

Swiss TPH



Swiss Tropical and Public Health Institute  
Schweizerisches Tropen- und Public Health-Institut  
Institut Tropical et de Santé Publique Suisse

## **“One Health” Webinar**

# ***The theory and practice of “One Health”***

Jakob Zinsstag

Swiss Tropical and Public Health Institute, Basel



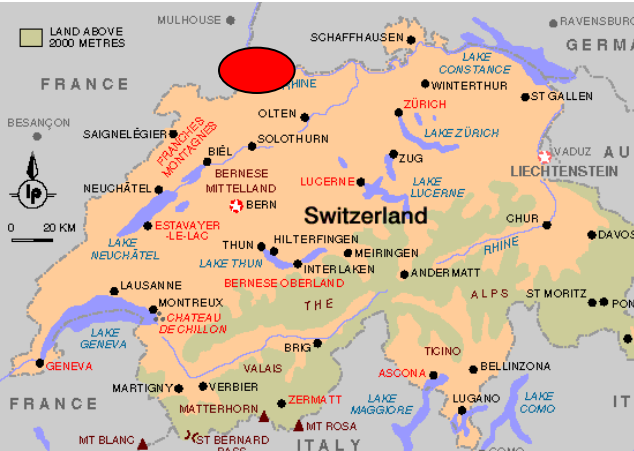
## Who we are.....

Multidisciplinary research unit within the Department of Epidemiology and Public health at the **Swiss Tropical and Public Health Institute** ([www.swisstph.ch](http://www.swisstph.ch)) with partnerships in eight countries in Africa and Central Asia.

### Focus:

Health systems for mobile pastoralists

Control of zoonoses (diseases transmissible between animals and humans in developing countries) Bovine tuberculosis, Rabies, Brucellosis, Anthrax, Avian Influenza

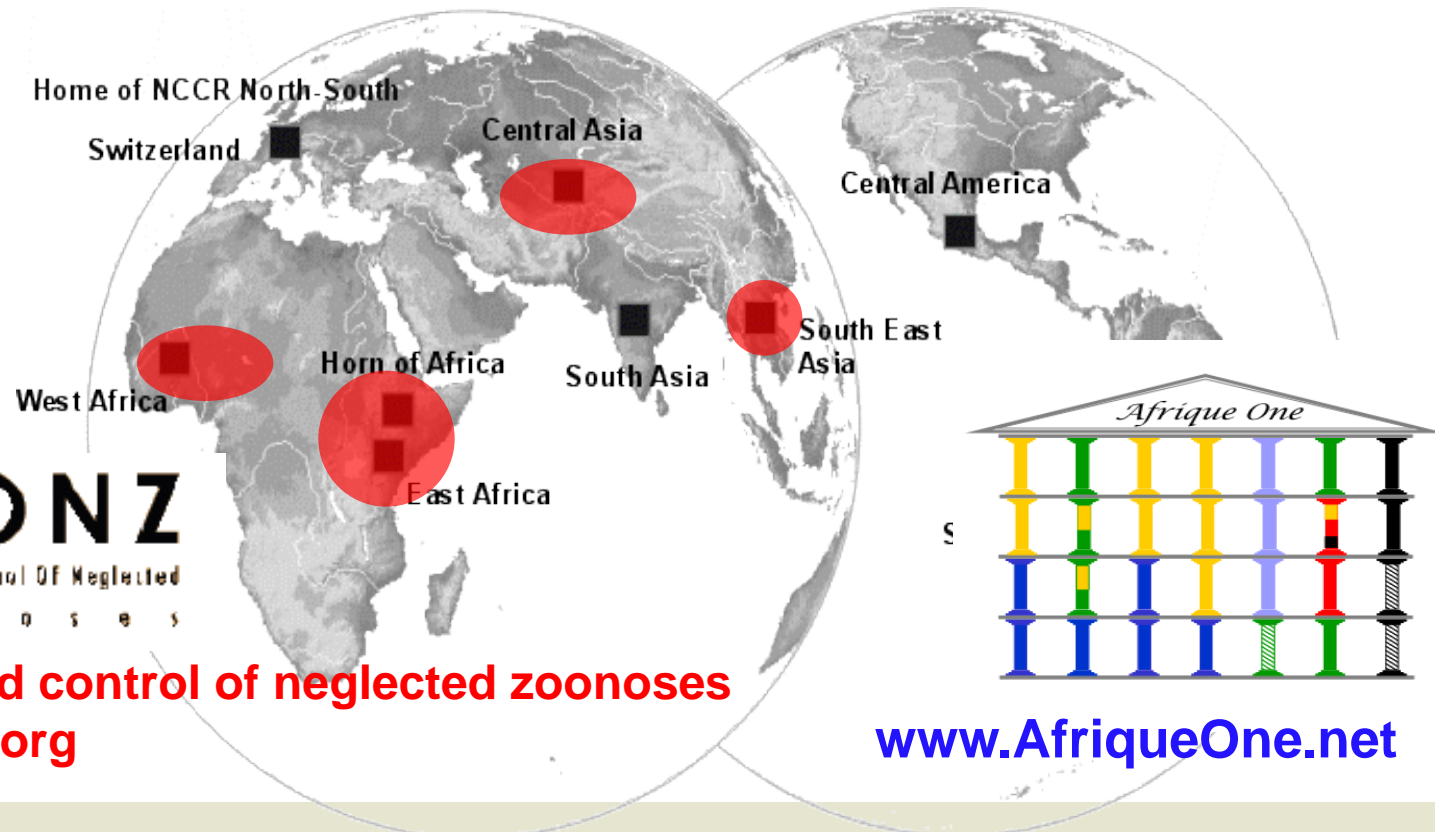




## National Centres for Competence of Research North-South

[www.nccr-north-south.unibe.ch](http://www.nccr-north-south.unibe.ch)

7 Swiss Institutions: NRM, Conflict, Governance, Sanitation, Livelihood, Health, Urban planning together with their South partners  
Funded by Swiss National Science Foundation and Swiss Development Cooperation



