

# Increasing and accurately measuring rabies vaccination coverage in Tanzania

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Canine mediated rabies is endemic in Tanzania despite the fact that the disease can be prevented entirely by mass dog vaccination. Since 2003 the Serengeti Health Initiative has been carrying out rabies vaccination campaigns that aim to achieve the 70% coverage required in order to eliminate rabies. The research team, a partnership among the Nelson Mandela African Institution of Science and Technology, the Paul G. Allen School for Global Animal Health at Washington State University, and Chicago's Lincoln Park Zoo, studied whether the use of incentives might increase owner participation in the vaccination events, and also examined the most effective way to estimate post-vaccination coverage.

Sixty-two villages were randomly allocated to either a control (no incentives) or one of three incentives: bright colored collars given to the dogs, bright colored wristbands given to the owners and both collars and wristbands handed out. Dog owners were also asked to rate which incentive they preferred. On average, the incentives resulted in 34 more dogs brought for vaccination treatment per village, with no difference seen between the different types of incentives. Given the increase in dog turnout, the researchers estimated the mean reduction in the cost-per-dog and the price-threshold under which the cost of the incentive used must fall to be economically viable. This was \$0.47. From the surveys, 41% indicated a preference for the dog collars and 43% for wristbands. 98% of respondents liked the incentives and were happy to see that vaccinated and non-vaccinated dogs could be easily distinguished.

The researchers also tested the accuracy of the two methods normally

used to determine [vaccine coverage](#). They tested them against the gold-standard of a village-wide census which, while accurate, is far more expensive than the commonly-used methods of random household questionnaire and transect survey. For the household questionnaire, a locally recruited interviewer was used to facilitate a verbal questionnaire at a minimum of 70 houses per village. For the transect survey, vaccinated dogs were marked with a stripe of water-soluble purple spray. The day following the vaccination, the teams performed a drive through the village estimating the proportion of marked and unmarked dogs. The household questionnaire underestimated coverage by 6.6% while the transect survey overestimated by 7.1%. These estimates were not significantly different from the results of the village-wide census ( $p = 0.14$  and  $0.06$  respectively).

A reliable method of assessing post-vaccination coverage is vital to check if the elimination coverage of 70% is met. In view of this, the researchers recommend the use of the household questionnaire to give a conservative estimate, particularly as it is more likely to pick up vaccination of puppies. The use of incentives is also recommended, to alert and remind villages to take their dogs to the vaccination centers, as well as providing a way of distinguishing vaccinated and non-vaccinated [dogs](#).

The study is published today in *PLOS Neglected Tropical Diseases*.

**More information:** *PLOS Neglected Tropical Diseases*,  
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