Zoonoses in the Bolivian Amazon: Alarming Initial Results from a One Health Initiative

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The working area

- Bolivia
- Amazon region (northern part of the country)
- La Paz Department
- Tacana People indigenous territory
- 2 Tacana communities: Buena Vista and Tumupasa



The Tacana indigenous territory



The Tacana indigenous territory (cont.)



Leptospirosis



Marr J. & Cathey J. 2010

NETCAP Project

<u>NETCAP</u>: Participatory & cross-sectorial pilot project to prepare **networks** and **capacities** for control of diseases spreading between animals and humans in rural communities.

<u>Objectives</u>: Develop **sustainable health solutions** for humans, domestic animals, wildlife and local ecosystems.



Methods and Materials



Level of Coordination	Public Health Sector	Animal Health Sector
National	PNETRs – MS (Rodent Borne Diseases National Program – Ministry of Healt)	
Regional (La Paz Department)	<i>SEDES LP</i> (La Paz Department Health Service)	SENASAG LP (National Veterinary Service – La Paz Service)
Local/Tacana Indigenous Territory	 Local Health Network – SEDES LP SBV Hospital DDH – GAM SBV (Rural Development Direction – SBV Municipality) CIPTA Directory CIMTA Directory 	 - SENASAG SBV - DDR – GAM SBV (Rural Development Direction – SBV Municipality) - NNRR CIPTA (Tacana Indigenous People Council)
Community	 Tumupasa and Buena Vista Health Centers and authorities Family members 	- Animal holders/ Farmers

Community	Nº animals sampled/species			Total	
	Bovine	Porcine	Canine	Equid	TOLAI
Tumupasa	25	7	19	3	54
Buena Vista	12	6	11	0	29
TOTAL	37	13	30	3	83

Datos de la	familia	HEREPERSONAL CONSISTER		
Cuantas per	sonas viven en su casa?	Niños	Adultos	
Cuántos ani	males tiene la familia?			
Perros	Chanchos	Bovinos .		Otro
Con cuales o	le esos animales tiene ust	ed contacto y de qué ma	nera?	
Observa ust	ed ratones/ratas en su don	nicilio o cerca de él?	Si 🖸	No 🖂
Este año, au	mentaron las poblaciones	de roedores en su comu	nidad? Si 🗖	No 🗆
Se baña ust	ed en aguas estancadas o	tiene contacto con ellas?	si 🗂	No 🖸
Muestras c	olectadas:			
Sangre	Cantidad	Orina	Cantidad]
Canago ont	and Internet	Orina	mi /al	A State of Lot o



Correctionsites	Nº individuals sampled		Tatal	
Community	Male	Female	Iotal	
Tumupasa	PRO	TD del Pacienter	43	
Buena Vista	Fecher Herra	Registrator/o:	33	
TOTAL	Oatos del paciente		76	
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Results

High proportion of human serum samples contain IgM antibodies directed against *Leptospira* spp. (acute infection).





Even higher proportion of PCR-tests of urine samples from humans were Leptospira-positive.





High proportion of PCR-tests of urine samples from animals were Leptospira-positive.





Analysis of reported clinical symptoms and some potential risk factors:

- Being **leptospira positive in urine** PCR-test is significantly associated with **back pain** (dorsalgia) even after adjusting for age, gender and occupation.
- Multivariable statistical analysis showed that being seropositive for lepto was associated with having more than one dog, having chickens, working in farm or forest as opposed to working at home or in an office/shop (need of reassessement on a larger dataset adjusting for clustereffects of family and village).
- **Observing rodents** was not associated with being testpositive (maybe because observation is uncertain and rodents are present in many places in both villages).

• Other important zoonotic diseases detected in the human samples:

Hantavirus (serology)
Cysticercosis (serology)
Aerococcus sp. (PCR)

• No evidence of circulation of *Trypanosoma cruzi* or other hemoparasites was observed in the human samples.

Conclusions

- Before this study, Leptospirosis was not considered in differential diagnosis of fever cases in the San Buenaventura Municipality (**unreported disease**);
- An important amount of people reported either being ill or having been ill recently (mix of fevers, headaches, muscle pain and others). Those symptoms could be related to both Leptospirosis, Hantavirus but also Dengue;
- Information meetings are been held in the local communities as well as between the health institutions and workers;
- A participatory integrated health **intervention strategy** is being discussed between partners in the initiative;

Conclusions (cont.)

• Efforts are urgently needed to:

 Identify the strains of *Leptospira* sp. circulating in domestic animals and humans (Are they the same?);

- Develop diagnostic tools (easy to use and cheep) for its use in remote tropical areas;
- Disseminate health information among the Tacana and non-Tacana population along the San Buenaventura Municipality, to prevent and control zoonotic diseases such as Leptospirosis, Hantavirus and Cysticercosis.



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- Consejo de Mujeres Tacana (CIMTA)
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- Corregimiento de la comunidad de Buena Vista
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- Centro de Salud Buena Vista
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