**ICONZ**  
Integrated Control Of Neglected  
Zoonoses

EU FP7 Integrated control of neglected zoonoses  
[www.iconzafrica.org](http://www.iconzafrica.org)

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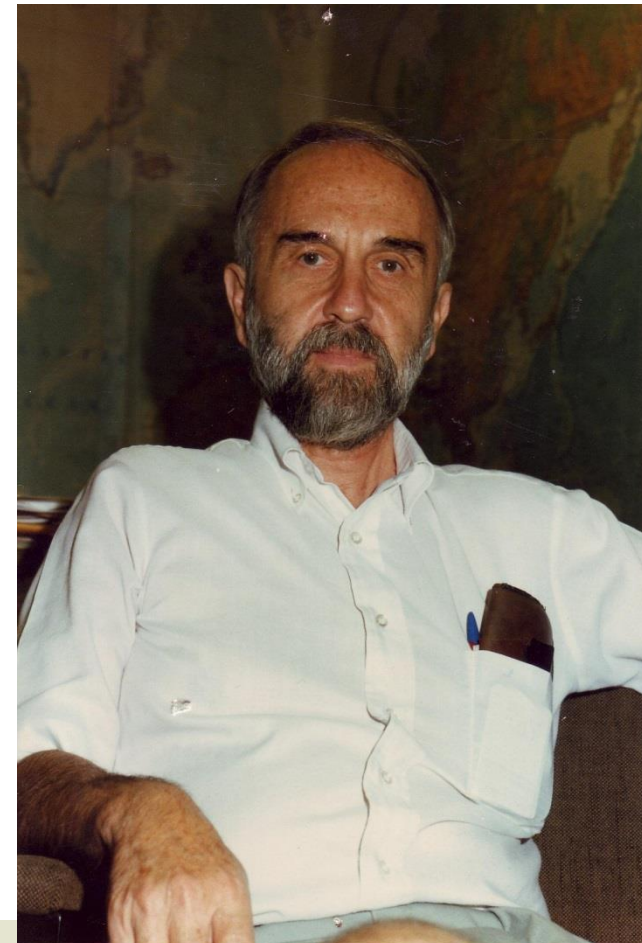
# Overview

1. From «One Medicine» to «One Health»
2. «One Health» necessary and sufficient components
3. Human-animal linkages in micronutrients and food security among mobile pastoralists.
4. Joint health service-delivery for mobile pastoralists
5. Added value of «One Health» in zoonoses control
6. Beyond «One Health»: Ecosystem health

The „One Medicine“ by Calvin Schwabe's has it's origins in his work with Dinka pastoralists in Sudan in the 1960s

„There is no difference of paradigm between human and veterinary medicine. Both sciences share a common body of knowledge in anatomy, physiology, pathology, on the origines of diseases in all species.“

Schwabe C. (1964, 1984 3rd Edition):  
Veterinary Medicine and Human Health.  
Williams and Wilkins, Baltimore





## „One Health“ requirements

Necessary (but not sufficient) requirements:

- Recognition of inextricable linkage of human, livestock, companion animals and wildlife

Sufficient requirements:

- Added value of health and wellbeing of humans and animals and/or financial savings from closer cooperation of human and animal health.



