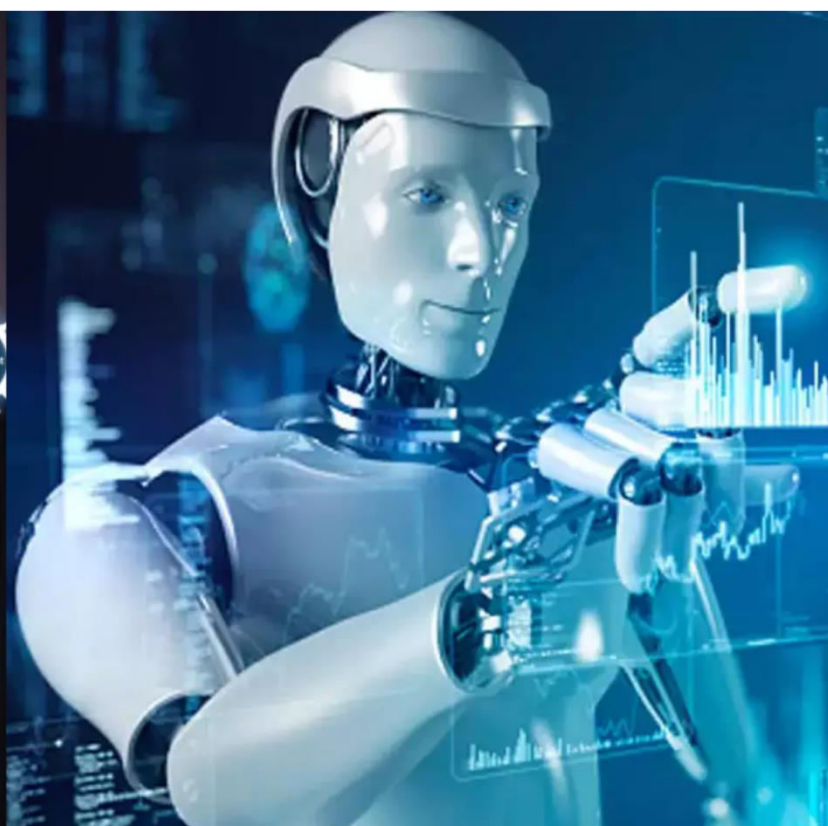




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# Investigation of a Case of Canine Rabies in the Commune of Moribabougou, Kati District, Koulikoro Region, Mali, October 2025

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## ABSTRACT

**Introduction:** Animals remain a specific and regular source of rabies transmission to humans. Despite the prevention and control measures implemented, rabies remains a major public health problem. Thus, following the notification in epidemiological week 39 of the year 2025 of a case of canine rabies in the rural commune of Moribabougou, an investigation was carried out around the case. **Methods:** This was a descriptive study conducted in October 2025 in the rural commune of Moribabougou, a peri-urban area of Bamako, Mali. A literature review and case definitions were used. A questionnaire was also administered to the population to collect data. **Results:** The case involved a 10-year-old unvaccinated female dog whose behavior had changed over two days. The dog bit a 9-year-old boy on his right foot on September 25, 2025. The victim received post-exposure prophylaxis. The head of the dog sent to the central veterinary laboratory tested positive for canine rabies. Public awareness campaigns and vaccinations of the nine dogs and one cat were carried out around the household. **Conclusion:** The investigation allowed us to describe the case of canine rabies and identify the bitten individual. These results show that rabies is still present in Mali, posing a risk to the human population.

