

Oral Rabies Vaccination: A Promising Strategy for Rabies Elimination in Indonesia



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ABSTRACT

Rabies has a long history since the first case in dogs was reported in 1890 on Java Island. In the past 30 years, new infected areas have emerged in Flores, Bali, Nias, West Kalimantan, Sumbawa and West Timor.

Mass dog vaccination (MDV) is the primary method to control the spread of the diseases in Indonesia. However, several challenges were encountered during the implementation, including the large number of hard-to-handle free-roaming dogs for vaccination against rabies.

Integrating oral rabies vaccination (ORV) strategies for unowned free-roaming dogs into MDV campaign could progress in eliminating rabies in Indonesia.

INTRODUCTION

Rabies in Indonesia

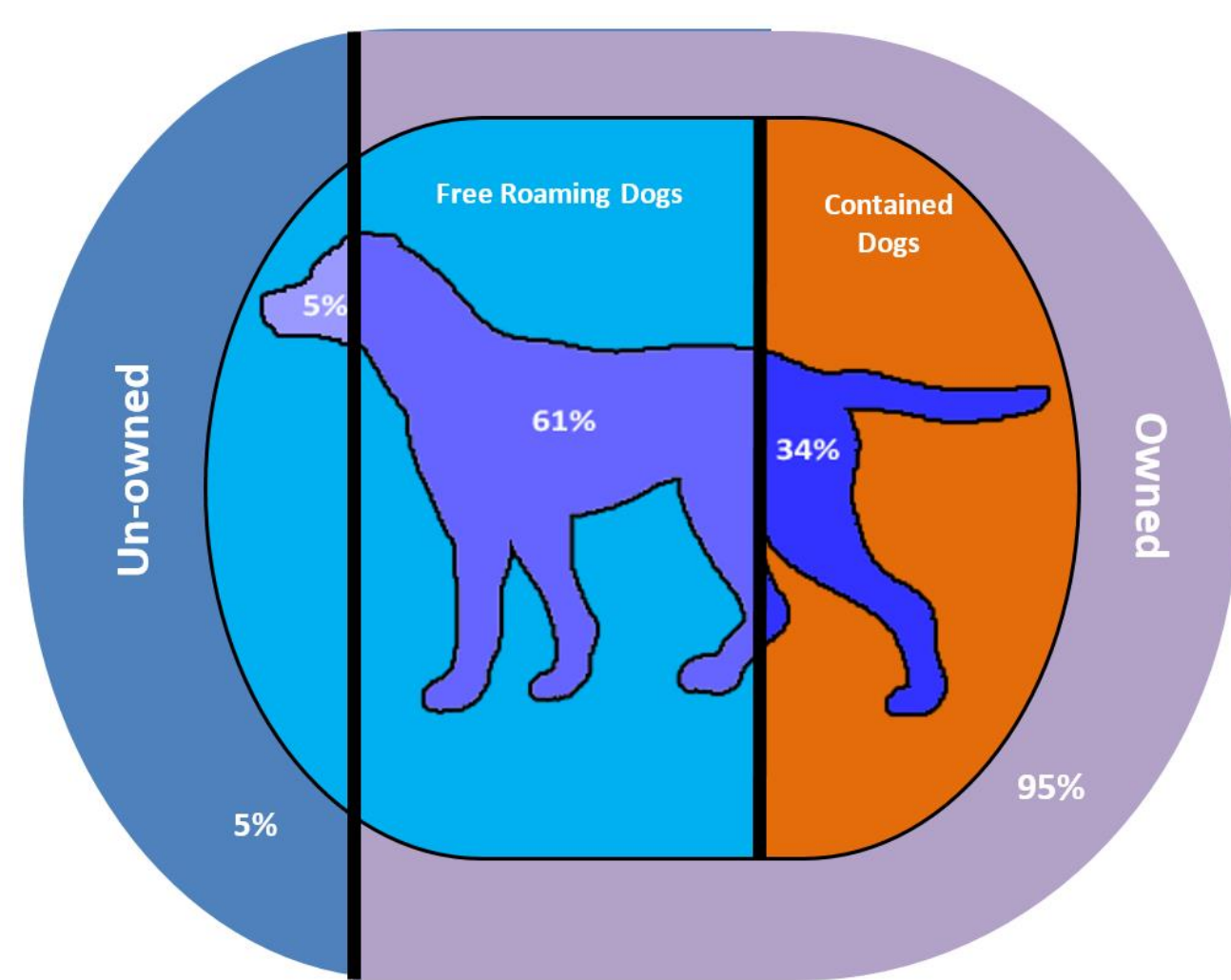
Rabies has been reported in Indonesia since the 1880s, when the first case of rabies was reported in Batavia (modern Jakarta). Subsequently, the Dutch East Indies colonial and Indonesian governments implemented rabies control and elimination; however, rabies outbreaks spread to almost all major islands of Indonesia.