# Health of mobile pastoralists







**„For animals we are in charge, for the children it is God“**





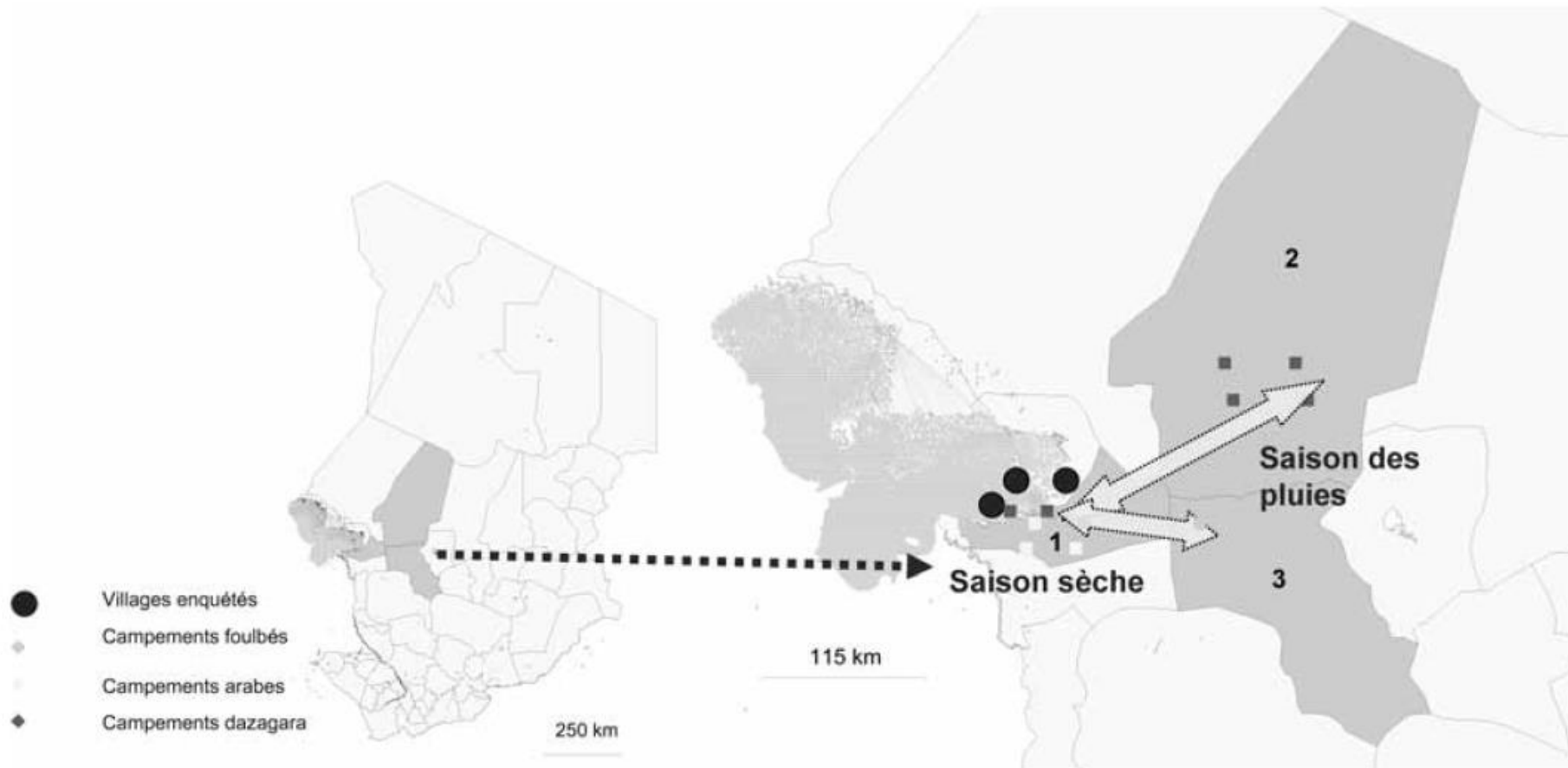












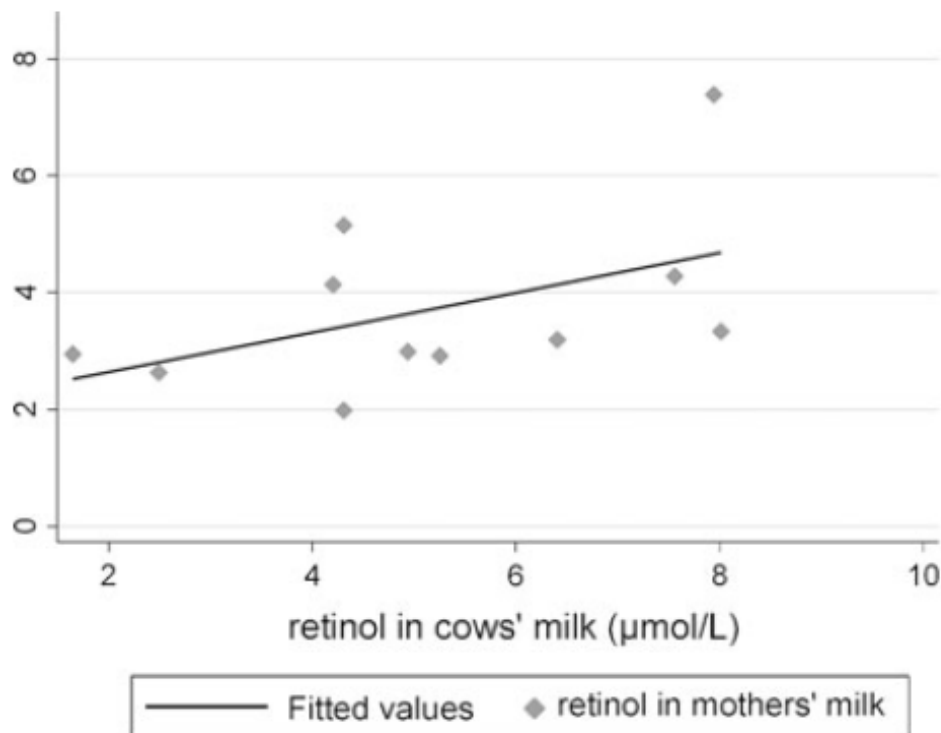
Figures 1 & 2. Cartes du Tchad et de la région d'étude : 1) Département de Dagana, 2) Région de Bahr-el-Ghazal & 3) Département de Dababa.

# Retinol Assessment Among Women and Children in Sahelian Mobile Pastoralists

M. Bechir,<sup>1,2,3</sup> E. Schelling,<sup>2,3</sup> K. Kraemer,<sup>4</sup> F. Schweigert,<sup>5</sup> B. Bonfoh,<sup>6</sup> L. Crump,<sup>2,3</sup> M. Tanner,<sup>2,3</sup> and J. Zinsstag<sup>2,3</sup>

Ecohealth 2012

Human mother's milk retinol ( $\mu\text{mol/L}$ )





# Food security depends on the seasonal availability of cereals and dairy products

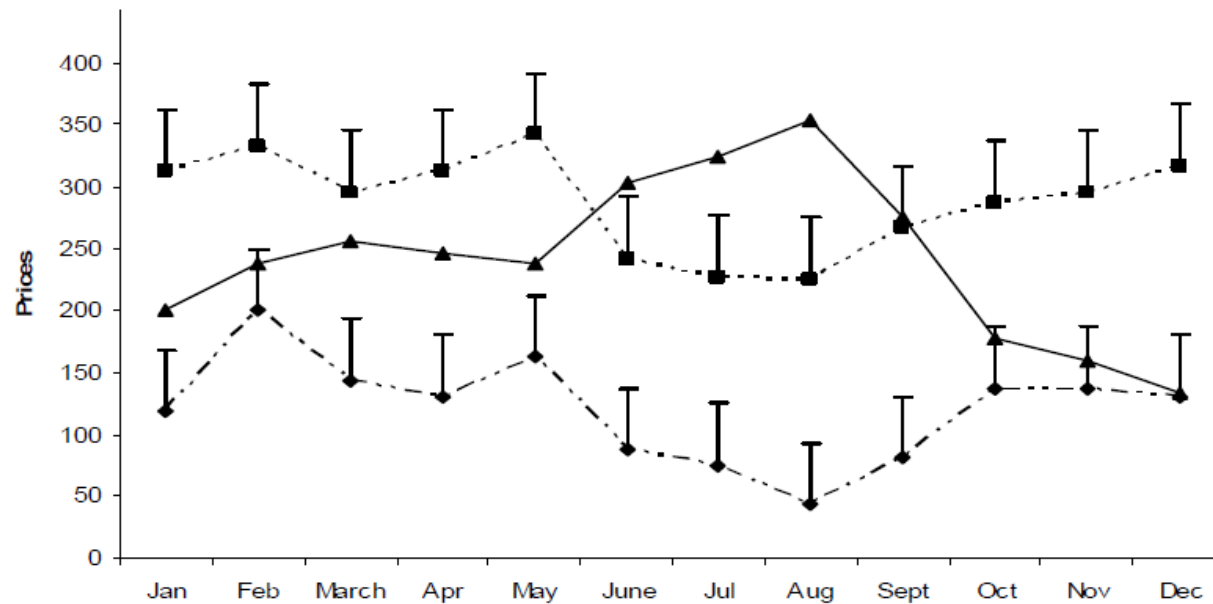


Figure 3: Yearly food price variation in the market of Gredaya: Diamonds: 1 litre of fermented milk, Squares: 100g of Butter, Triangle: 1 kg of Corn. Prices in FCFA.

