



Human rabies in South Africa: focus on post-exposure prophylaxis

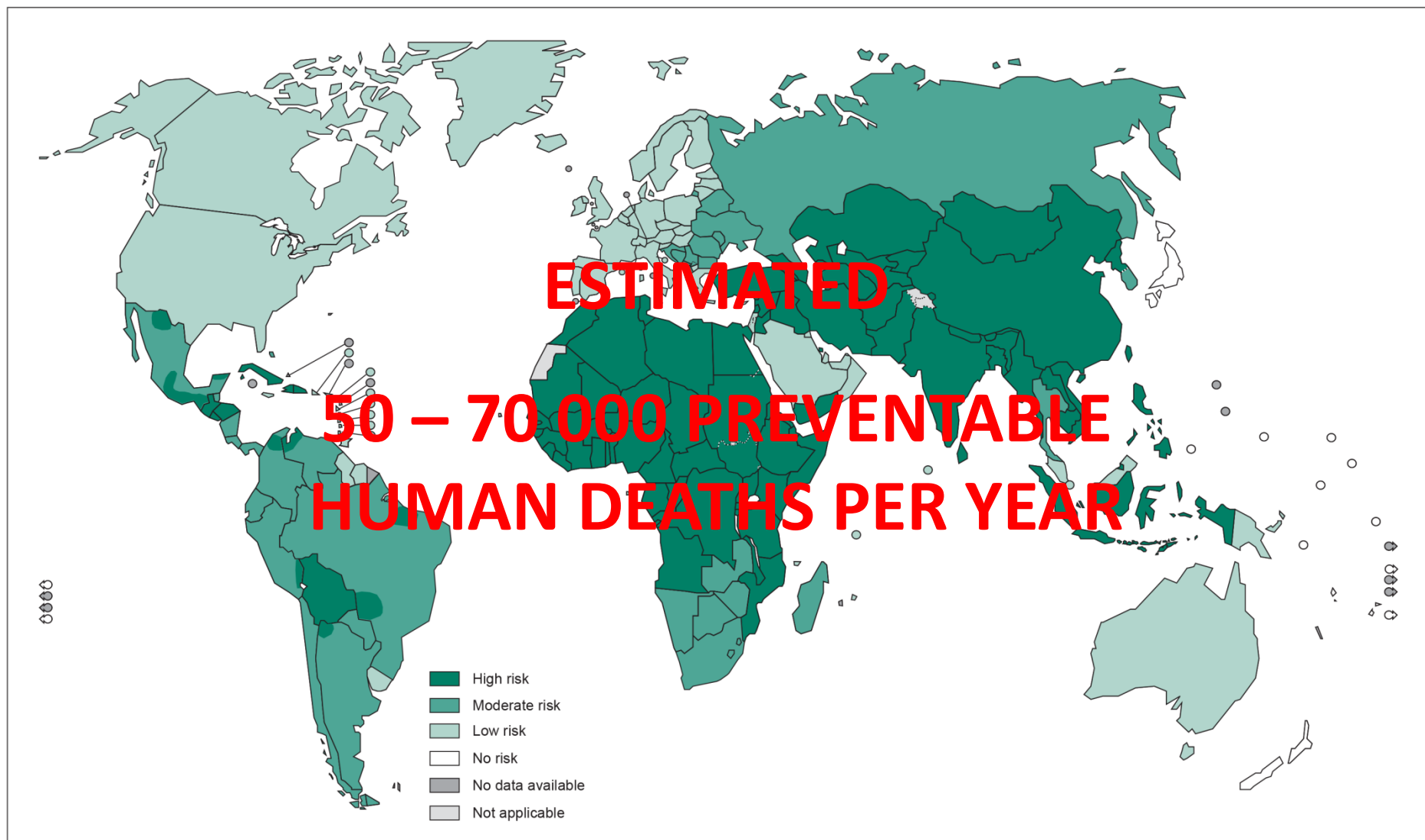
Jacqueline Weyer (PhD, MPH)

