

Controlling and Eradicating Rabies in Bali

A factual paper prepared by Bali Animal Welfare Association (BAWA) to assist rabies control and eradication in Bali.

CONTENTS

- 1/. History
- 2/. Current
- 3/. Recommendations
- 4/. Attachments

1. Bali Rabies Response and Humane Control, December 2009 to June 2011

- Bali was historically free of rabies. Rabies was first detected within the Bukit peninsula of Bali in November 2008.
- Following the entry of rabies to Bali in 2008, early government attempts to contain and eradicate the disease by a mixture of dog vaccination and culling on the Bukit peninsula in Badung regency, and then in neighbouring regencies, were unsuccessful. This was due to many factors including insufficient resources to mount a comprehensive response, including the insufficient import of international rabies vaccines. The disease gradually spread over the entire island.
- There was considerable negative publicity about the extent of government-initiated dog culls, and human and animal health and welfare experts recommended a more humane and effective program, focussing on vaccination and minimising inhumane and ineffective culling.
- In December 2009, BAWA began and funded a pilot program of house-to-house vaccination in banjars in Gianyar regency. Within six months (by the end of June 2010) 48,293 dogs were vaccinated.
- Due to the success of the pilot program in Gianyar, the World Society for the Protection of Animals (WSPA) provided operational funding and the Australian government provided vaccines to BAWA to extend the vaccination program into the Bangli regency where an additional 22,025 dogs were vaccinated.
- In January 2010, BAWA hosted a three-day rabies seminar at Udayana university/ medical college where the government, veterinarians and medical doctors were invited to participate for free. World-leading experts in rabies control including the director of zoonoses for the World Health Organization

attended to share their expertise in human rabies vaccines and canine vaccination, and highlighted the need for canine vaccination over elimination.

- On the 21st September 2010, a historic Memorandum of Understanding (MoU) for Humane Eradication of Rabies in Bali was signed between Bali Animal Welfare Association (BAWA) and the Governor of Bali, and subsequently by all regency leaders, including the Mayor of Denpasar, with the exception of Klungkung. The islandwide vaccination program was implemented in a further six regencies from October 2010 to March 2011. Epidemiologists from Glasgow University warned that even one unvaccinated region could cause the program to fail.
- Epidemiologists recommended 3 islandwide programs to eradicate rabies in Bali. As part of the agreement, BAWA hired and trained both local staff and Bali government to train them in the program so that the next two vaccination phases needed to eradicate rabies in Bali would be well-staffed. BAWA hired and trained 440 members of staff over a six month period.
- The projected dog population to be vaccinated was 300,000 dogs (estimated as 1 dog to 12.8 humans) in 4,230 banjars and all regencies (including Denpasar, with the exception of Klungkung). Sufficient funds were provided by WSPA and the Australian government to achieve this. The actual cumulative total of dogs vaccinated through the BAWA pilot and WSPA-funded programs was 275,604 dogs in 4,129 banjars. We estimated this to be 78% of the dog population in Bali.
- Statistics show that this program effectively reduced canine rabies by 86% when comparing June and July 2011 to June and July 2010.
- As of May 2011, in accordance with the MoU, the provincial government both funded and operated the islandwide program in collaboration with the FAO of the UN and continue to do so.

2. The Current Situation and Associated Concerns

Disappointingly, following the success of phases, there was a resurgence of culling and the critical herd immunity (70% of the dog population), that protects dog populations and humans from rabies, was lost. In 2013 only 2 of Bali's 9 regions did not have cases of rabies in dogs. But the human death total that peaked at 82 in 2010 and was reduced to 1 in 2013, rose to 2 in 2014 and, as of August 2015, the number was at 12.

Now, with resumed mass and indiscriminate dog culls, including previously vaccinated dogs, there has been a major loss of and reduction in dog herd immunity, threatening any realistic attempts to control and eliminate the disease.

The impacts of current rabies control efforts in Bali:

- In 2009, the World Health Organization and the Gates Foundation published a joint statement outlining that culling has never had a known effect on population control or on rabies control. These findings are supported today by world's leading agencies in human and animal health.

- Achieving and maintaining herd immunity to the disease by vaccinating at least 70% of the dog population is the key to rabies eradication. This is achieved through a rabies vaccination program that starts in one area and builds on that area with a “sweeping technique”. If a rabies case occurs in other areas, emergency response teams immediately need to vaccinate, but core vaccinators must continue to work on establishing and creating herd immunity, area by area.
- Mass and indiscriminate culling of dogs has been proven internationally and in Bali to be counter-effective. Any country anywhere in the world that has resorted to culling has failed to control and eradicate rabies.
- The only effective means of rabies control is mass canine vaccination, such as the program undertaken by BAWA in conjunction with the provincial government in 2010/2011.
- Dog culling presents numerous problems, in addition to violating international animal welfare principles:
 - Vaccinated, healthy and often sterilized dogs are now being unnecessarily killed. Indiscriminate dog culling risks eliminating vaccinated dogs which are the “warriors” that create the barrier needed to isolate and eradicate rabies. If vaccinated dogs are killed, new dogs of unknown vaccination status will replace them. To end rabies in Bali, it is critical that 70 percent vaccination coverage is maintained.
 - Free roaming dogs are not a problem. In fact, vaccinated free roaming dogs are part of the solution. Balinese dogs are highly territorial and will protect their territory should a rabid animal come into a community. An environment will sustain the number of animals it can support, so culling encourages new dogs that may be infected to enter communities.
 - Humans too will bring new dogs into communities to replace those that have been culled. Those new dogs may be unvaccinated dogs from infected areas.
- Chaining and caging is not the solution for rabies eradication. During a rabies epidemic, chaining and caging dogs is risky. According to CDC (Center for Diseases Control) and international studies, chained and caged dogs are 2.5 times more aggressive than free roaming dogs. Chained, unvaccinated dogs can still get rabies, and do not have chance to avoid other dogs or fights. BAWA had several cases of chained dogs getting rabies and had many human bite cases from caged and chained dogs as the dogs become more fearful and therefore have a greater tendency to bite.
- It was proven in the first island-wide program that to reduce human and dog rabies it was not necessary to cage and chain dogs.
- The only time chaining or caging dogs is advocated is to facilitate the work of the vaccination teams.