## ADVANCES IN FOOD SCIENCE AND NUTRITION

Food Security and Resilience among Mobile Pastoral and Settled Community around Lake Chad in Sahel: An Overview

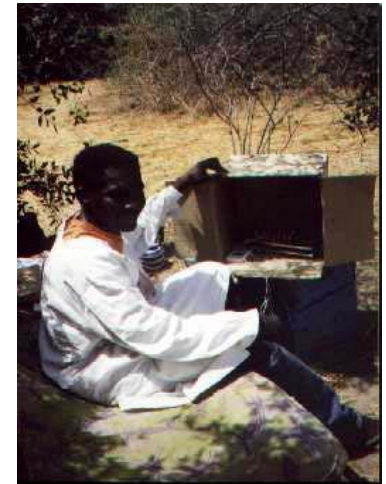
Bechir M.<sup>1,2</sup>; Zinsstag J.<sup>3</sup>; Tidjani A.<sup>4</sup>; Schelling E.<sup>5</sup>; Ibrahim A.<sup>4</sup>; Bonfoh B.<sup>3</sup> & Tanner M.<sup>3</sup>

Dr. YASHI SRIVASTAVA (Editor-in-Chief)  
Queen's College of Food Technology & Research Foundation  
Aurangabad, India-431001





# Mixed teams integrating human and animal health for nomadic people in Chad



## Joint human and animal vaccinations improve access to health care for pastoralists



Costing study: public health sector could save up to 15% of infrastructure, cold chain and staff costs