29 September 2020

 NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

Distribution of risk levels for humans contacting rabies, worldwide, 2013

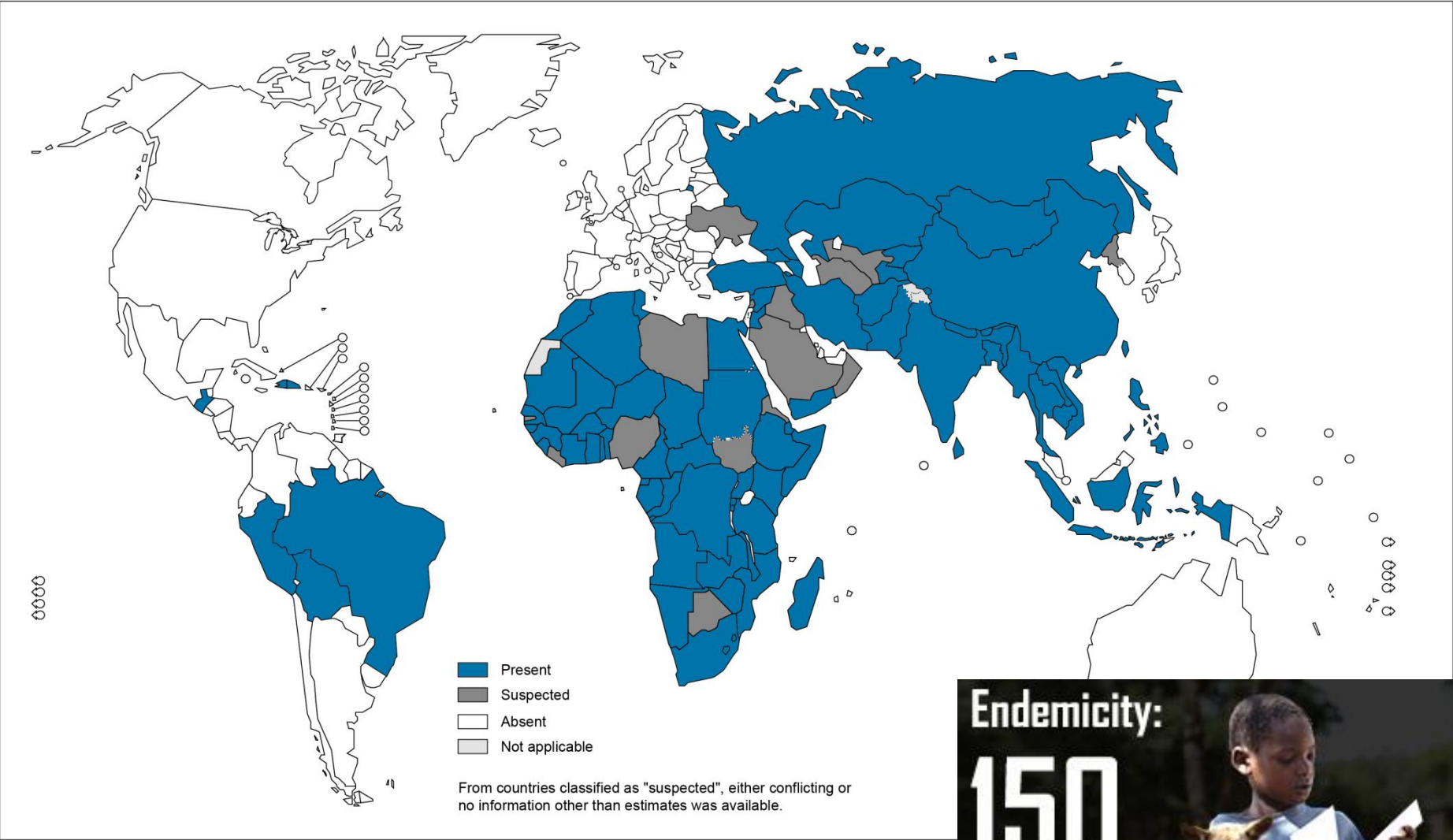


The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2014. All rights reserved

Data Source: World Health Organization
Map Production: Control of Neglected
Tropical Diseases (NTD)
World Health Organization



Presence of dog-transmitted human rabies based on most recent data points from different sources, 2010-2014



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. © WHO 2015. All rights reserved

