

ONE HEALTH AND ANIMAL CONTROL: A WINNING

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ABSTRACT

Every year on September 28, the world comes together to raise awareness and take action towards eliminating rabies. This day also commemorates the anniversary of Louis Pasteur's death, the renowned French scientist who pioneered the first rabies vaccine. Rabies is a deadly viral disease caused by the rabies virus, affecting over 150 countries and territories worldwide. It results in significant human suffering, with estimated annual losses of 1.6 to 10.4 million disability-adjusted life years and \$2.9 to \$21.5 billion in economic costs. While pre-exposure and post-exposure prophylaxis are effective in preventing human deaths from rabies, they do not provide a clear solution for eliminating the disease in animal reservoirs, particularly in dogs. A more comprehensive approach is needed to tackle the root causes of rabies transmission and ultimately achieve a rabies-free world.

INTRODUCTION

Rabies is a fatal yet preventable viral disease that claims approximately 59,000 lives globally each year, primarily due to dog bites. The disease is almost invariably fatal once symptoms appear, leading to agonizing deaths from encephalitis. Most cases occur in underserved communities in Africa and Asia, with children under 15 accounting for around 40% of cases. Dog bites are responsible for over 95% of human rabies cases worldwide. However, human deaths from rabies are entirely preventable with prompt and proper medical care, including post-exposure prophylaxis (PEP) comprising wound management and administration of rabies vaccines and immunoglobulins as needed. The World Health Organization (WHO) categorizes animal bite exposures into three risk categories, and timely PEP can effectively prevent the disease. The global goal is to eliminate human deaths from dog-mediated rabies by 2030, with a focus on generating evidence-based guidance and high-quality data to inform policy decisions.

CONDITION OF RABIES IN INDIA

Rabies is an endemic disease in India, prevalent in all states and union territories except Andaman & Nicobar and Lakshadweep Islands. The country accounts for a staggering 35% of the global rabies burden. Annually, India witnesses approximately 17.4 million animal bites, resulting in around 20,565 human rabies deaths, and incurs significant economic losses amounting to \$8.6 billion, as well as 3.7 million disability-adjusted life years (DALYs) globally. Given the substantial burden of rabies in India, up-to-date country-specific data are crucial for reliable global estimates. Previous studies have estimated varying numbers of rabies deaths in the country, with one study projecting 16,450 deaths and another estimating 12,700 symptomatically identifiable rabies deaths in 2005. Notably, the majority of these deaths (91%) occur in rural areas, with 62% of the victims being males and 50% being children under 15 years old. The overall mortality rate is estimated to be 1.1 deaths per 100,000

population, with a significant proportion of these deaths concentrated in specific states, including Uttar Pradesh and seven central and south-eastern states. Given India's substantial contribution to global rabies deaths, the World Health Organization (WHO) recognizes the importance of the country's programmatic experiences and evidence on rabies control in achieving the goal of eliminating rabies deaths.

CONTROL OF RABIES SPREAD

Implementing responsible management practices, such as sterilization and vaccination programs, is a significantly more effective and humane approach to managing dog populations and controlling rabies. This approach has been successfully demonstrated in countries like Bhutan, where mass sterilization initiatives have led to notable reductions in rabies cases. The management of dog populations typically involves a range of strategies, including culling, long-term sheltering, and fertility control, as well as supplementary measures such as public education campaigns promoting responsible dog ownership and taxation policies. The specific objectives of dog population management can vary between countries, but common goals include reducing the number of free-roaming dogs, encouraging responsible ownership practices, and improving the overall health and well-being of dogs. Research has consistently shown that fertility control is a highly effective method for reducing dog populations, with population declines ranging from 14% to 78% over a 20-year period, depending on the extent of neutering coverage. In contrast, sheltering alone has been found to have a relatively minimal impact on population numbers, reducing them by only 3% over a 10-year period. Moreover, fertility control has been demonstrated to be more effective than culling, achieving a 75% reduction in dog populations compared to a 13% reduction through culling. When combined with rabies vaccination, fertility control emerges as the

most effective strategy for controlling dog populations and ultimately eradicating rabies.

