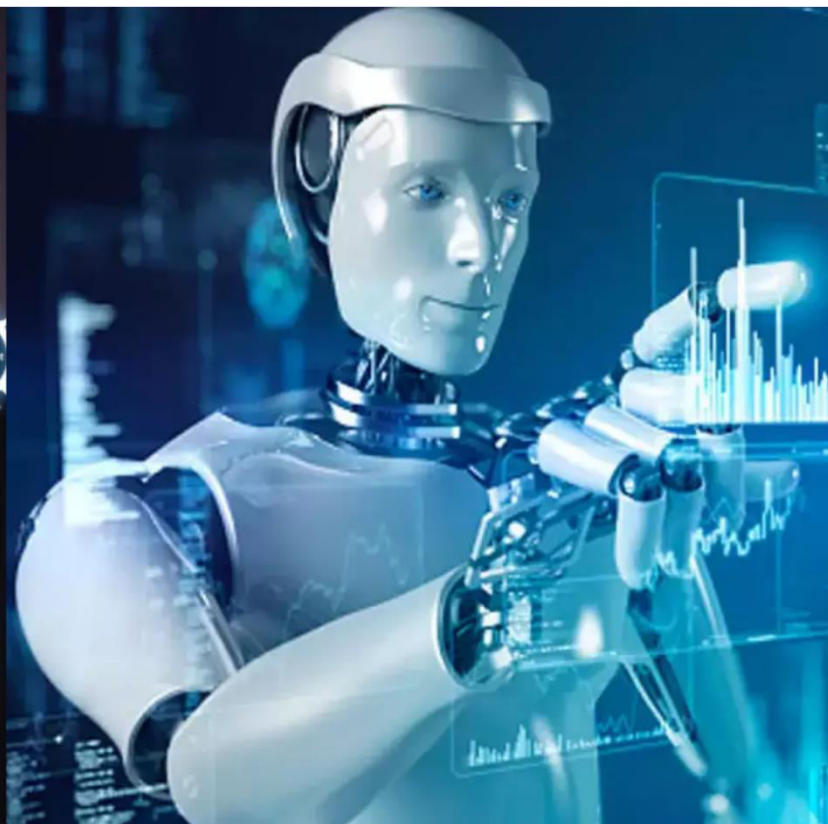




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Investigation of a dog bite case in the Medina-coura health area, Mopti Health District, July 2025

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ABSTRACT: Dogs are responsible for most fatal cases of human rabies (approximately 97%) worldwide. They are the primary vector of the virus in Africa. According to WHO estimates, approximately 55,000 people die from rabies each year globally, including 24,000 in Africa. This study aims to investigate a case of dog bite reported in the Medina-coura health area, Mopti health district, Mali. **Methods:** We conducted a descriptive cross-sectional study from July 10 to 19, 2025, on the reported case of a dog bite. Data entry and analysis were performed using Word and Excel 2007. **Results:** The dog bit her in several places, notably on her forehead, right hand, and left foot, leaving open wounds in some areas and minor bleeding. Faced with this serious attack, the patient went to a private clinic, which then recommended she go to the Mopti Referral Health Center for better care. Upon arrival, she received wound cleaning with liquid soap, followed by a first dose of the Verorab vaccine (0.5 ml) administered subcutaneously. **Conclusion:** The patient's care was provided, including community awareness campaigns on disease prevention measures.

KEYWORDS: Investigation, Dog bite, Mopti, Mali.

