



POLICY BRIEF

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DOG BITE MANAGEMENT ESSENTIAL FOR RABIES CONTROL

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Abstract

Despite the high prioritisation of rabies in India, policy makers have been reluctant to implement state-wide rabies control programmes. Earlier research at the Public Health Foundation of India (PHFI) demonstrated that this disconnect was partly due to researchers being unable to adequately address policy concerns around issues such as feasibility, sustainability and cost effectiveness of rabies control in India. Researchers at PHFI, along with collaborators, attempted to answer some of these questions by conducting a cost effectiveness analysis of rabies control in the state of Tamil Nadu. The findings clearly showed that while canine vaccination is indeed effective in reducing rabies transmission, it might not be as cost effective in the longer term as compared to the combination of female sterilisation and vaccination among dogs. It suggests that the intervention of choice should be decided, based upon an understanding of local dog ecology and expectations of decision makers. Going forward, this will require constant interaction among researchers and programme managers, cutting across the human and animal health sectors.

Background

Decision makers in India and elsewhere are hesitant to commit to a full-fledged population level rabies control programme, especially one that goes beyond post exposure prophylaxis (PEP) among humans. This is arguably due to a disconnect between the research and decision making communities, leading to a mismatch in the way both communities envisage the problem and consequently propose solutions.

The Public Health Foundation of India (PHFI)/ Roadmap to Combat Zoonoses in India (RCZI) Initiative, as part of its multisectoral work on research, capacity building and advocacy has taken up rabies as one of its focus areas of work. Supported by a Grand Challenge award from the Gates foundation, researchers from PHFI, Yale University and the London School of Hygiene and Tropical Medicine (LSHTM) came together in 2014 to develop a One Health framework for assessing impacts of zoonoses and their interventions from the perspectives of animal and human health sectors.

The study team used local information to develop a disease transmission model describing rabies dynamics for the state of Tamil Nadu and combining it with data from a previously conducted costs analysis. This exercise helped develop an integrative multisectoral cost effectiveness analysis of different rabies control interventions for the state. The analysis found that while rabies transmission could be controlled relatively quickly with moderate coverage of canine vaccination, it was more cost effective in the long-term while combining canine vaccination with the sterilisation of female dogs.

Context

The current rabies control strategy in Tamil Nadu is prophylactic vaccination of humans following a dog bite.¹ In addition, pilot Animal Birth Control (ABC) programmes have been conducted in 50 Municipalities and five Municipal Corporations within the urban context. However, these efforts are yet to be scaled-up to the district or state level.²

Issues of Concern

Between 2011-15, around 4.7 million cases of dog bites and 350 cases of suspected rabies were reported by the Department of Public Health. Given this level of burden, there is considerably more pressure on programme managers for decreasing dog bite numbers as opposed to rabies cases which are reported periodically in its 32 districts.

A survey among key stakeholders of rabies control in Tamil Nadu, demonstrated that both, reduction in human rabies as well as dog bite cases should be targeted in India. Given the country's large stray dog population, it is challenging to reach them every year through mass canine vaccine programmes. As female sterilisation

programmes tend to limit dog population size over time, and consequently, reducing dog bites, in addition to reducing rabies transmission. This makes a combination approach more attractive to programme managers and potentially more cost effective, with respect to canine vaccination alone.

One Health Approaches to Cost Effective Rabies Control

Canine vaccination has successfully controlled rabies in much of the developed world, but is often perceived as too costly or insufficiently effective for resource-constrained regions with an abundance of stray dogs. The study team examined the cost and human health outcome of strategies specifically tailored for Tamil Nadu, India, where 42% of the canine population is classified as stray. An evaluation was undertaken for existing strategies of canine vaccination along with combined strategies of canine vaccination and sterilisation and canine vaccination and female sterilisation. A key finding was that a relatively moderate strategy that combined canine vaccination and female sterilisation of 150,000 dogs annually (10% of dogs) could cost effectively achieve a reduction in human rabies deaths and dog bite morbidity in humans by over 90% within five years, as compared to the standalone canine vaccination. Another key finding was that a modest strategy combining canine vaccination and female sterilisation of 350,000 dogs annually could prevent 4000 dog bites per year, and consequently avert more human rabies deaths and dog bite co-morbidities.

The results suggest that canine vaccination might not be suitable in a state like Tamil Nadu, where a combination of canine vaccination and sterilisation of female dogs would impact rabies dynamics in a far more productive manner. This could be done in three ways, namely:

- i) Decreasing canine density to reduce transmission within the canine population
- ii) Decreasing competition for food scraps to increase longevity of individual dogs, including vaccinated dogs leading to a smaller canine population, that further reduces exposure of humans to dog bites
- iii) Cost incurred to the government for implementing a

standalone canine vaccination campaign to increase in time due to ever growing number of dogs in need of vaccination

The conclusion that emerged from the evaluation was that costs decrease over time when strategies of canine vaccination are combined with sterilisation.

Policy Recommendations

Rabies will continue to threaten human life in Tamil Nadu if unabated in the canine population. Suggested policy recommendations that can avert such a scenario, include:

- Coordination between different sectors of state government to be fundamental to the successful control of rabies in Tamil Nadu specifically, and India generally
- Rabies control efforts that lead to benefits for both human and animal health sectors
- More sterilisation campaigns to be held with the objective of improving canine health, both for sterilised dogs and for other dogs in the community.³
- The Department of Animal Husbandry and the Animal Welfare Board of India to be given the mandate along with funds to address human health challenges for canine interventions to be useful and effective

Conclusion

Dog bite management and stray dog population control should be considered as important drivers which can influence policy making for rabies control. Furthermore, researchers, programme managers and decision makers need to initiate constructive cross-sectoral dialogue in order to better conceive and rethink the problem. Based on these ground realities, possible solution/s must be implemented.

There is benefit in strengthening the levels of cooperation between the Department of Animal Husbandry and the Animal Welfare Board of India. The study clearly brought out the potential value of such cooperation. The implementation of combined vaccination and female sterilisation throughout Tamil Nadu has potential to dramatically reduce mortality. This positive scenario can serve as an example of cost-effective rabies control for similar settings within and beyond India.

Key Reading

For additional information refer to the website of the Roadmap to Combat Zoonoses in India (RCZI) Initiative: <http://zoonoses.phfi.org/>

References

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