Rabies situation in Indonesia

Indonesia's challenges in eliminating rabies

The huge free-roaming dog population is Indonesia's major challenge to eliminating rabies.



Proportions of the different types of dog ownership in Bali, Indonesia

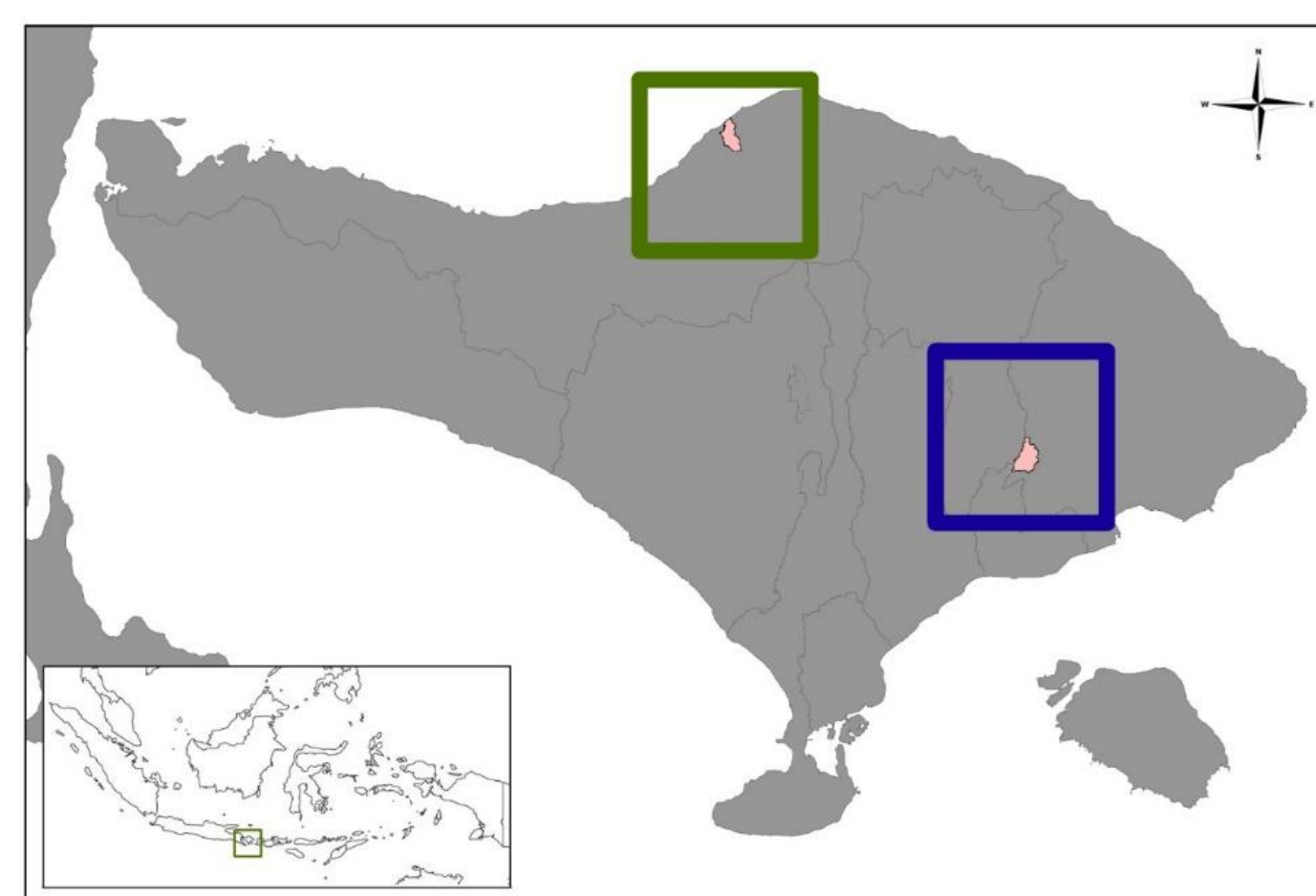
CONCLUSIONS AND RECOMMENDATIONS

- Free-roaming dogs are considered to play a key role in the transmission of rabies.
- The result of the studies underline the potential of ORV as an important tool for targeting hard-to-reach free-roaming dogs in mass dog vaccination campaigns in Bali to effectively interrupt rabies transmission among dogs.
- This will support the elimination of dog-mediated rabies from Bali, and potentially from other areas of Indonesia
- The next step should be the implementation of field trials integrating ORV into MDV strategies at a large scale and investigating the cost-effectiveness of this approach in wider areas in Indonesia.