3. Moving Forward: Recommendations

BAWA supports the island wide mass vaccination of dogs as the scientifically proven and cost-effective way to control and eradicate rabies in Bali in order to save human lives.

Mass vaccination of dogs is the only way to control and eradicate rabies. The vaccination program must effectively target 70% of dog populations islandwide to achieve the herd immunity.

All sectors should be in agreement and committed to vaccination as the solution.

The following recommendations are based on successful international rabies control campaigns and on Bali's own experience when mass vaccination achieved a significant and historic reduction in rabies. Epidemiologists and all leading international human and animal health agencies support mass vaccination of dogs to control and eradicate rabies.

BAWA therefore recommends that Bali:

- Vaccinate dogs using only imported WHO approved 2-3 year vaccines, and maintain herd immunity by not killing previously vaccinated dogs.
- Follow recommendations and SOPs from 2011, including humane euthanasia policy based on the first successful island-wide program that began on the 1st October 2010, significantly reducing human and canine rabies.
- Continue to follow the island-wide program established in 2010- 2011. Teams of 5 move from banjar to banjar vaccinating and collaring (tied on collars are cheapest and most effective). Growing or unowned puppies that cannot be collared are marked with safe, oil-based paint.
 - Continue to vaccinate and survey in each banjar until 70% of dogs are marked and vaccinated.
- Conduct 3 x back-to-back island-wide campaigns for maximum effectiveness.
 - Epidemiologists (Glasgow University) recommended that Bali would need 3 campaigns due to the high turnover of dogs and new-born puppies.
 - Once dogs are one-year-old and vaccinated twice, then follow pharmaceutical recommendations on the 2 or 3 year vaccine. Imported, long-acting vaccines should be used. Locally produced vaccines where their efficiency has not been tested should not be used. Cold storage of vaccines should be maintained at 2- 8 degrees Celsius (the "cold chain") in storage and in the field.
- Enact and enforce legislation or regulations that prohibit people from throwing away puppies and sick dogs and prevent unregulated mass breeding (puppy mills).

- For Bali, we suggest rabies control becomes a banjar responsibility outside of heavily developed areas such as Kuta Beach. Any dog or puppy that enters or leaves a banjar must be vaccinated. The exception is if an animal is being transported to an animal hospital or clinic.
 - If there are too many puppies in a banjar, then free sterilization or adoptions can be organized from NGOs including BAWA.
- BAWA recommends community education in banjars islandwide. For example, BAWA has run a community education program since January 2012 in partnership with International Fund for Animal Welfare (IFAW) that has been problem free. People in these banjars no longer throw away puppies; people understand that all dogs need vaccinations, nutrition, treatment and care. People practice humane control of their dog populations. They become proud and respectful of their animals and the role they play in society. Community leaders and youth and women's groups set examples which others follow to ensure healthy animal populations and to minimize risks to humans.
- Education should include everyone in the community. People should be taught about bite prevention and responsible dog ownership, including teaching people the difference between provoked and unprovoked bites. Human post-bite treatment is essential.
- Follow euthanasia policy, using humane euthanasia drugs such as Lethobarb or Valobarb.
- We suggest that field workers are paid a monthly wage rather than a per dog rate, and have strict supervision / management systems in place during campaigns.
- Legislate so that all suspect rabies dogs once euthanized must be sent to BBVet for testing. Do not allow suspect dogs to be killed and then drowned or buried.
- Share information with vets, NGOs and others working in the field so they are aware of rabies-positive areas in Bali in order to protect staff, the communities and tourists; better respond to emergency cases; and make informed decisions.
- We suggest international groups that are offering free services to be allowed to work in Bali. For example, BAWA has been offered free-assistance to bring teams in to vaccinate and cover operational costs, and Bali could greatly benefit from these services.

Bali Animal Welfare Association
Bali, Indonesia
September 2015

4. Supporting Data: Attachments and links

1 August 2013: "Designing Programs for Eliminating Canine Rabies from Islands: Bali, Indonesia as a Case Study"

<http://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0002372>

#2 2014: "Development of life-saving control strategies to eliminate rabies in Bali"

<http://impact.ref.ac.uk/CaseStudies/CaseStudy.aspx?Id=40344>

#3 November 2013: "Canine rabies virus: the disease, the problem and current global recommendations for control and elimination"

<http://www.wsava.org/sites/default/files/Presentation%20OIE-WSAVA%20Symposium%202013%20-%20Sarah%20Cleveland.pdf>

#4 <http://impact.ref.ac.uk/casestudies2/refservice.svc/GetCaseStudyPDF/40344>

\