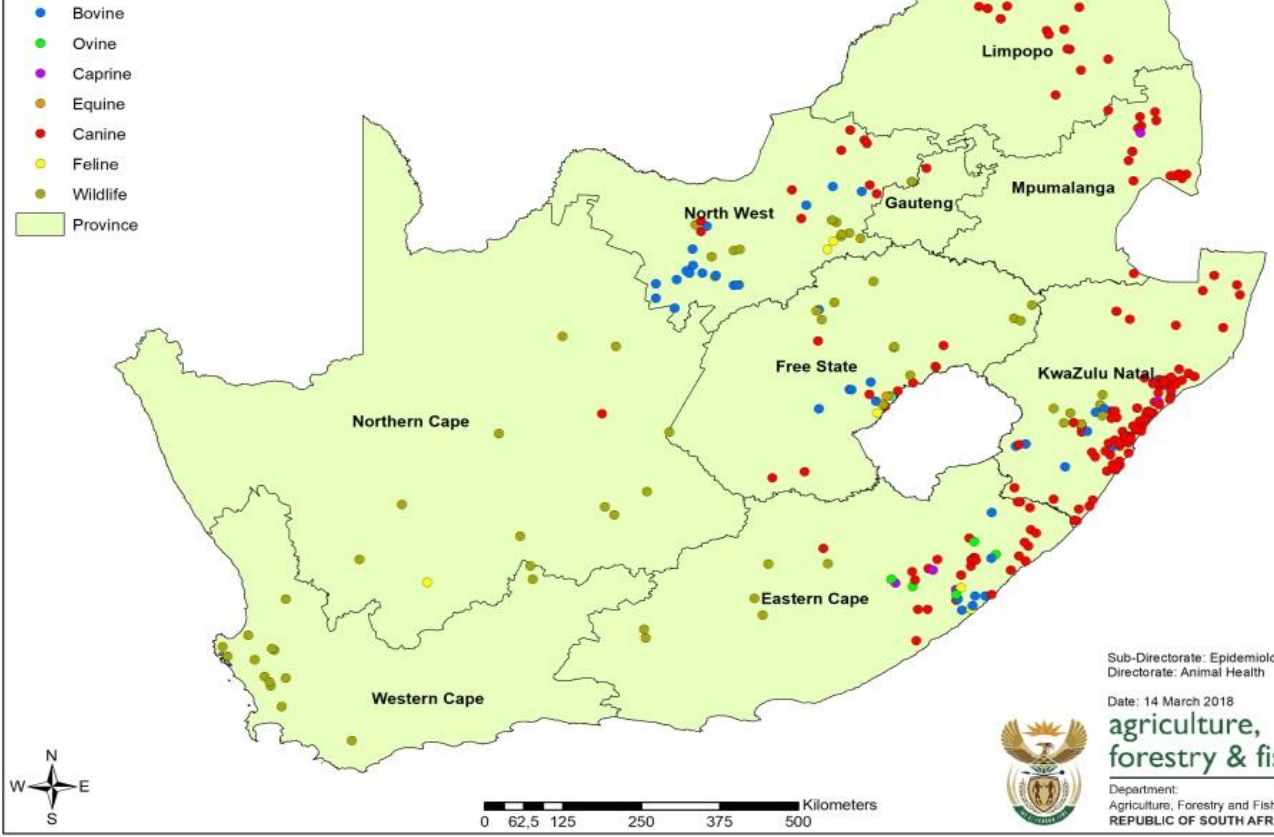
Data Source: World Health Organization
 Map Production: Control of Neglected Tropical Diseases (NTD) World Health Organization

Endemicity:

