LOW-COST ANIMAL RABIES VACCINATION CLINICS IN MARYLAND:
POLICY AND PRACTICE

Radhika Gharpure, DVM
DHMH PHASE Intern, 2017
Johns Hopkins School of Public Health

Katherine Feldman, DVM, MPH
Center for Zoonotic and Vectorborne Diseases
Maryland Department of Health and Mental Hygiene
OVERVIEW

- Rabies
- Maryland low-cost antirabies clinics
- Project aims
  1) Survey of local health departments
  2) Revision of clinic procedures
  3) Clinic data analysis
- Conclusions
RABIES VIRUS

- Family Rhabdoviridae
- Zoonosis: animal-to-human transmission via the bite of an infected animal
- Acute, progressive, fatal encephalitis
- No effective antiviral drugs
RABIES

Zero deaths by 2030

99% human cases result from dog bites

One death every 15 minutes worldwide

4 out of 10 deaths are in children

100% vaccine preventable

VACCINATE TO STOP TRANSMISSION

VACCINATE TO SAVE LIVES

learn how to interact

TODAY

2030

no bite no rabies

#rabies

28 September

World Rabies Day

www.who.int/rabies/en
Rabies in the United States

- Human cases are uncommon
- Animal cases are not uncommon
  - 93% in wildlife (2014)
- Vaccination of animals mandated at the state level

www.cdc.gov/rabies
“Vaccination required – Each person who owns or keeps a dog, cat, or ferret that is 4 months old or older shall have the dog, cat, or ferret vaccinated adequately against rabies.”
“Clinics required – With the county health department for each county, the Department shall provide for an antirabies clinic in the county;”

“Vaccination procedures – The public health veterinarian shall set the vaccination procedures to be used at the clinics.”
PHASE PROJECT AIMS

1) Survey local health departments

2) Revise clinic procedures for low-cost antirabies clinics
   - Last revised in 2006

3) Evaluate the number and characteristics of animals vaccinated
   - Data last collected for 2006-2008
AIM 1: SURVEY LOCAL HEALTH DEPARTMENTS

- Online survey via SurveyMonkey platform

- Collected information regarding
  - Attitudes towards the existing clinic procedure guidelines
  - Suggestions for revision
  - Clinic data from 2015-2016

- Follow-up via phone call
SURVEY RESULTS

WOULD UPDATED CLINIC PROCEDURE GUIDELINES FROM DHMH BE USEFUL TO YOUR LOCAL HEALTH DEPARTMENT?

- Yes: 67%
- No: 16%
- Don't know: 17%
AIM 2: REVISE CLINIC PROCEDURES

- Edited/modernized syntax
- Reorganized sections
- Updated outdated information
- Added section on staff safety
- Added information regarding adverse vaccine reactions
### AIM 3: CLINIC DATA ANALYSIS

**Animals vaccinated at low-cost antirabies clinics in Maryland**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Dogs</th>
<th>Cats</th>
<th>Ferrets</th>
<th>Unspecified</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>12,212 (68%)</td>
<td>5,702 (32%)</td>
<td>20 (&lt;1%)</td>
<td>3,961</td>
<td>21,895</td>
</tr>
<tr>
<td>2016</td>
<td>10,512 (68%)</td>
<td>4,959 (32%)</td>
<td>35 (&lt;1%)</td>
<td>5,824</td>
<td>21,330</td>
</tr>
</tbody>
</table>
CLINIC DATA ANALYSIS (CONT.)

AVG. ANNUAL NUMBER OF ANIMALS VACCINATED AT PUBLIC CLINICS BY JURISDICTION

- t-test (2-sided, paired): p = 0.84
PERCENT OF PET POPULATION (EST.) VACCINATED ANNUALLY

<table>
<thead>
<tr>
<th></th>
<th>2006-2008</th>
<th>2015-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOGS</td>
<td>1%</td>
<td>0.82%</td>
</tr>
<tr>
<td>CATS</td>
<td>0.39%</td>
<td>0.35%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0.66%</td>
<td>0.58%</td>
</tr>
</tbody>
</table>
COST PER ANIMAL VACCINATED

\[ \text{Mean cost:} \]

2006 = $5.36

2016 = $6.96

\[ t\text{-test (2-sided, paired):} \quad p = 0.01^{**} \]
CLINIC DATA ANALYSIS (CONT.)

NUMBER OF CLINICS CONDUCTED PER YEAR

- t-test (2-sided, paired): p = 0.22
ANALYSIS CONCLUSIONS

These antirabies clinics serve over 20,000 animals in the state of Maryland every year
- Small proportion (<1%) but large absolute number!

Only slight changes between 2006 and 2016
- Decrease in proportion of cats
- Decrease in number of ferrets
- $1.60 increase in cost of vaccine

No changes in absolute number of animals or clinic frequency
POLICY AND PRACTICE IMPLICATIONS

Dissemination of clinic procedures to LHDs

- Revision of clinic procedures was indicated to be necessary by 2/3 of local health departments

Role of the procedures document:

- Best practices for clinic operations
- Suggestions for maximizing efficiency
- Impetus for communication and collaboration between DHMH, LHDs, and partner agencies
These clinics minimize potential human rabies exposures from unvaccinated dogs, cats, and ferrets.

Often serve low-income clients who may not otherwise seek veterinary care.

Routine vaccination of pets is important for:

- Maintaining low numbers of human and animal rabies cases
- Decreasing financial costs from post-exposure prophylaxis administered after exposures to unvaccinated animals
ADDITIONAL EXPERIENCES

- Reviewed >200 rabies vaccination delay requests submitted by Maryland veterinarians
- Analyzed survey data about rehabilitation of wildlife rabies vector species
- Other zoonotic diseases: Q fever, psittacosis
- Weekly outbreak meetings and ID consults
ACKNOWLEDGEMENTS

- Katherine Feldman and Kim Mitchell
- PHASE program
- Samantha Dolan and Sally Ann Iverson
- Local health departments
- CZVBD: Mary Armolt, Heather Rutz, SB Wee, Megan Galvin, Richard Brooks
QUESTIONS?

THANK YOU FOR YOUR ATTENTION