvLab Virology requisition** (*one per patient for all samples is acceptable, providing that ALL samples collected at that time are sent with this requisition*) with all of the following information: ordering physician, patient's name, date of birth, gender, PHN, home address and phone number, specimen type and source, lab tests required **and clinical history**, date and time of collection
 - **If the information provided is incomplete the sample may be discarded or testing will be delayed pending receipt of this information**
- The ordering physician and office address must be clearly provided. If copies to another physician are required, provide the physician name and complete address where copies should be sent to comply with current privacy legislation
- **Important:** Provide the date of onset of illness, symptoms and whether recently traveled (within the past 3 weeks) and to where. This information will be used to prioritize sample testing and to assist public health follow-up.

Transport:

- Send only one sample per biosafety bag, with the sample and absorbent material in the reclosable side, and the requisition in the adjoining pouch. Samples can be sent at ambient temperature if within 8 hours of collection. If more than 8 hours – use a Cold-Pak or ice-pack to maintain the integrity of the sample and virus.
 - **If multiple samples are sent in one bag and one or more leak, ALL of the samples may be discarded.**

Mumps test results and interpretations:

In the Table below are common combinations of results and their interpretations; the Virologist-on-Call (contact information below) is available to discuss other unusual results.

Mumps NAT result	IgM antibody result	IgG antibody result	Comments/Interpretation
+	-	-	Recent infection, consider infectious
	+ or Ind	+ or Ind	
Inc	+ or Ind	+ or Ind	Recent infection with low titre of virus; consider infectious
	-	+	
-	+ or Ind	+ or Ind	Suggests recent infection or recent immunization. Immunized persons may still become infected
	+ or Ind	-	
-	-	-	Susceptible. Not currently infected

Inc = Inconclusive NAT result; Ind = Indeterminate serology result

Supplies:

If swabs and Universal Transport medium are not available from your local laboratory or collection site, contact one of the ProvLab sites below:

Laboratory Information	Calgary Site	Edmonton Site
General inquiries	Phone: 403 944 1200	Phone: 780 407 7121
Supplies	Phone: 403 944 2583 FAX: 403 944 2317	Phone 780 407 8971 FAX 780 407 8984
Address	3030 Hospital Drive NW Calgary, AB T2N 4W4	Walter Mackenzie Health Sciences Centre University Hospital Rm 2B4.04, 8440 – 112 Street Edmonton, AB T6G 2J2

Inquiries and feedback may be directed to:**Microbiologist/Virologist-on-Call phone numbers:**

Edmonton site: 780 407 7121

Calgary site: 403 944 1200

Questions & Comments:

Contact Dr. Kevin Fonseca

Phone: 403 944 1263

E-mail: kevin.fonseca@albertahealthservices.ca