150

countries and territories

Reported Rabies outbreaks in South Africa:
January to December 2017

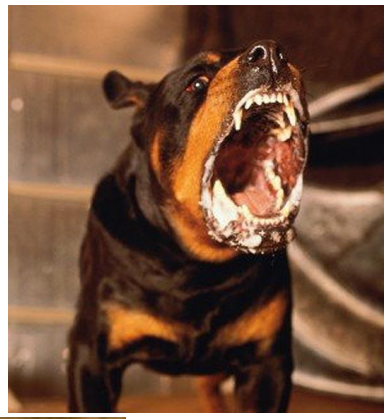


Sub-Directorate: Epidemiology
Directorate: Animal Health

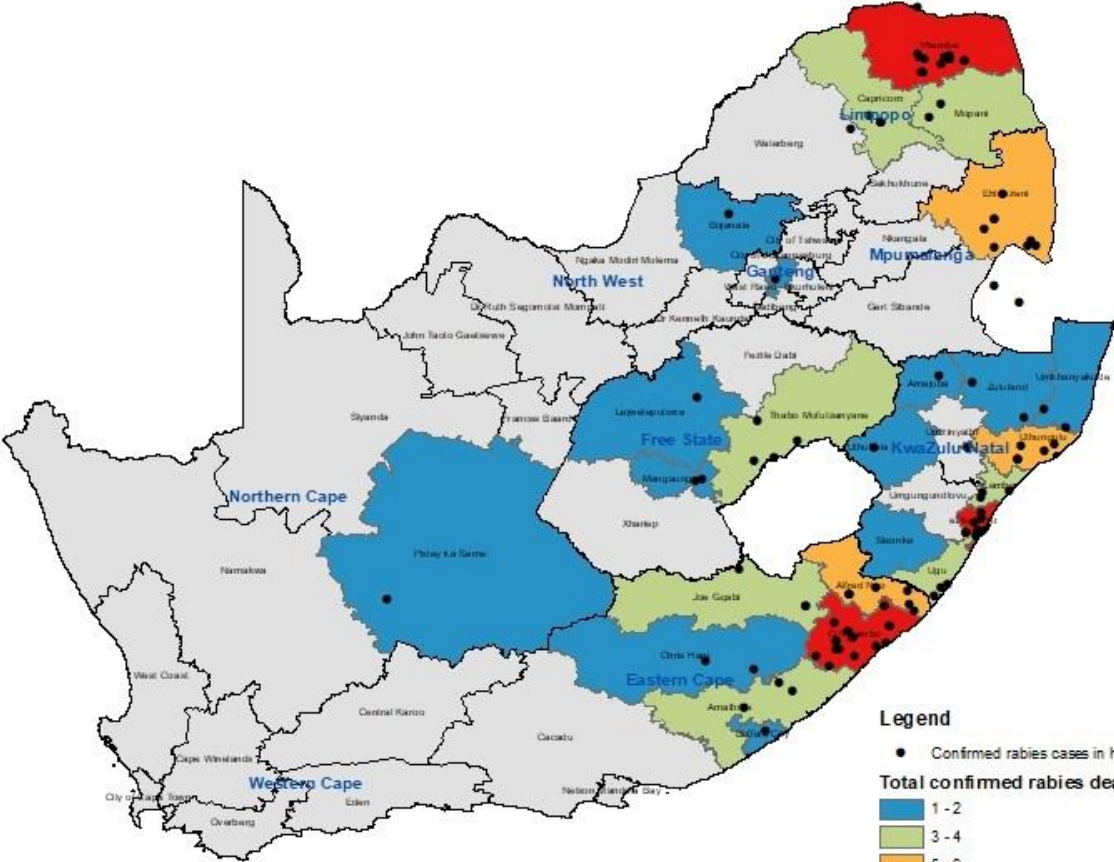
Date: 14 March 2018

**agriculture,
forestry & fisheries**

