Oral Vaccination of Dogs against Rabies (OVD): an additional tool for your toolbox?

Ad Vos

IDT

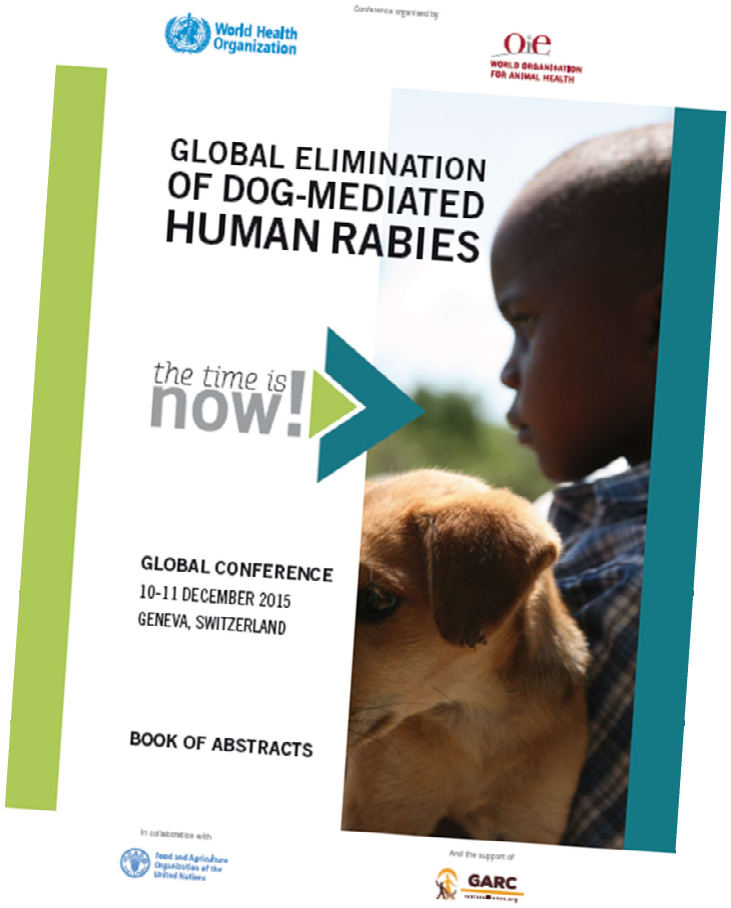
Rabitec
OUR WORLD RABIES FREE

Mass Dog Vaccination Campaigns: Cornerstone of (dog) rabies control

„Dog-mediated human rabies can be eliminated at source by vaccinating dogs …“

central point vaccination

door-to-door vaccination



IDT

Rabitec
OUR WORLD RABIES FREE

Mass Dog Vaccination Campaigns: Cornerstone of dog rabies control


Vaccine 30 (2012) 3492–3502

Contents lists available at SciVerse ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Review

Canine rabies vaccination and domestic dog population characteristics in the developing world: A systematic review

Stacy L. Davlin*, Helena M. VonVille


OPEN ACCESS Freely available online

PLoS NEGLECTED TROPICAL DISEASES

The Feasibility of Canine Rabies Elimination in Africa: Dispelling Doubts with Data

Tiziana Lembo[1,2*], Katie Hampson[3], Magai T. Kaare[4], Eblate Ernest[4], Darryn Knobel[1], Rudovick R. Kazwala[5], Daniel T. Haydon[1], Sarah Cleaveland[1]

1 Boyd Orr Centre for Population and Ecosystem Health, University of Glasgow, Glasgow, United Kingdom, 2 Davee Center for Epidemiology and Endocrinology, Lincoln Park Zoo, Chicago, Illinois, United States of America, 3 Department of Animal and Plant Sciences, University of Sheffield, Western Bank, Sheffield, United Kingdom, 4 Serengeti Carnivore Viral Transmission Dynamics Project, Tanzania Wildlife Research Institute, Arusha, Tanzania, 5 Sokoine University of Agriculture, Department of Veterinary Medicine and Public Health, Morogoro, Tanzania


Review on Dog Rabies Vaccination Coverage in Africa: A Question of Dog Accessibility or Cost Recovery?