Private veterinarians' interest in capitalising on transportation infrastructure



# Is it profitable to control rabies by dog mass vaccination in African city?



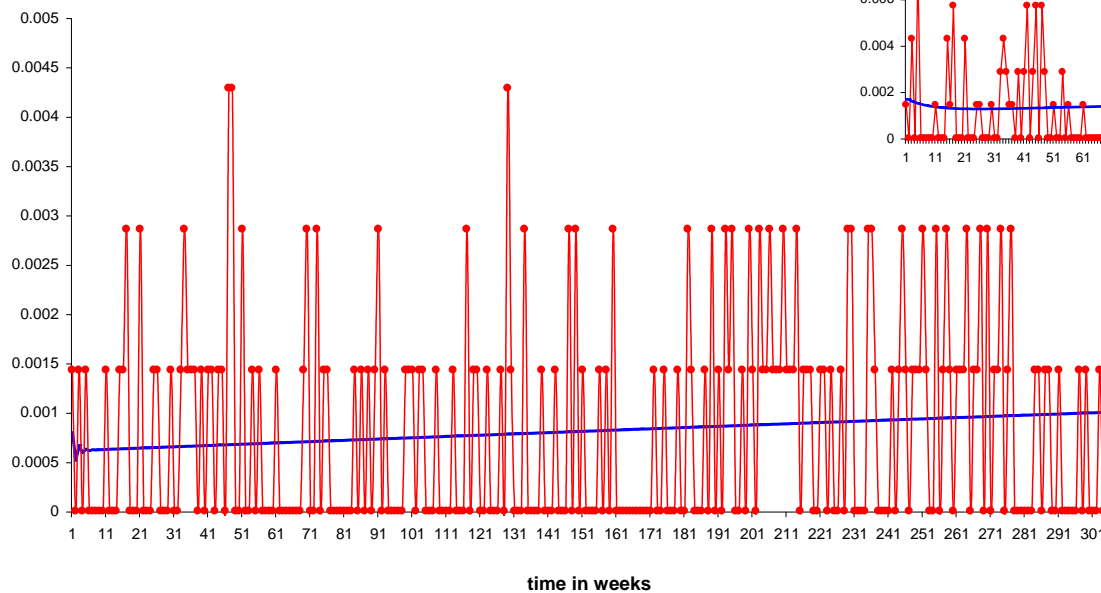




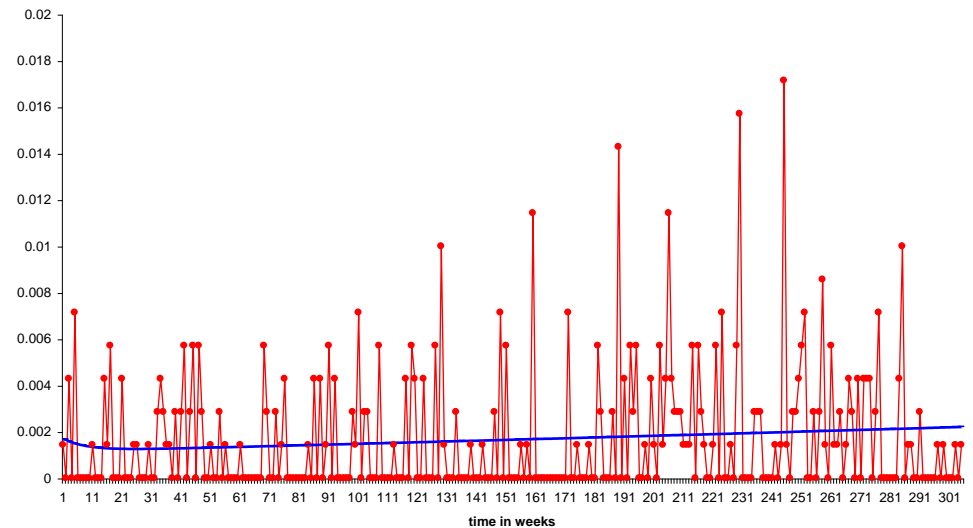


# Endemic stable dog-human rabies transmission in N'Djamena

rabid dogs per km2

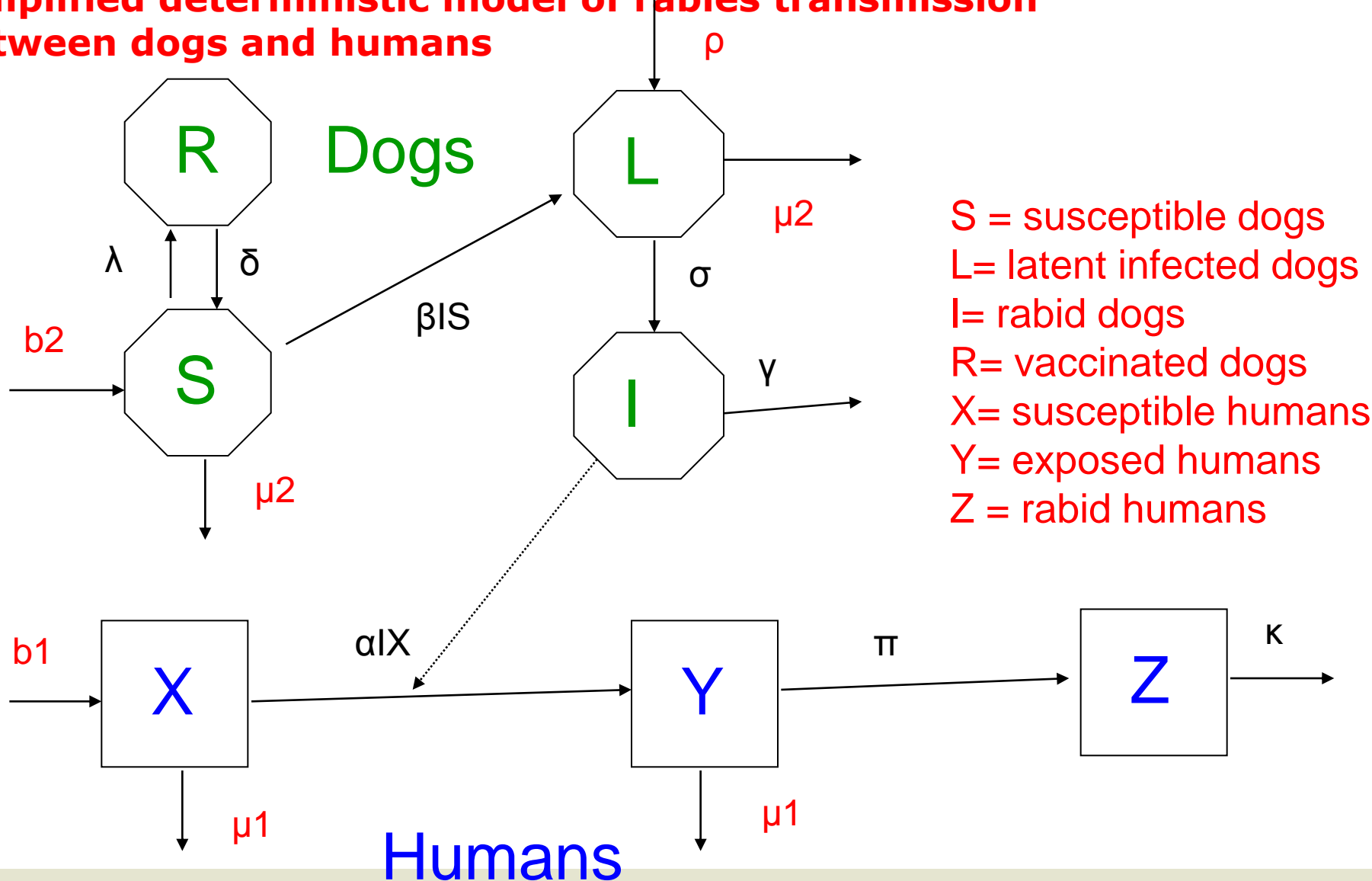


