

LABORATORY DIAGNOSIS OF MEASLES INFECTION

Laboratory tests commonly used in Ireland

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Laboratory diagnosis of measles is based on one of the following (summarised in Table1):

1. Antibody investigation
 - Positive IgM antibody or seroconversion to IgG
2. Molecular investigation
 - Detection of measles RNA
3. Virus isolation
 - Isolation of measles virus from clinical specimen

Table 1. Measles laboratory investigation, specimen required, optimal timing of sample collection

Virus	Investigation*	Specimen required
		(optimal timing of sample, days following onset of rash)
Measles	IgM detection	Serum >200µl (>4d to 2-3 months); Oral fluid ('Oracol') (>7d to 2 months)
	PCR / genotyping	Oral fluid ('Oracol') (up to 5 days)
	Virus isolation	Throat swab, Nasopharyngeal aspirate, conjunctival swab (up to 5 days), Urine; (up to 1 week, ideally 1-3 days)

Antibody testing is the most frequently used test to confirm acute measles infection. NVRL are increasingly using PCR/genotyping as a diagnostic test. Cell culture is performed following consultation with the NVRL.

If SSPE is suspected, contact the NVRL to discuss the appropriate samples to collect.

1. Antibody investigations on either serum or oral fluid samples:

IgM antibodies usually become detectable in serum after four days post onset of rash (90-100% sensitivity) and can be detected for 2-3 months. Diagnosis based upon IgG testing requires the identification of seroconversion to measles IgG.

2. Molecular investigation

Measles RNA can be detected (oral fluid/ throat swabs) up to 5 days post disease manifestation.

3. Isolation of measles virus

Measles virus can be isolated from clinical specimens, including; throat swab, conjunctival swabs, nasopharyngeal aspirates or urine (Table 1).

Specimen collection:

I. Oral fluid (Saliva) specimens

Oral fluid (Saliva) specimens should be collected using a foam swab (Oracol) supplied by the NVRL or using commercially available collection devices. The kit consists of an absorbent foam swab (designed to collect up to 1 ml of saliva), centrifuge tube and cap. Please contact the Serology laboratory with queries (Tel: 01 716 1626).

II. Clotted blood

For serological investigations serum samples (>1ml) or 1 x 5 to 10ml container of clotted blood should be sent to the NVRL.

III. Obtaining specimens for virus isolation

Efforts should be made to obtain clinical specimens (throat swabs, nasopharyngeal aspirate, oral fluid, conjunctival swabs or urine) for viral isolation for at least some cases in each outbreak at the time of the initial investigation.

IV. Midstream urine

10 to 20ml of urine should be sent in a sterile container. Specimens should be transported without delay, ideally at 4°C.

Collection and transport of specimens

- Specimens must be collected in appropriate plastic leak proof containers with a screw top lid. The containers should be clearly labelled with patient details (name/DOB) and dated. They should then be placed inside another plastic leak proof container of suitable strength. Glass containers must not be used. Specimens suspected of containing a blood borne virus e.g. HIV or Hepatitis B should be labelled with a biohazard-warning sticker.
- All pathological material should be packaged and transported according to the requirements of current legislation. Advice on packaging and transport is available from the NVRL.
- Please avoid use of staples for closure of packages, as these present a safety hazard to the laboratory staff.
- Specimens accompanied by their appropriate request forms should reach the NVRL with minimum delay.

Useful contact numbers: *NVRL Serology laboratory*

Telephone: 01 716 1626