**KEYWORDS:** Investigation, canine rabies, Moribabougou, Mali

## I. INTRODUCTION

Rabies is a viral disease with a worldwide distribution, but it primarily affects African countries [1]. It is a zoonosis caused by a *Lyssavirus* of the *Rhabdoviridae* family and particularly affects mammals [1]. It is transmitted to humans and animals through skin breaks such as bites, scratches, or direct contact with the mucous membranes of an infected animal. The main signs are excessive salivation, increased aggression, paralysis, and death [2]. Human rabies is a major public health problem, with a 100% fatality rate once clinical signs appear. According to the World Health Organization (WHO), rabies is estimated to cause approximately 60,000 human deaths each year, with 99% of cases associated with transmission by dogs [3]. This situation is concerning given the increase in the stray dog population, the global movement of humans and animals, and the low rates of rabies vaccination in domestic animals (dogs, cats) in many areas where rabies is endemic [3]. In developed countries, rabies has been eradicated. However, in developing countries, cases of rabies are still being reported [4]. In Africa, the rabies virus represents a constant threat to populations as one person dies from it every twenty minutes, mainly due to bites from unvaccinated dogs [5]. Approximately 30 to 60% of dog bite victims are children under 15. They often play with animals and do not necessarily report bites or scratches [6]. Low vaccination coverage, the prevalence of stray dogs, and gaps in surveillance exacerbate the continent's vulnerability. In developed countries, rabies has been eradicated. In 2015 the tripartite organization (World Health Organization, World Organization for Animal Health, and Food and Agriculture Organization of the United Nations) FAO prioritized rabies as a model for 'one health' collaboration and established the global framework for the elimination of human rabies transmitted by dogs [7]. Mass vaccination campaigns of dogs have proven to be an effective system for reducing the rabies burden in dogs, thereby limiting their transmission to

humans. Although effective, they require a huge financial commitment [7]. In Mali, national structures recorded approximately 1385 cases of bites in 2024 with 65% of the biting animals testing positive for rabies [8]. Given the severity of this disease, it has been classified as a major zoonosis subject to mandatory reporting in Mali and is subject to strict legislation in order to achieve the objective of the World Organization for Animal Health which is the elimination of dog-borne rabies by the year 2030[9]. It is also among the priority zoonoses monitored by stakeholders in animal health, human health, and the environment according to the One Health approach [10]. Efforts have been made to combat rabies in Mali through the inclusion of rabies surveillance in the minimum package of activities of health facilities, free rabies vaccination at all levels of the healthcare system, public awareness campaigns about rabies, and the organization of mass vaccination campaigns. During routine surveillance activities, the veterinary sector in Kati reported a case of canine rabies on September 28, 2025, in the commune of Moribabougou. It was in this context that we investigated to support rabies surveillance efforts.

## **II. METHODS**

### **2.1. Study Setting**

Our investigation took place in the commune of Moribabougou, Kati district, Koulikoro province. This commune is a peri-urban area of Bamako, located 15 km from the Bamako District. It has an estimated population of 254,765 inhabitants. Animal health protection is ensured by the staff of the Kati veterinary services (public officials and veterinarians holding a health mandate) who notify the region of notifiable diseases, which are then forwarded to the national level. According to the veterinary services, the dog population is estimated at 10,213 in 2024. They are generally used for guarding homes.

### **2.2. Study type and period**

This was a descriptive cross-sectional study conducted in October 2025.

### **2.3. Study population**

Animal population

It concerned the entire canine rabies population of the commune of Moribabougou, Kati district, Koulikoro region from July 13 to October 13, 2025.

### **2.4. Case definitions**

**Suspected case:** any sensitive animal that stayed in Moribabougou, from July 13 to October 13, 2025, exhibits during this period at least one of the following signs: headaches, neck pain, aggression, hydrophobia, anxiety, agitation, abnormal tingling sensations or pain, biting of people and animals.

**Confirmed case:** A suspected case in which the rabies virus has been detected by the Central Veterinary Laboratory (LCV).

**Bite or contact animal:** Any animal that has been bitten, scratched, or licked by another animal suspected of having rabies.

### **2.5. Data Collection**

#### **2.5.1. Collection Techniques**

The data collection technique was based on face-to-face interviews with veterinary sector providers, the dog owner and the victim's parents, a review of the document register for reporting suspected diseases at the veterinary sector level, the vaccination records of dog owners in the municipality and observation of dogs.

#### **2.5.2. Data Collection Tool**

The suspected case reporting form, the notification form, the sampling form, the veterinary observation form for a biting animal and a notebook as a medium for collecting data were used for data collection.

### **2.6. Data Analysis**

The data was entered using Microsoft Word and Excel.



## **2.7. Ethical Considerations**

The data collected has been coded to ensure that all identifying information of the individuals surveyed remains confidential and that their names are not disclosed. Personal information will not be shared with anyone outside our study, and every effort will be made to ensure that the individuals involved are unrecognizable in the photograph.