I. INTRODUCTION

Dogs are responsible for most human rabies deaths (approximately 97%) worldwide and are the primary vector of the rabies virus in Africa [1]. A dog bite is an injury caused by its teeth. It can result from play gone wrong, fear, or aggression. Dogs may bite during hierarchical conflicts, but they can also bite humans when they perceive a real or perceived threat [2]. According to WHO estimates, approximately 55,000 people die from rabies worldwide each year [1]. India has the highest estimated number of dog bites in the world, with 17.4 million cases and up to 20,000 rabies-related deaths annually. Dog bites are more common and more misunderstood than most people realize. In the United States alone, an estimated 4.5 million people are bitten by dogs each year, and hundreds of thousands of them require medical attention [3]. In Africa, nearly 25,000 deaths are recorded annually, mainly due to bites from unvaccinated dogs. Low vaccination coverage, the prevalence of stray dogs, and gaps in surveillance exacerbate the continent's vulnerability [4]. Although there is active monitoring and periodic organization of dog vaccination campaigns, free post-exposure prophylaxis, and follow-up of the biting dog by veterinarians. Mali recorded 2,405 cases of dog bites in 2024 and experienced 17 cases of human rabies and the same number of deaths during the same period [5]. Since 2020, we have been witnessing an increasing number of cases, not only of bites but also of human rabies [6]. The Mopti region recorded 167 cases of dog bites during the same period, with no confirmed cases of rabies in the district. The Mopti health district recorded 52 cases of dog bites, with no cases of human rabies. The Mopti health center received a patient on Thursday, July 10, 2025, for a dog bite. A joint team composed of the Epidemiological Surveillance Support of the Mopti health district, the head of the regional veterinary office of Sevaré, and the PEV officer, went to the Medina-coura CScCom to investigate the case.

II. METHODS

2.1 Study setting:

The investigation was conducted in the Medina-coura health area, Mopti health district. The Mopti health district is located in the fifth administrative region of Mali and covers an area of 7,262 km², with an estimated population of 565,149 inhabitants in 2023. It has 34 functional and 6 non-functional health areas. A population density of 78 inhabitants/km², 1 reference health center (CSRéf), 53 community health worker sites, 18 medical clinics and 10 treatment centers, 3 faith-based centers. It is bordered to the north by the districts of Youwarou and Niafunké (district belonging to the Timbuktu region), to the south by the district of Djenné, to the west by the district of Tenenkou and to the east by the districts of Bandiagara and Douentza. It comprises fourteen rural communes and one urban commune. The hydrographic network is dominated by the Niger River, which receives tributaries: the Bani (at the Mopti commune) and the Yamé (Konna commune). The Koli-Koli tributary feeds Lake Korientzé, which it connects to Lake Debo. Thus, the Mopti region is divided into two zones in relation to the river:

- A flooded zone inaccessible by land during the high-water season (July to November). During this period, the only route is by river;
- A dry zone accessible by land at any time of year.

The staff situation is as follows:

13 Doctors, 1 dentist, 1 pharmacist, 12 Medical Assistants, 17 State-certified nurses, 25 midwives, 2 senior laboratory technicians, 2 hygiene technicians (1 in training), 64 junior nurses, 40 obstetric nurses, 4 laboratory technicians and 34 midwives.

2.2. Types and duration of studies

This was a descriptive cross-sectional study on the case of dog bite observed in the Medina-coura health area, Mopti health district over the period from July 10 to 17, 2025.

2.3. The Investigated Population:

The population consisted of the entire population of the Medina-coura health area, Mopti health district.

2.4. Standardized Case Definition of a Dog Bite

2.4.1. Presumed case:

A suspected case is any person presenting with a skin or subcutaneous lesion, accompanied by pain, redness, swelling or bleeding, reporting having been attacked, bitten or scratched by a dog identified or described as a dog, without formal proof or without an independent witness to the event during the period from 10 to 17 July 2025 in the Medina Coura health area, Mopti health district.

2.4.2. Confirmed case:

A confirmed case is any person who has been clinically examined or questioned, presenting lesions characteristic of a bite, and whose event is corroborated by a witness or confirmed by the owner of the dog during the period from 10 to 17 July 2025 in the Medina Coura health area, Mopti health district.

2.5. Data Collection:

2.5.1 Data Collection Technique

Data was collected through:

- Interviews with the family of the person bitten, the dog owner, and immediate neighbors;
- Active research at the Medina Coura Community Health Center (CSCoM) and in the community;
- Document review;
- Physical examination of the patient.

2.5.2 Data Collection Tools

These included notification forms, the curative consultation register, and a questionnaire.

2.6. Data Entry

The data were entered and analyzed using Excel 2016.

2.7. Ethical Considerations

This survey was conducted with the authorization of the chief medical officer of the Mopti district, as well as the interviewee and the dog owner. We assured them that the collected data would be kept anonymous and confidential. The information will be used for this training.