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



HUMAN RABIES IN SOUTH AFRICA, 2008-2018

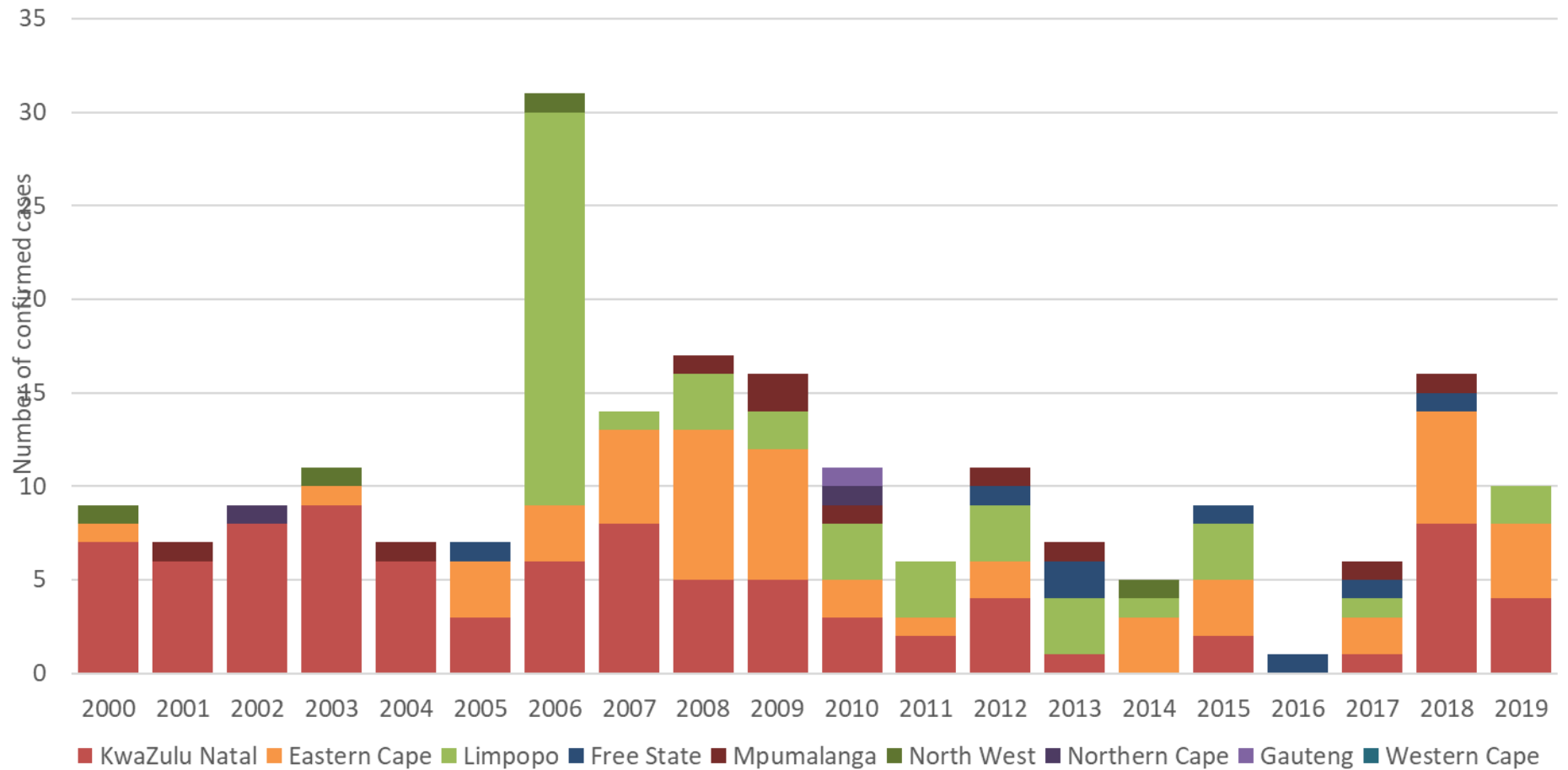


Legend

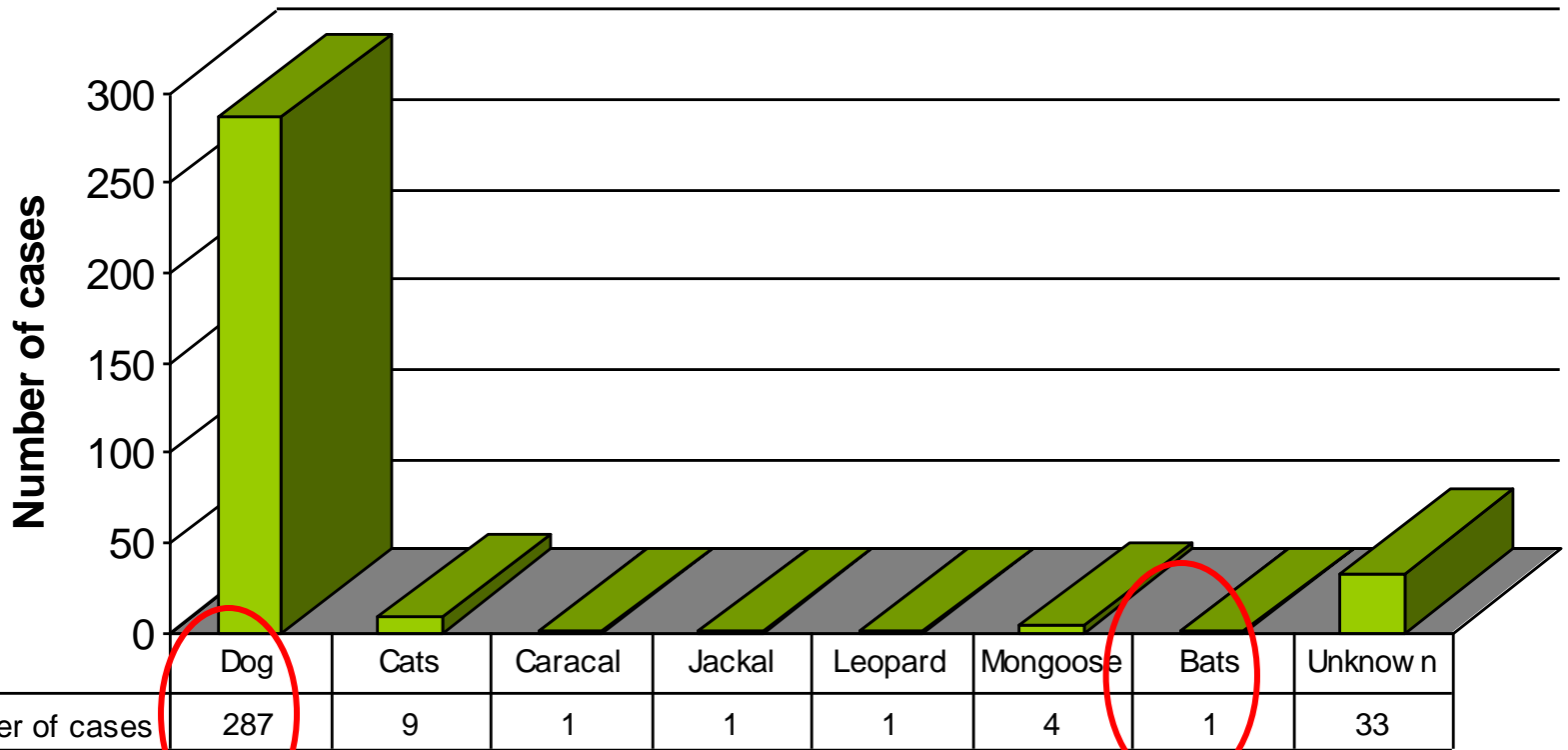
- Confirmed rabies cases in humans
- Total confirmed rabies death per district
 - 1 - 2
 - 3 - 4
 - 5 - 9
 - ≥ 10