exposed persons per km2

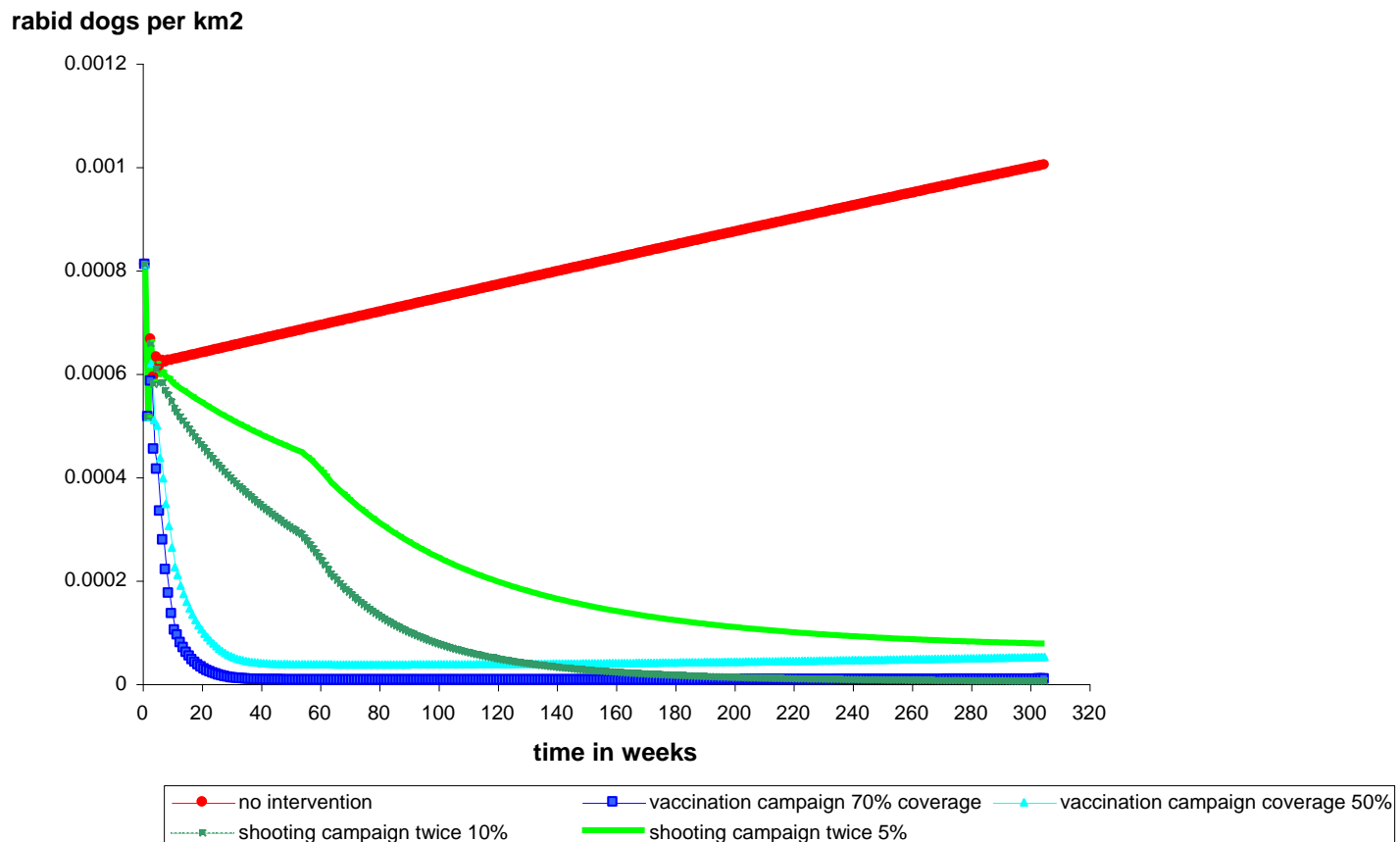




# Simplified deterministic model of rabies transmission between dogs and humans



# Effect of different control strategies on the transmission of rabies



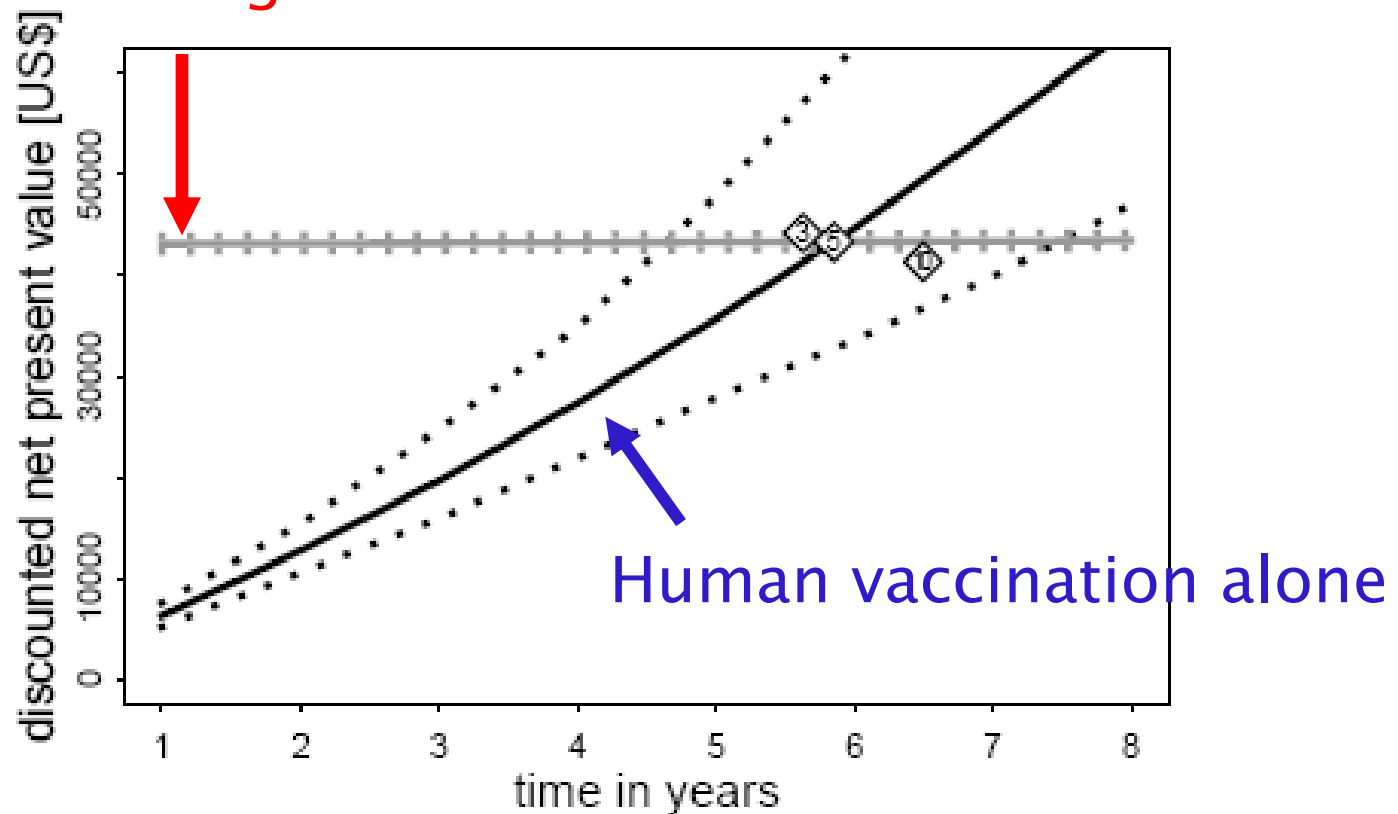




# Comparative profitability of rabies control in N'Djaména

(Zinsstag et al. PNAS 2009, 106(35) 14996–15001)