Tariku Jibat[1,2*], Henk Hogeveen[1], Monique C. M. Mourits[1]

1 Business Economics Group, Wageningen University, Wageningen, The Netherlands, 2 College of Veterinary Medicine and Agriculture, Addis Ababa University, Debre Zeit, Ethiopia

Zambia	80%	De Balogh et al, 1993
Mexico	73%	Flores-Ibarra et al, 2004
Chad	74%	Kayali et al, 2003
Thailand	70%	Kongkaew et al, 2004
Bolivia	85%	Suzuki et al, 2008
Tanzania	68%	Cleaveland et al, 2003
Mexico	78%	Fishbein et al, 1992
Tanzania	80%	Kaare et al, 2009
Sri Lanka	66%	Matter et al, 2000
Philippines	73%	Robinsin et al, 1996
Tunisia	70%	Touihri et al, 2011
Tanzania	78%	Gsell et al, 2012

Chad	24%	Dürr et al., 2009
Kenya	29%	Kitala et al., 2001
Madagascar	22%	Ratsitorahina et al. 2009
Nigeria	17%	Dzikwi et al., 2011
South Africa	56%	Van Sittert et al., 2010
Tanzania	9%	Cleaveland et al., 2003
Zambia	20%	De Balogh et al., 2003
Kenya	33%	Macharia et al (2003)
Malawi	12-20%	Chimera & Chikungwa (2001)
Namibia	12%	Mettler (2003)
Sudan	3%	Ali (2001)
Uganda	16%	Rutebarika (2003)

IDT

Rabitec

OUR WORLD RABIES FREE

Mass Dog Vaccination Campaigns: Cornerstone of dog rabies control

Several reasons have been identified to explain the difficulty in achieving high vaccination coverages

- campaigns are not well managed
- lack of awareness
- shortage in financial and/or human resources
- high turnover-rate of dog population
- charging a vaccination-fee
- poor quality of vaccine
- vaccines are not always handled or applied properly
- poor immune responsiveness of the vaccinated dog
- inaccessibility of a large fraction of the dog population (free-roaming dogs)

„Free-roaming dogs: Key in transmission of rabies„
(Prof Dr Be-Nazir Ahmed, Rabies Global Conference)

IDT

Rabitec
OUR WORLD RABIES FREE

Mass Dog Vaccination

The tools ‘vaccine‘ and ‘syringe‘ are there but how to reach the free-roaming dog with parenteral vaccines?

Mass Dog Vaccination Campaigns: Cornerstone of dog rabies control

We can add some tools to capture the dogs …

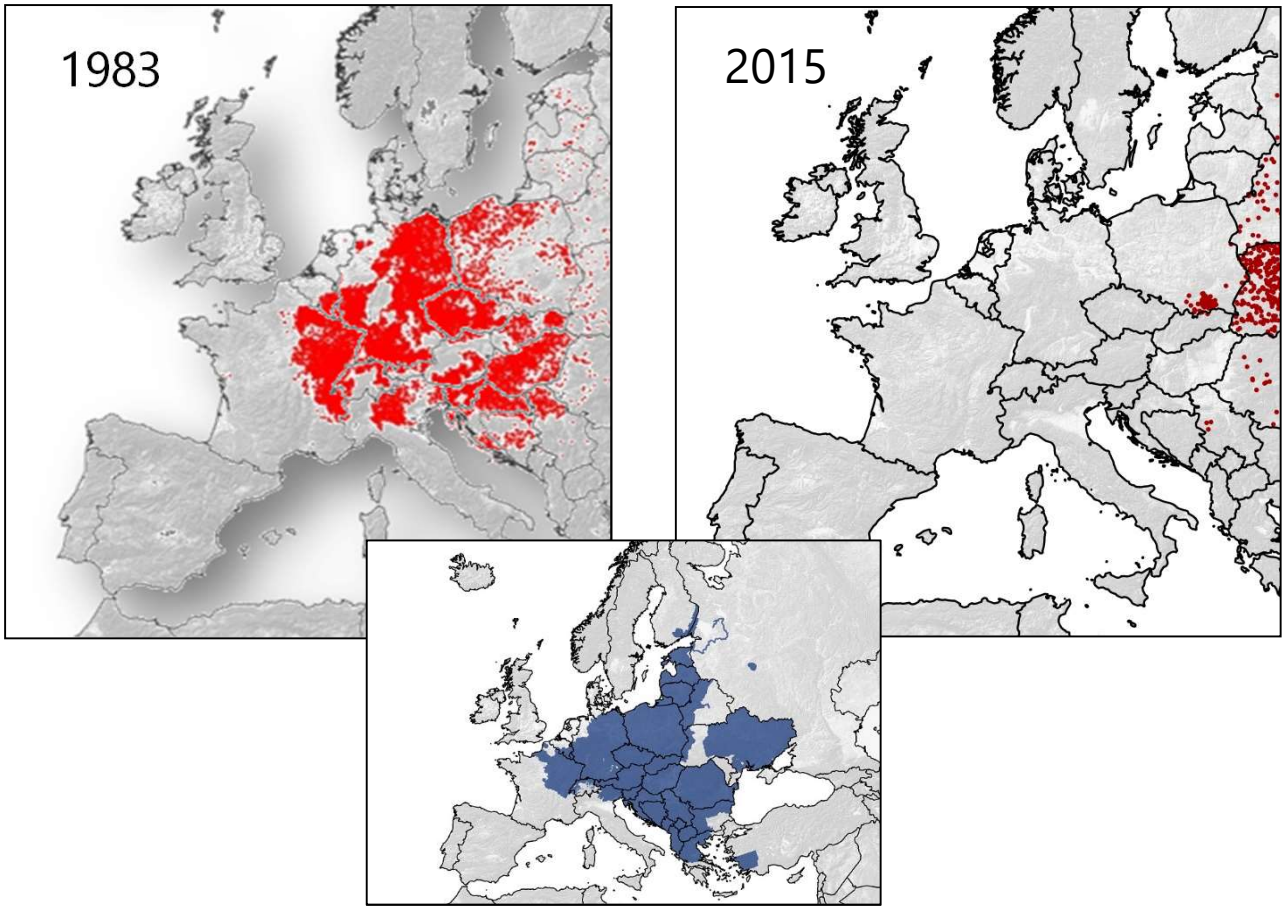
Accessibility of dogs defines the percentage of dogs in a given population which can be caught by a person without special effort (WHO, 1988)