ACTIVITIES AND ITS RESULTS

The use of ORV is considered to vaccinate free-roaming dogs against rabies infection. Two studies of ORV on the bait acceptance and oral vaccine immunogenicity were implemented in Bali Island.

Field activities



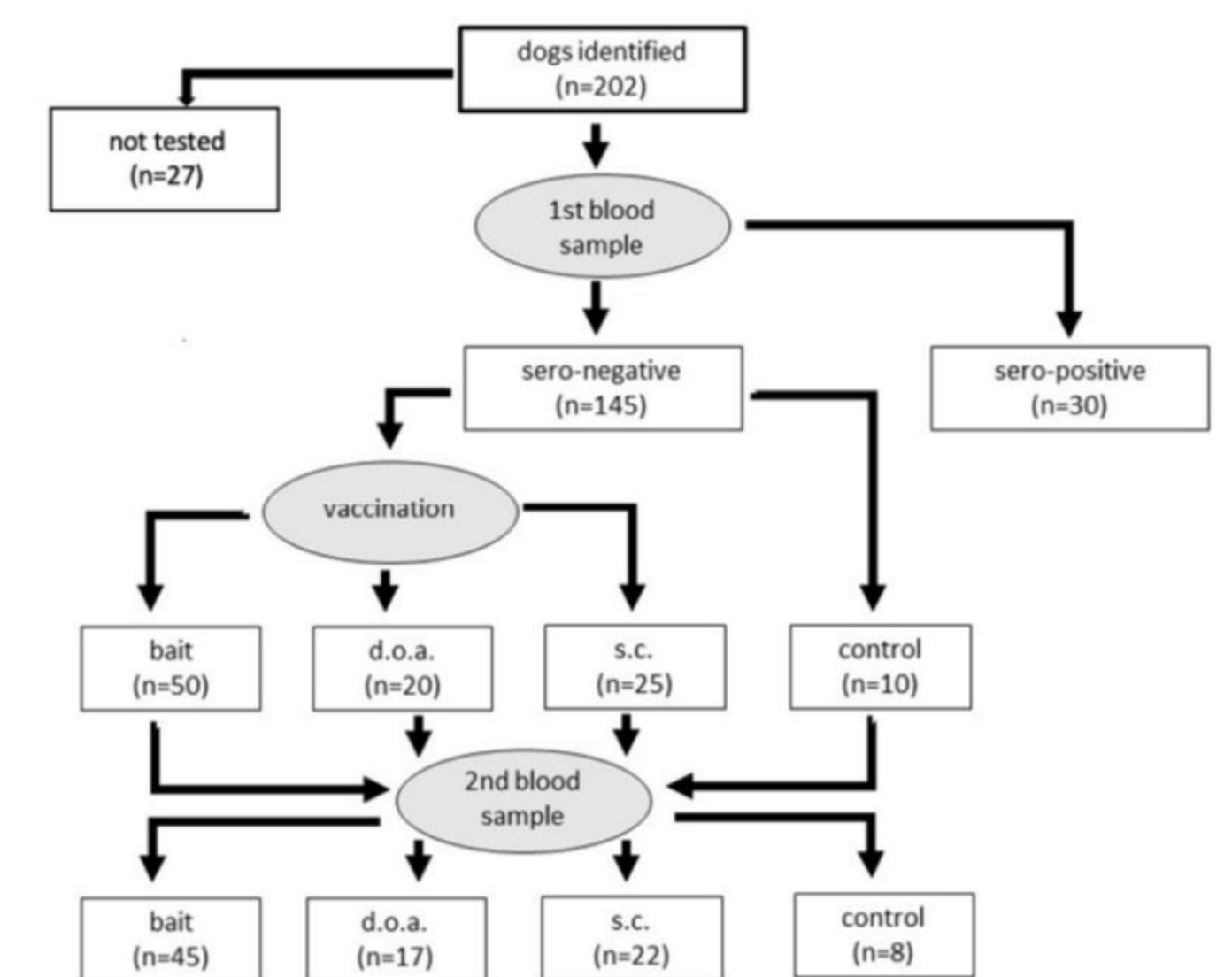
(a)



(b)



(c)



(d)

(a) Location of Nongan (blue square) and Banyuning villages (green) in Bali Island when the ORV studies were conducted; (b) Different baits used (left: boiled intestine, middle: fishmeal, right: egg-flavored); (c) The appearance of blue coloration of the oral cavity and tongue; (d) Flowchart of the immunogenicity study and number of dogs per group.

Achievements

- Local dogs readily accepted both a locally created intestinal bait and an industrially produced egg-flavored bait, with success rates of 83% and 95%, respectively.
- The immunogenicity: there was no significant quantitative difference in the level of antibodies between orally and parenterally vaccinated dogs under field conditions in Indonesia.



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ACKNOWLEDGEMENT



Food and Agriculture
Organization of the
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