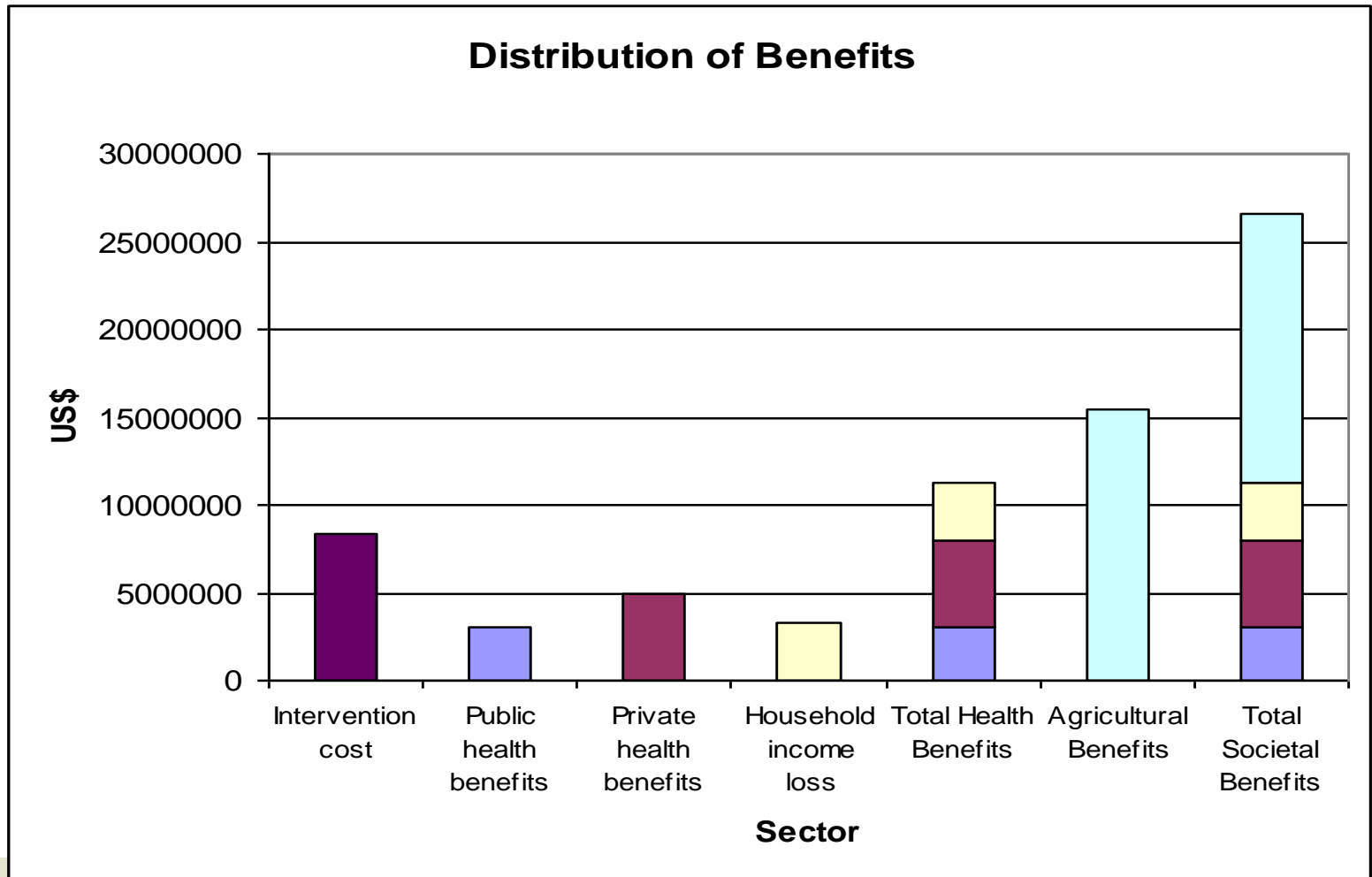
## Dog and human vaccination





Courtesy: Dr. Jan Kolar, Prague

**Synoptic view of benefits and costs of animal brucellosis mass vaccination in Mongolia**





# One Health

## The Theory and Practice of Integrated Health Approaches

Edited by Jakob Zinsstag, Esther Schelling, David Waltner-Toews, Maxine Whittaker and Marcel Tanner

The One Health concept of combined veterinary and human health continues to gain momentum. It is becoming clear that a closer cooperation between human and animal health and related disciplines results in a better level of health, faster detection of new diseases and financial savings.

This book examines the origins of One Health before discussing practical aspects such as methodological tools, data gathering, monitoring techniques, study designs, and mathematical models. It covers the legal aspects of the human-animal relationship, wildlife conservation, social sciences and joint health service provision. Zoonotic diseases, with discussions of diseases of wildlife, farm animals, domestic pets and humans, and world issues such as sanitation, economics, food security and evaluating the success of vaccination programmes are also covered in detail. This book reviews how to put policy into practice to address the future challenges of sustaining health of humans, animals and the ecosystems they live in. With case studies throughout, it draws on the experience of over fifty authors from around the world to combine research and practice in one broad-ranging volume for veterinarians, medics and academics.