Laboratory confirmed human rabies cases in South Africa, 2000-2019



Animals linked to confirmed human rabies cases, South Africa 1985-2007



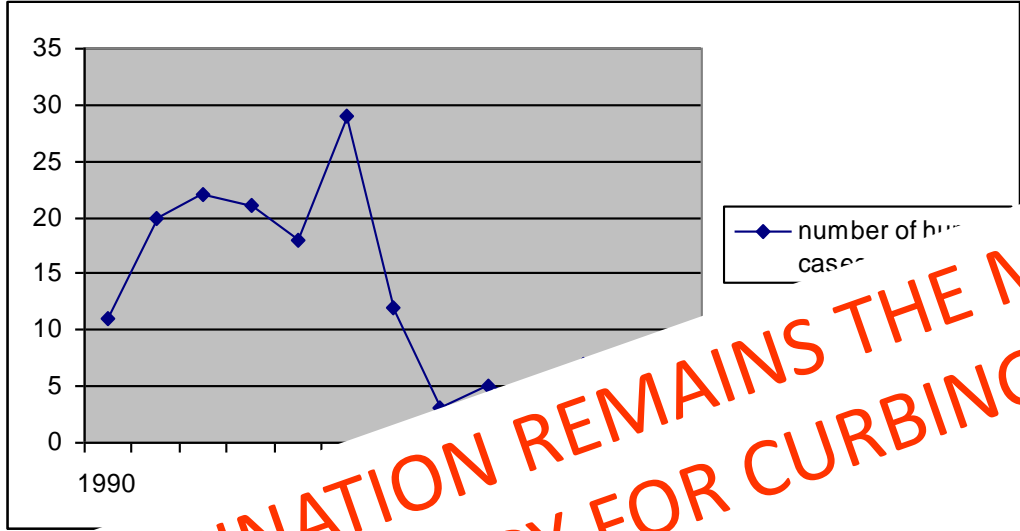
85%

2006 Duvenhage case

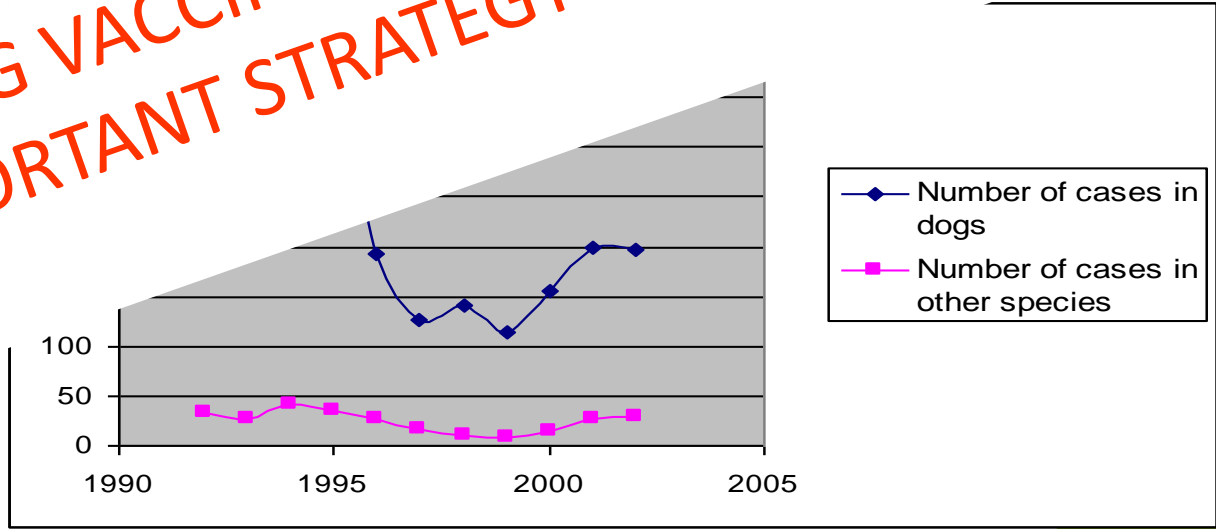


NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES

Division in the National Health Laboratory Service



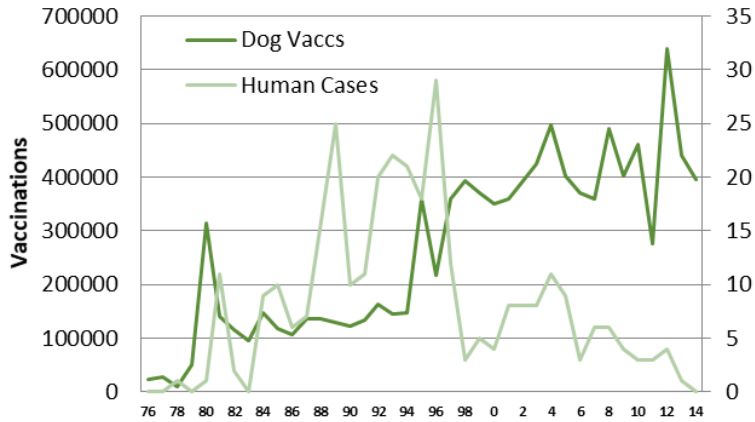
DOG VACCINATION REMAINS THE MOST IMPORTANT STRATEGY FOR CURBING RABIES



A classical Greek vase painting in reddish-brown tones on a dark background. The scene depicts a man in a loincloth fighting a large, spotted, rabid dog. The man is holding a long wooden staff or spear, ready to strike. To the left, two spotted animals, possibly goats or sheep, are shown. To the right, another man in a loincloth and sandals is walking away, carrying a large bundle on his back. The entire scene is framed by a decorative border at the top and bottom.

HOW DO WE
PREVENT RABIES
IN HUMANS?

Dog Vaccinations Impact Human Cases?



**DOG RABIES =
HUMAN RABIES**

**MOST IMPORTANT
INTERVENTION:**

DOG VACCINATION!

Animal and Human Rabies, KZN 2007-16



Rabies Prophylaxis in SA

- 2 vaccines for SA, inactivated cell culture