## **III. RESULTS**

### **3.1. Case Description and Circumstances of Bite**

Dog that bit: a local breed female dog, fawn-colored, approximately ten (10) years old, and unvaccinated. On September 25, 2025, the dog bit her owner's child, a nine (9)-year-old boy, in Moribabougou at approximately 2:00 PM. The owner shot the dog, and its head was sent to the central veterinary laboratory for immunofluorescence antibody analysis via the Kati veterinary sector, through the regional veterinary services directorate of the Bamako District. It was confirmed positive for rabies on September 28, 2025. The victim was then taken to the health center for treatment. Circumstances of the bite: On September 25, 2025, at approximately 2:30 p.m., a 9-year-old boy living in Moribabougou was playing in the yard of his house. The family dog, named Mike, was present. The child accidentally jumped on the dog, who was at the door of the chicken coop, her usual sleeping spot. She immediately growled and then bit the child on his right foot (at the level of the second and third phalanges). The mother intervened immediately to take her child. The dog had displayed intense aggression and agitation the day before. Furthermore, she had also exhibited unusual behavior two days prior: she no longer greeted her owner upon his arrival home and no longer responded to his name, "Mike."



**Photo 1:** Bitten site of the child's right foot (second and third phalanges).

### **3.2. Investigation of additional cases**

- Within the victim's family: the investigation revealed that another dog, approximately five (5) years old, belonging to the same owner, showed no signs of rabies at the time of the investigation. No other cases of contact or dog bites were reported.
- In the vicinity of the family: no contact with other animals was reported for the confirmed case. Active searches did not identify any other confirmed cases. The dogs examined during the investigation had a median age of 14 months, a male-to-female ratio of 3.5, and a rabies vaccination coverage of 0.11%.

### **3.3. Prevention and Control Measures:** The measures taken were:

#### **3.3.1. At the community level**

- Raising awareness among the victim's family regarding the continuation of post-exposure rabies vaccination; vaccination of children was carried out according to the WHO protocol (Day 0, Day 3, Day 7) using RABIVAX (lot: x1A391V) at the Banantoukoro vaccination center.
- Raising awareness among neighboring households about the importance of vaccinating animals against rabies and reporting any cases of animal bites or scratches to the nearest health center for immediate care.

**3.3.2. Observation of the contact dog**

The contact dog was placed under veterinary observation at the regional veterinary services directorate of the District of Bamako; after 15 days, it showed no signs of rabies.



**Photo 2:** Observation and vaccination of the contact dog

**3.3.3. Vaccination of animals**

A total of nine (09) dogs and one (01) cat were vaccinated around the home using VAXIPET-R (lot: 585532A).



**Photo 3:** Dog vaccination in Moribabougou, Mali, 2025

**IV. DISCUSSION**

The case involved a domestic dog with an unvaccinated status. This plays a significant role in the occurrence of rabies. This result is consistent with the findings of SAMAKE et al. in Mali, based on their analysis of the database of the Central Veterinary Laboratory of Bamako from 2011 to 2020, who found that domestic dogs are responsible for 87% of suspected rabies cases [11]. This observation could be explained by the ignorance of many pet owners regarding rabies prevention measures in dogs. The victim of the bite was a child; this observation was made by SAVADOGO et al. in their 2020 study of the epidemiology of rabies and knowledge, attitudes and practices of communities in Burkina Faso, which found that children are more exposed to dog bites [5]. This could be explained by the fact that children see these animals as friends but also as toys, with which they behave naively. Another dog belonging to the owner of a confirmed

case showed no signs of rabies at the time of the investigation, and other contacts could not be traced. This could be explained by the incubation period of rabies, which is usually two to three months, but can range from less than a week to a year. Signs of behavioral change, such as no longer responding to its name, could be explained by the development of rabies symptoms. Given the severity of the illness, raising awareness about rabies among the victim's parents, and the fact that the event coincided with World Rabies Day on September 28th, prompted the free vaccination of dogs in the vicinity of the home. Through vaccination, we should contribute to the elimination of rabies. Conclusion: The investigation confirmed that a 9-year-old boy in Moribabougou was bitten by a rabid dog. He received post-exposure rabies vaccination and is doing well after the vaccination.

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