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## Introduction

- Estimated 25,000-35,000 dogs in Kathmandu Valley <sup>1</sup>
- Canine rabies control World Health Organization (WHO) guidelines include dog population control congruent with country's socio-economic structure <sup>2</sup>
- Kathmandu dog population control
  - strychnine poisoning → ineffective & inhumane <sup>2</sup>
  - surgical sterilization → time-consuming & costly <sup>1,2</sup>
- Non-surgical sterilization
  - Must be 100% safe, effective, & impart permanent sterility with one dose in both sexes
  - Could save on labor, time, need for sterile facility & equipment, need for post-op recovery area & kennels, and need for anesthetics, antibiotics, pain meds
  - Ideal product does not yet exist for dogs
- Purpose: To explore potential challenges regarding the introduction of non-surgical sterilization in Kathmandu by investigating community and veterinary attitudes toward Kathmandu's street dog population and its control methods



## Abstract

Rabies is a major public health concern in Nepal. An average of 25,000 people receive rabies post-exposure treatment and more than 100 people die from rabies each year in Nepal. Per World Health Organization guidelines, controlling the street dog population is one major component of rabies control. Both poisoning and surgical sterilization have been used in Kathmandu, Nepal in attempts to reduce the street dog population. The aim of this study was to analyze the feasibility of using an alternative population control method, non-surgical sterilization, in Kathmandu, and, in doing so, explore potential societal challenges regarding the introduction of this novel control method. A total of 60 community and 20 veterinary questionnaires were conducted to collect data on the social attitude towards the Kathmandu street dog population and its control

methods. Although respondents expressed general acceptance and support for non-surgical sterilization, the study identified multiple concerns that must be addressed if a non-surgical sterilant is to be introduced in Kathmandu. Lack of community awareness regarding dog overpopulation and lack of government involvement in dog population management indicate the need for a national policy on rabies and a government-led dog population control that includes public education. The data collected in this study will facilitate future implementation of non-surgical sterilization in Kathmandu by guiding policy development on rabies and dog population control, and it may also serve as a model for potential implementation of non-surgical methods in other countries.



## Discussion

- Recognition of a true street dog overpopulation problem & its connection to rabies
- General support for non-surgical sterilization

**Community wants non-surgical sterilant that is:**

- less costly
- not as risky as surgery
- does not require post-op care

### Veterinarians' concerns about non-surgical sterilization:

- might disrupt economic dynamics of private practice
- "anti-heat" injections as agent for temporary sterility
  - humanDepo Provera used on dogs
  - less costly than surgical sterilization
  - results in pyometra in many cases
  - concern about other non-surgical sterilants

- Challenges in dog population control

### Lack of public awareness:

- Similar community responses in areas with & without ABC
- lack of pet sterilization: pet is confined, unaware of sterilization, want to breed
- pets abandoned if become sickly
- only 35.7% of vets always discuss pet sterilization with clients
- sustainable dog population control efforts must involve local community

### Lack of government involvement:

- other socio-economic priorities
- lack of sanitation system
- lack of national rabies control policy

## Materials & Methods

- **Study Sites**
  - Conducted June 2009 - August 2009
  - Kathmandu divided into 35 wards
  - Community surveys
    - 3 wards where NGO performs animal birth control (ABC)
    - 3 wards without ABC
  - Veterinary surveys
    - Throughout Kathmandu & neighboring cities of Lalitpur & Bhaktapur
- **Study Design**
  - Qualitative, standardized questionnaires
    - Open & closed-ended questions
  - Community questionnaire
    - Public perspective & knowledge of dog population
    - Street dog population control methods
    - Interest in non-surgical sterilization
  - Veterinary questionnaire
    - Non-surgical sterilization in relation to their practice
  - Local veterinarian served as translator
  - Participation voluntary & confidential (Tufts IRB approved)
- **Study Respondents**
  - Community questionnaires
    - 60 questionnaires in 6 wards
  - Veterinary questionnaires
    - 20 veterinarians surveyed from the 85 registered
    - Included government, private, NGO

- **Data Analysis**
  - Microsoft Excel
  - Epi Info
  - Content analysis conducted for open-ended questions where appropriate

## References

1. Anon., 2004b. Kathmandu Animal Treatment Centre. <http://www.katcentre.org.np>
2. Anon., 2004. WHO expert consultation on rabies: first report WHO Technical Report Series 931. Geneva, WHO.

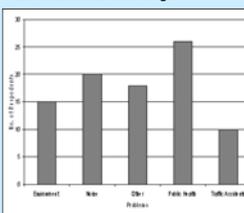
## Results

### Community Findings

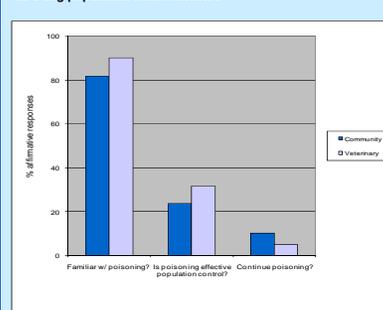
#### Community responses regarding dog population, its control methods, and non-surgical sterilization

- 95% know rabies transmitted by dogs
- 98.3% believe street dog population control needed
- 95% believe government is responsible for dog population control
- No statistically significant difference in responses between wards with & without ABC regarding awareness of population control efforts (P=0.3997, Fisher's exact test)
- 82.9% have not sterilized their own dog
- 93.2% prefer non-surgical sterilization over surgical sterilization
- 75% prefer permanent sterilization for owned dogs
- 98.2% prefer permanent sterilization for street dogs
- 89.8% would help with a non-surgical sterilization campaign

Graph 1. Classification of community responses when asked of problems associated with street dogs



Graph 2. Community & veterinary responses regarding poisoning as a dog population control method

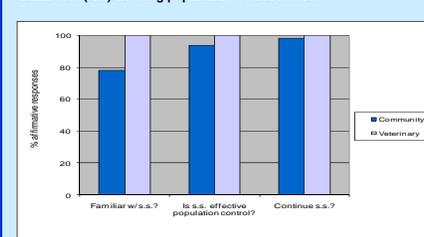


### Veterinary Findings

#### Veterinary responses regarding dog population, its control methods, and non-surgical sterilization

- 100% believe street dog population control needed
- 90% believe government is responsible for dog population control
- 89.4% believe public understands connection between rabies & dogs
- 50% always discuss rabies education; 35.7% only discuss if client asks
- 35.7% always discuss pet sterilization; 50% only discuss if clients asks
- 93.8% believe that non-surgical sterilization could be an effective population control method
- 88.2% believe only vets should have access to non-surgical sterilants
- Regarding potential use of non-surgical sterilization in their practice:
  - 70% want to learn more about the ideal non-surgical product
  - 70% would use it in their practice
  - 70% believe they could sterilize more dogs if a non-surgical sterilant existed
  - 92.8% believe more clients would sterilize their dog if a non-surgical sterilant existed

Graph 3. Community and veterinary responses regarding surgical sterilization (s.s.) as a dog population control method



## Conclusions

- Data indicates that non-surgical sterilization is a socially acceptable method of population control
- Some concerns must be addressed before implementation of non-surgical sterilization in to Kathmandu
- There is a need for a national policy on rabies and government-led dog population control program that includes public education
- Must address economic issues to gain full support of the veterinary community for introduction of non-surgical sterilization

The aim of this feasibility study is to facilitate future implementation of non-surgical sterilization techniques in Kathmandu with the intention of curbing the city's burgeoning dog population & related rabies incidences. This study may also serve as a model for potential implementation of non-surgical methods in other countries.

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