IDT

Rabitec
OUR WORLD RABIES FREE

Oral vaccination of wildlife against rabies

Rabies incidence



Source: Friedrich Loeffler Institute,Insel Riems – Greifswald, Germany

Oral vaccination of dogs against rabies

If it works for him, …

why would it not work for her? …

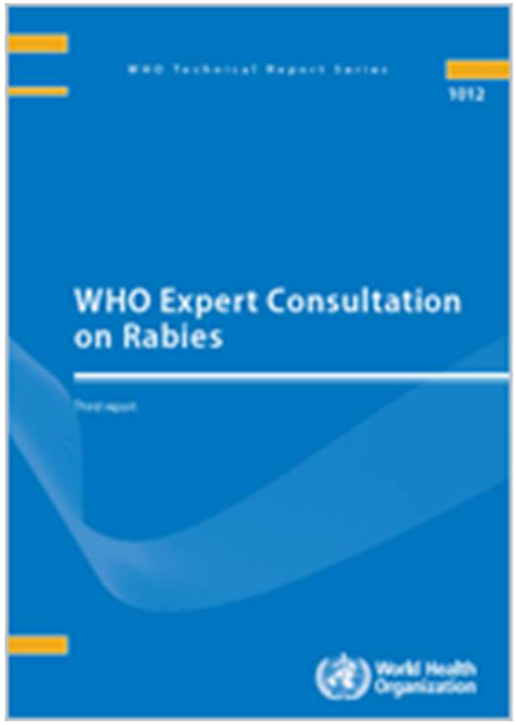
… it does!

IDT

Rabitec
OUR WORLD RABIES FREE

Oral vaccination of dogs against rabies

WHO Expert Consultation on Rabies:
WHO TRS N°1012 Third report



Mass parenteral canine vaccination campaigns … are the mainstay of dog-mediated rabies contol. … **Oral rabies vaccination (OVD)** of dogs may improve coverage in situations in which dogs cannot be restrained or caught and should be used as a complementary measure to improve overall vaccination coverage in dog rabies control programmes

IDT

Rabitec
OUR WORLD RABIES FREE

Oral vaccination of dogs against rabies: field studies - Turkey

Istanbul, Turkey

Vaccination coverage [%]	Sarigazi	Ferhatpasa
Prior to campaign	18.0	15,5
Campaign at clinic	21.8	-
House-to-house campaign		
Parenteral	22.8	40.5
Subtotal	62.6	56.0
Oral	21.2	18.1
Total	83.8	74.1

IDT

Rabitec
OUR WORLD RABIES FREE

Oral vaccination of dogs against rabies: field studies - Philippines

BMC Infectious Diseases BioMed Central

Research article

Field trial with oral vaccination of dogs against rabies in the Philippines

Roland Estrada[1], Ad Vos*[2], Renato De Leon[3] and Thomas Mueller[4]

Address: [1]Institute of Veterinary Medicine, DM MMSU, Bacnotan, La Union, Philippines, [2]IDT GmbH, PSF214, 06855 Rosslau, Germany, [3]Provincial Veterinary Office, San Fernando City, La Union, Philippines and [4]Federal Research Centre for Virus Diseases of Animals, 16868 Wusterhausen, Germany