III. RESULT**❖ Case Description**

The case was discovered during the consultation on 10/07/2025 at the emergency department of the CSRéf in Mopti. It was a 25-year-old married woman, a housewife with no prior medical or surgical history, who went to a neighbor's house in the neighborhood on Thursday, July 10, 2025, around 9:00 a.m., to buy traditional medicine. To her great surprise, she found herself facing a biting dog in the yard. The dog bit her in several places, including her forehead, right hand, and left foot, leaving open wounds and some minor bleeding. Faced with this situation, the patient went to a local private doctor's office, which then recommended she go to the Mopti Referral Health Center (CSRéf) for further treatment. Upon arrival, the wounds were cleaned with liquid soap, and then a first dose of the Verorab vaccine (0.5 ml) was administered subcutaneously. The dog that bit was placed under observation by the veterinarian to confirm or rule out rabies. Furthermore, the dog that bit the other dog is an 11-month-old male domestic dog with a black and white coat that has never been vaccinated.

❖ Identification of exposure risks

During questioning, the dog's owner stated that the dog that bit the other dog is his adopted pet, is approximately 11 months old, and has never been vaccinated against rabies;

The bite resulted in open wounds on the forehead, right hand, and left foot.

Active search for other bite cases:

The active search did not find any additional cases at the Medina Coura Community Health Center or in the community (immediate vicinity of the case).

❖ Implement prevention and control measures**Post-exposure prophylaxis**

The case benefited from:

- Cleaning the wound with soapy water;
- Treatment with amoxicillin 500mg: 2 blister packs & 2 gels twice daily; Ibuprofen 400mg: 2 blister packs, 1 tablet three times daily;
- Tetanus vaccination: one intramuscular dose;
- Rabies vaccination: administration of three 0.5 ml subcutaneous doses of Verorab vaccine on days 0, 3, and 7, respectively July 10, 12, and 16, 2025.

Health monitoring of the dog that bit:

The dog that bit was monitored by a veterinarian for 15 days (from July 10 to 25, 2025) at the owner's home to screen for signs of rabies.

At the end of the 15-day monitoring period, the dog showed no signs of rabies.

IV. DISCUSSION

- Bite occurring in another family outside the case's family (lack of familiarity): During the investigation, we did not find any other cases of bites in the community, nor in the consultation register, which confirms the owner's statement that it was a domestic dog. Several studies have shown that stray dogs are responsible for most bite cases, in Niger, Hamidou Christian Amadou et al [4].

- Unvaccinated dog:

Dogs are dangerous when they are not vaccinated; at the time of the investigation, the dog was not vaccinated against rabies. Vaccination of pets against rabies is shown to be the best public health activity that can lead to the control of

human rabies in Asia and Africa [7]. As our results show, vaccination coverage for dogs in Africa is far from the coverage required for the control or elimination of dog-transmitted human rabies (8).

- Public-private sector collaboration:

This is an effective means for monitoring notifiable diseases; however, we must ensure the ongoing training of its agents because we have a constant turnover of agents from the private sector.

- Post-exposure prophylaxis for bitten individuals:

The patient followed the protocol scrupulously; this result differs from the study carried out by Tiembré et al in Côte d'Ivoire [9] who reported that the demand for care after exposure was very low for all patients (20%), study by Kampo et al in Mali in 2019 found that 15.62% had not completed vaccination [9].

- Health monitoring of the dog, despite the observation of the dog by the veterinarian we are convinced that vaccination remains the safest way to prevent rabies.

V. CONCLUSION

This investigation allowed us to investigate a case of dog bite on a 25-year-old female patient and to manage her according to the country's treatment protocols.

Furthermore, it allowed us to monitor the biting dog, which showed no signs of rabies during the 15-day observation period.

However, particular emphasis must be placed on dog vaccination and raising public awareness about the risks associated with dog bites.

VI. PUBLIC HEALTH ACTION

- Notification of the event to regional health authorities;
- Prompt administration of post-exposure prophylaxis;
- Observation of the dog that bit;
- Investigation of additional cases in the community and at the Medina Coura Community Health Center (CSCoM);
- Community awareness campaign on pet dog vaccination;
- Vaccination of the dog that bit.



Photo of the biting dog, Mopti 2025

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