PRODUCT NAME	DOSAGE	SITE OF ADMINISTRATION	SCHEDULE
i. Verorab™	0.5 ml (one vial)	Intramuscular. Deltoid muscle in adults, anterolateral thigh in small	One dose each on days **0, 3, 7,14 or 28
ii. Rabipur™	1.0 ml (one vial)	children (aged < 2 years)*	

Post-exposure Prophylaxis

WOUND
CARE

VACCINATION

RIG

Cat II and III exposures for non-vaccinated

4 doses of vaccine: day 0, 3, 7 and 14 (or any day up to 28)

Add RIG if Cat III:

HRIG (20 IU/kg)

ERIG (40 IU/kg)

infiltration in wound NB!



Immunoglobulin:

Human derived



PRODUCT NAME	MAXIMUM DOSAGE	DESCRIPTION	SITE OF ADMINISTRATION	SCHEDULE
i. Rabigam®	20 IU/kg bodyweight	150 IU/mL Supplied in a 2 mL vial	Infiltrate up to the maximum calculated dose in and around the wound site/s. For smaller wounds/areas where it is not possible to infiltrate all of the calculated dose, infiltrate as much as is anatomically feasible in and around the wound site/s.	On day 0 of vaccine administration/ ASAP after exposure to be effective to neutralise virus (or up to 7 days after administration of first dose of vaccine if not immediately available).
ii. KamRAB®	20 IU/kg bodyweight	150 IU/mL Supplied in 2, 5 and 10 mL vials.		

