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Department:
Health
REPUBLIC OF SOUTH AFRICA

NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

RABIES CLINICAL AND LABORATORY DIAGNOSIS ADVISORY

An update for Physicians, Accident & Emergency Practitioners and Laboratorians

Updated: 22 July 2024 (first edition: 25 November 2021)

Outbreak Response Unit,
Division of Public Health Surveillance and Response
National Institute for Communicable Diseases (NICD)
24-hour hotline number: 0800 212 552

Rabies is endemic in South Africa, and the provinces most severely affected by dog rabies outbreaks include the Eastern Cape, Limpopo (notably Vhembe district), and KwaZulu-Natal (notably Ethekwini district). Sporadic cases in domestic dogs and a focal outbreak in jackals were reported in Gauteng (Cradle of Humankind area) in 2021. In the same year (2021) rabid dogs were also detected in the Western Cape (Khayelitsha and Gordon's Bay areas). Recent years have seen an increase in dog rabies outbreaks, including cases in these two provinces. Human rabies cases have been reported in KwaZulu-Natal, Limpopo, and the Eastern Cape provinces in the last five years; however, post-exposure prophylaxis and animal vaccinations have prevented rabies cases in these and other parts of South Africa. In June 2024, Western Cape Province confirmed an outbreak of rabies in seals. This is the first outbreak of its kind recorded in the Southern Hemisphere.

What is rabies?

- Rabies is a fatal but preventable viral zoonotic disease.
- The rabies virus is transmitted to humans through contact with virus-laden **saliva** from a rabid animal, most-often **dogs**.
- Other by no means exhaustive list of animals that can transmit rabies to humans include domestic cats, domestic livestock (such as cattle and sheep), wildlife (such as jackal), and rarely, marine mammals (such as seals) in South Africa.
- The virus is shed in the saliva of an infected animal and can be introduced into another body through **bites, scratches and any other wounds that transect the skin**. Contact of the infected saliva with mucous membranes is also thought to be a possible route of infection.
- Rabies is preventable through pre-exposure prophylaxis (PrEP) for individuals at high and continual risk, and post-exposure prophylaxis (PEP). The draft guidelines for the prevention of human rabies in South Africa is available from the NICD website

Clinical presentation, diagnoses and management:

- **Incubation period:** Typically 1-3 months but can range from a few days to years.
- **Acute phase**: Nearly two-thirds of patients develop furious rabies, which may include the following signs: hyperexcitability, hyper-arousal, hydrophobia, aerophobia, aggression, confusion, etc. The remaining cases present with the paralytic form, which is similar to Guillain- Barre syndrome. Most patients die within a week of the onset of symptoms. Even within an intensive care setting, survival rarely exceeds one month. Clinical diagnosis is based on the observation of **progressive encephalitis** in a patient without an alternative confirmed diagnosis.
- **Management is supportive**. Rabies vaccination and immunoglobulin therapy are not useful after the onset of clinical illness, and may thwart diagnostic testing efforts.
- **Infection prevention and control**: Patients do not need to be isolated and standard IPC precautions apply. For compassionate reasons, private accommodation is recommended. Rabies post-exposure prophylaxis is considered on a case-to-case basis for health care workers who may have been exposed to the patient's saliva and other secretions.
- **Differential diagnoses** Bacterial/viral meningitis, cerebritis or encephalitis, acute flaccid paralysis, and non- infectious causes such as snake bites and psychosis. An epidemiological link involving possible exposure to a rabid animal will strengthen the suspicion of rabies, but such histories are not forthcoming in all cases.
- **Specialised laboratory tests** for rabies are always required to confirm or exclude the diagnosis.

Case definition for suspected cases:

A person presenting with an **acute neurological syndrome (encephalitis)** dominated by forms of **hyperactivity (furious rabies) or paralytic syndromes (dumb rabies)** *progressing towards coma and death*, usually by respiratory failure, **within 7-10 days after the first symptom** if no intensive care is instituted with or without animal exposure history.

Response to a suspected case of rabies:

1. Establish that the patient meets the case definition for a suspected clinical rabies case.
2. Call the NICD Clinician Hotline to discuss the case if unsure (0800 212 552).
3. Rabies is a category I notifiable medical condition in South Africa. Please notify suspected cases immediately (https://www.nicd.ac.za/nmc-overview/).
4. Submit ante-mortem samples (saliva, skin biopsy, CSF) or post-mortem samples (brain samples and skin biopsies). Detailed sample collection and submission guidelines are available on the NICD website (https://www.nicd.ac.za/wp-content/uploads/2021/03/RabiesSpecimenCollectionGuide2021.pdf).
5. Complete the case investigation form as available on NICD website (in addition to NMC notification). Submit the form with the samples.
6. Samples are referred to NICD using routine referral protocols. The samples 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.

Laboratory contact details:
Dr Naazneen Moolla, naazneenm@nicd.ac.za / 011 386 6338 / 066 380 6029 (WhatsApp or SMS only)
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For more information:
24-hour NICD clinician hotline (Healthcare Workers Only): 0800 212 552
NICD website: https://www.nicd.ac.za/diseases-a-z-index/rabies/