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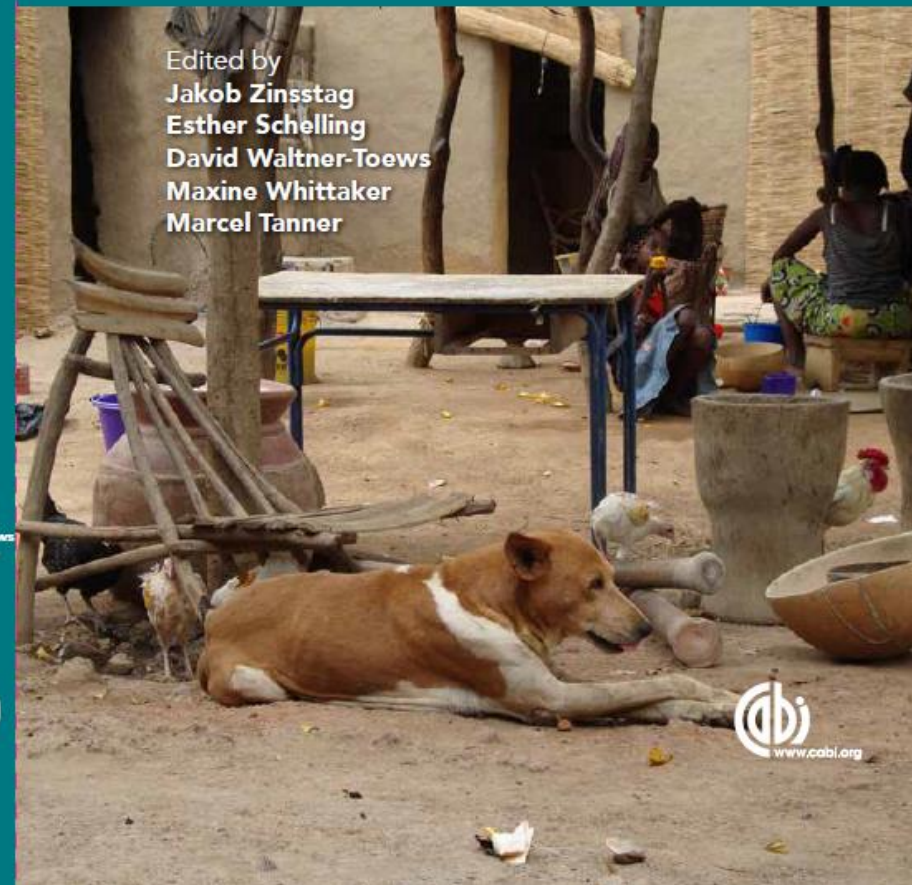
The Theory and Practice of Integrated Health Approaches

Zinsstag  
Schelling  
Waltner-Toews  
Whittaker  
Tanner

# One Health

## The Theory and Practice of Integrated Health Approaches

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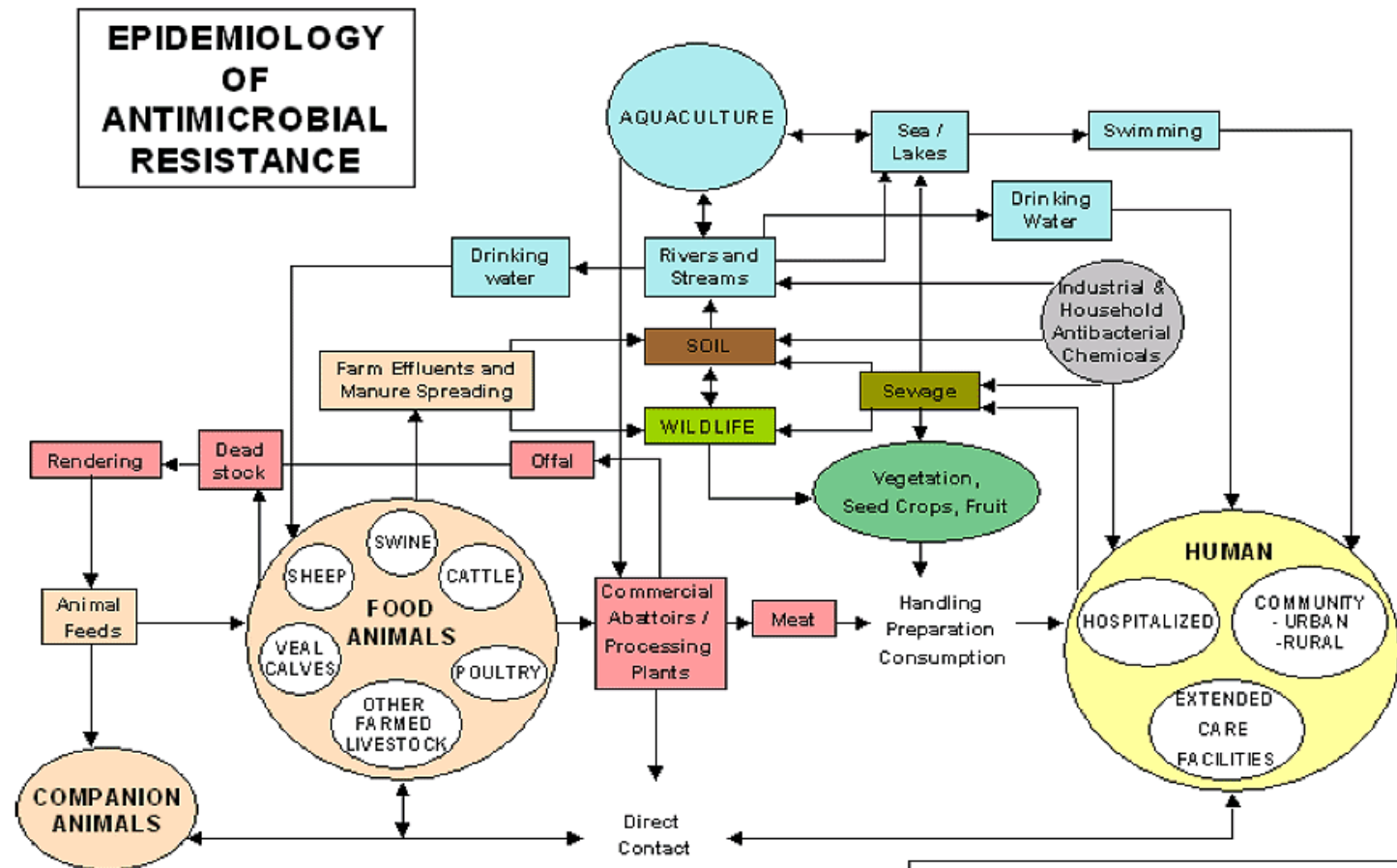


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*after Linton AH (1977), modified by Irwin RJ*