EUTHANASIA AS PREVENTIVE BUT UNETHICAL METHOD

Ideally, euthanasia should be limited to animals that are terminally ill or experiencing unbearable suffering due to behavioral issues or lack of proper care, which cannot be alleviated with available resources. However, in many cases, euthanasia is also used as a means of population control, resulting in the unnecessary sacrifice of many dogs. When euthanasia is deemed necessary, it is crucial that it is performed by trained and qualified veterinary staff who have access to the required medications and possess expertise in humane handling and euthanasia techniques.

LEGAL FRAMEWORK AND ETHICAL CONSIDERATIONS

The Prevention of Cruelty to Animals Act of 1960 underscores the importance of treating animals humanely and prohibits acts of cruelty such as abandonment, mistreatment, and neglect. However, the common perception of street dogs as a nuisance often leads to inhumane treatment, despite the existence of laws designed to protect these animals. Under Indian law, abandoning a dog or allowing it to roam freely without care is already considered a form of cruelty. Nevertheless, societal attitudes often fail to align with legal protections, resulting in a disconnect between the law and its practical application.

PUBLIC HEALTH SIGNIFICANCE

Rabies is a significant public health concern associated with free-roaming dogs, with studies indicating that a substantial proportion of rabies cases in India can be linked to dog bites, particularly from unvaccinated free-roaming dogs. However, focusing solely on rabies risk without addressing the underlying human-dog interactions can lead to harmful measures like mass culling, which is not only inhumane but also ineffective in controlling rabies. To effectively manage dog populations, it's

essential to consider the different causes of unowned dogs, such as abandonment or street births, which require different strategies. Community involvement and attitudes toward dogs are also crucial for success, and dog population management programs must take into account local views and prioritize strategies that are acceptable to the community to have a lasting impact, whether through education, regulation, sterilization, or other approaches.

ORGANIZATIONS INVOLVED WORLDWIDE

The International Task Force on the Elimination of Diseases (ITFDE) identifies seven curable diseases and provides guidance to organizations like the World Health Organization (WHO) on disease eradication. Eradicating infectious diseases globally is a complex task, complicated by societal factors and the unique characteristics of specific pathogens. To address this challenge, the World Health Organization (WHO), the World Organization for Animal Health (OIE), the Food and Agricultural Organization of the United Nations (FAO), and the Global Alliance for Rabies Control (GARC) have set a global goal to eliminate dog-mediated human rabies deaths by 2030. A significant step towards achieving this goal was taken in 2021 when India declared human rabies a notifiable disease, ensuring accurate reporting of rabies incidence data, which is essential for developing and implementing effective

prevention and control measures. However, gross underreporting of rabies cases is a challenge, often due to deaths occurring outside hospital settings and the preference for traditional healers for treatment. To overcome these data limitations, India has launched an Integrated Health Information Platform (IHIP) to collect real-time data using mobile applications, aiming to improve the accuracy and timeliness of rabies reporting.

Conclusion: India accounts for over one-third of global rabies deaths and has therefore developed a National Programme to Eliminate Rabies (NRCP) by 2030. Understanding the trends of rabies is crucial during the elimination phase. To eliminate rabies, it is essential to strengthen strategies that target the source of infection. The World Health Organization (WHO), the United Nations Food and Agriculture Organization, and the World Organization for Animal Health have emphasized that a One Health approach, involving effective intersectoral cooperation, is the cornerstone of strategies for eliminating dog-mediated human rabies. Implementing these strategies has helped many countries reduce the burden of rabies or maintain elimination. A critical component of effective rabies control and ultimate elimination is achieving vaccination coverage above 70% in the dog population. This level of coverage is vital for establishing herd immunity and preventing the spread of the disease, making it a crucial target for rabies elimination efforts.

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