Equine derived

PRODUCT NAME	MAXIMUM DOSAGE	DESCRIPTION	SITE OF ADMINISTRATION	SCHEDULE
i. Equirab®	40 IU/kg bodyweight	200 IU/mL Supplied in a 5 mL vial.	Infiltrate up to the maximum calculated dose in and around the wound site/s. For smaller wounds/areas where it is not possible to infiltrate all of the calculated dose, infiltrate as much as is anatomically feasible in and around the wound site/s.	On day 0 of vaccine administration/ ASAP after exposure to be effective to neutralise virus (or up to 7 days after administration of first dose of vaccine). if not immediately available).

Pre-exposure Prophylaxis

High risk individuals

2 doses of vaccine: day 0, 7



Periodically check Ab titer (<0.5 IU/ml), booster?

After an exposure event:

2 doses of vaccine: day 0, 3

No RIG required

How many people are bitten by dogs in South Africa?

- No active surveillance, poor data
- From studies –

Average of 1700 animal bite cases presenting for treatment at health care facilities in Uthungulu District, KZN per year (~ 3 /1000 per year) (Kubheka et al, 2013)

13 % of 1992 households from 5 districts in KZN had member that was bitten by dog in year preceding the study (Hergert and Nel, 2013)

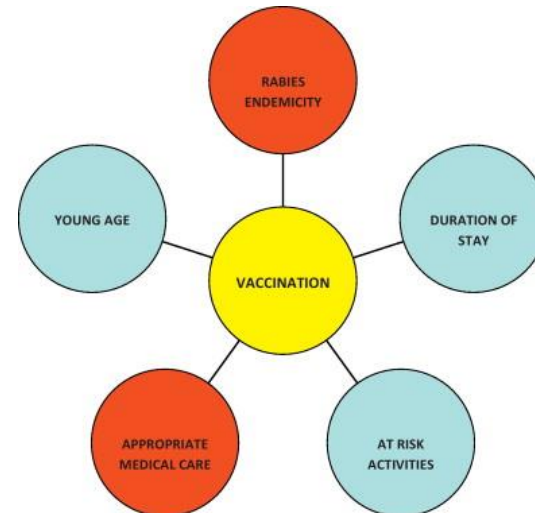
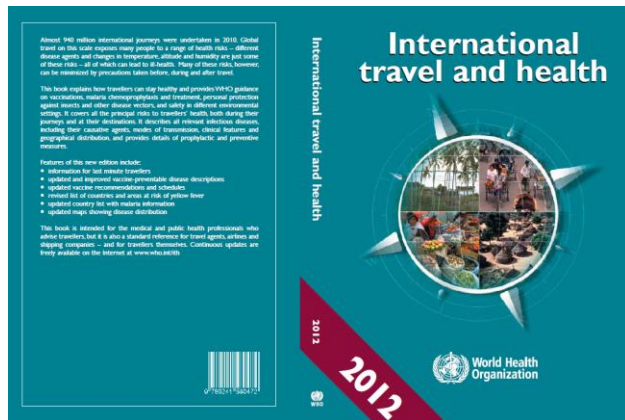
Study at paediatric trauma unit in Cape Town report average of 145 child patients being bitten by dog per year (Dwyer et al 2007)
(That is almost 3 patients per week at this one facility!)

At least ZAR 70 million spent on rabies PEP annually (RAG, 2014)

Travellers: Who to vaccinate?

Travellers that travel to dog rabies endemic zones, with:

- Extensive outdoor exposure / or other activities that may predispose for rabies exposure;
- Travel to isolated areas with low access to medical care; where access to rabies PEP limited.
- Duration of stay;
- Age.



From: Gautret and Parola, 2012. *Vaccine* 30:126-133.

Prophylaxis

- POST-exposure vaccination:

WOUND
CARE

VACCINATION

RIG



Cat II and III exposures for non-vaccinated

4 doses of vaccine: day 0, 3, 7 and 14 (or any day up to 28)

Add RIG if Cat III:

HRIG (20 IU/kg)

ERIG (40 IU/kg)

infiltration in wound NB!



POST EXPOSURE PROPHYLAXIS FAILURES

- Deviations from proposed schedules and administration guidelines
- Not applying rabies immunoglobulin when indicated
- Suturing of wounds shortly after application of rabies immunoglobulin, or before application of rabies immunoglobulin
- Not applying rabies immunoglobulin to all wounds
- Applying rabies immunoglobulin into gluteal area
- Multiple invasive wounds, especially to head and shoulders or other highly innervated areas such as hands and fingers

For more information on human rabies and how to prevent human rabies in South Africa,
www.nicd.ac.za