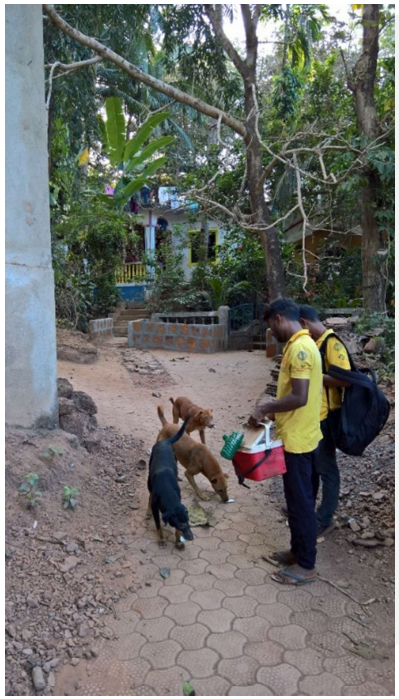
E-mail: Roland Estrada - ovd_philippines@pinoyjustice.com; Ad Vos* - ad.vos@idt-direct.de; Renato De Leon - rdeleon@thepentagon.com; Thomas Mueller - thomas.mueller@wus.bfav.de

*Corresponding author

Mindoro, la Union, 11-12 June 2001

	vaccination coverage
before campaign	0%
after campaign	76%*
- parenteral	(9%)
- oral	(67%)

* - puppies not included



IDT

Rabitec
OUR WORLD RABIES FREE

Oral vaccination of dogs against rabies: field studies - Haiti

Mass dog vaccination campaign methods

Central point vaccination (CPV)

or

Capture-vaccinate-release (CVR)

Parenteral vaccination: accessible dogs

door-to-door

Oral vaccination (OVD): inaccessible dogs
hand-out model

IDT

Rabitec
OUR WORLD RABIES FREE

Oral vaccination of dogs against rabies: field studies - Haiti

Source: Wallace R – CDC, Atlanta

Oral vaccination of dogs against rabies: field studies - Haiti

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Evaluation of immune responses in dogs to oral rabies vaccine under field conditions

Todd G. Smith [a,1,*], Max Millien [b,1], Ad Vos [c], Franso A. Fracciterne [d], Kelly Crowdis [e], Cornelius Chirodea [e], Alexandra Medley [a], Richard Chipman [f], Yunlong Qin [a,2], Jesse Blanton [a,2], Ryan Wallace [a,2]

Hand-out model of baits:

- 97% of dogs offered a bait accepted it
- 93% of dogs offered a bait punctured the vaccine capsule
- 95% of blisters were swallowed by dogs or recovered by vaccinators
- 78% of dogs had evidence of rabies antibodies after bait acceptance (ELISA)
- No adverse events in dogs and humans reported

IDT

Rabitec
OUR WORLD RABIES FREE

Oral vaccination of dogs against rabies: field studies – Goa State, India

Cost-effectiveness analysis ORV vs. CVR

ORV-team: team leader, vaccinator + scooter
CVR-team: team leader, vaccinator, 4 catchers, 1 driver + truck

1 CVR person : 1 ORV person = 9 : 32 dogs vaccinated/day

IDT

Rabitec
OUR WORLD RABIES FREE

Oral Vaccination of Dogs against Rabies - Summary

- Oral vaccination offers a possibility to reach dogs inaccessible for parenteral vaccination
- Oral vaccination increases efficiency of campaigns by reducing time (and therefore money) required to capture and restrain dogs
- Oral vaccination reduces capture stress for both dogs and humans
- Oral vaccination as a supplemantory tool to parenteral vaccination can increase herd immunity to levels required to interrupt the transmission cycle

IDT

Rabitec
OUR WORLD RABIES FREE

Acknowledgements:

- USDA/APHIS, Wildlife Service, USA
- CDC, Atlanta, USA
- FLI, Germany
- Mission Rabies, UK
- Faculty of Vet Med, Kasetsart University, Thailand
- Dept. of Livestock, Thailand
- Institute of Vet. Medicine DMMMSU, Philippines
- Faculty of Vet Med Adnan Menderes University, Turkey
- Ministry of Agriculture and Rural Affairs, Turkey
- Ministry of Agriculture, Natural Resources and Rural Development, Haiti
- Navajo Nation Veterinary Program, USA
- ……..

Thank you!

IDT

Rabitec
OUR WORLD RABIES FREE