



Human Rabies: Ante-mortem & Post-mortem Specimen Collection Guide

1. Ante-mortem specimens

Suitable ante-mortem specimens for rabies testing include saliva, nuchal skin biopsy and cerebrospinal fluid (CSF). Submitting a full range of specimens for a suspected rabies cases is recommended.

1.1 Saliva specimens

- Collect at least 500µl of saliva into a universal specimen container – often easiest using a syringe or suction device. Sputum is not an acceptable specimen.
- If possible, collect 3 specimens in total: 1 specimen daily on 3 consecutive days (not 3 specimens on the same day).
- It is recommended to collect a saliva specimen as soon as rabies is considered as part of the differential diagnosis of a patient. Our experience have shown that many rabies patients present late, and this may be the only opportunity to attempt laboratory investigation.

1.2 CSF specimens

- Collect at least 500µl of CSF. CSF is typically collected in untreated sterile plastic tubes

1.3 Nuchal biopsy specimens

Nuchal skin biopsy

Section of skin, 5-6 mm in diameter and ≈5-7 mm depth, must be taken from the nape of the neck (Figure). It is important that specimen contained hair follicles and should be of sufficient depth to include the cutaneous nerves at the base of hair follicles.

1. Collect the skin biopsy. This can be done as an excision or punch biopsy.
2. Moisten a piece of gauze with saline or water.
3. Place the skin biopsy onto, and cover with, a piece of sterile saline-moistened gauze. This keeps the specimen from drying out.
4. Place the gauze with the biopsy into a screw-top container. *No fixative required.*



Nape of the neck

Figure: Location of the nape of the neck

2. Post-mortem specimens

It is important to conduct laboratory investigations on persons who died from a suspected rabies virus infections. A brain specimen is the preferred specimen, which may be conducted by a Forensic Pathologists. However, if not available, clinicians may obtain a post-mortem nuchal skin biopsy for rabies diagnosis (see Section 1.3).

2.1 Brain specimens

- Small sections of the both the cerebellum and the cerebrum should be submitted. 2 cm X 2cm cubes of the different sections provide ample material for rabies investigation.
- Place the specimen in a screw top container (NOT GLASS) and submerge the specimen in 50% glycerol saline (half volume glycerol and half PBS). If glycerol saline is not available: freeze and send ASAP.
DO NOT fix in formalin.

3. Transportation

- The specimens should be packaged in accordance with the guidelines for the transport of dangerous biological goods (triple packaging using absorbent material) and transported directly to:
National Institute for Communicable Diseases (NICD), National Health Laboratory Service (NHLS)
Center for Emerging Zoonotic and Parasitic Diseases
No. 1 Modderfontein Rd
Sandringham, 2131
Gauteng, South Africa
- Keep the specimen cool (on ice packs are sufficient) and send ASAP.
- ALL specimens should be clearly labelled AND accompanied by a fully completed Suspected Human Rabies Case History Form (available on NICD website).

Please inform the Laboratory when submitting specimens for rabies diagnosis, Dr Jacqueline Weyer 082 903 9131 (jacquelinew@nicd.ac.za)

Rabies is a category I notifiable medical condition in South Africa. Please notify suspected cases immediately (<https://www.nicd.ac.za/nmc-overview/>)