

The Uncommon Veterinarian

Катедра за хигијену и технологију намирница
анималног порекла
Универзитет у Београду
FVM



Emerging pathogens: the epidemiology and evolution of species jumps

Mark E.J. Woolhouse¹, Daniel T. Haydon² and Rustom Antia³

¹Centre for Infectious Diseases, University of Edinburgh, Easter Bush Veterinary Centre, Roslin, Midlothian, UK, EH25 9RG

²Graham Kerr Building, Division of Environmental and Evolutionary Biology, University of Glasgow, Glasgow, UK, G12 8QQ

³Department of Biology, Emory University, Atlanta, GA 30322, USA

Novel pathogens continue to emerge in human, domestic animal, wildlife and plant populations, yet the population dynamics of this kind of biological invasion remain poorly understood. Here, we consider the epidemiological and evolutionary processes underlying the initial introduction and subsequent spread of a pathogen in a new host population, with special reference to pathogens that originate by jumping from one host species to another. We conclude that, although pathogen emergence is inherently unpredictable, emerging pathogens tend to share some common traits, and that directly transmitted RNA viruses might be the pathogens that are most likely to jump between host species.

Conversely, there are numerous examples of species jumps that have had far less dramatic consequences: for example, BSE/vCJD and Ebola virus in humans which, although undoubtedly serious problems in themselves, show no signs of 'taking off' in the way that HIV/AIDS has. Moreover, there are many pathogens that have a long history of routinely jumping between species (e.g. rabies virus into humans from domestic or wild carnivores) without, again, triggering major epidemics in the 'new' host population. Understanding the epidemiology and evolutionary biology underlying these differences is crucial for understanding the phenomenon of emerging infectious diseases in human, domestic animal, wildlife and plant populations.

Taylor, Latham i Woolhouse (2001) - od 1415 (150 have both the capability of human-to-human transmission and the potential to cause epidemics) patogena ljudi, 61 % su uzročnici zoonoza

Risk factors for human disease emergence

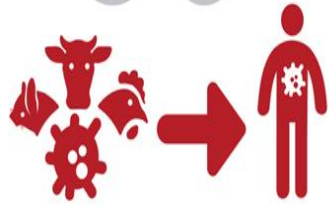
Louise H. Taylor*, **Sophia M. Latham†** and **Mark E. J. Woolhouse**

Centre for Tropical Veterinary Medicine, University of Edinburgh, Easter Bush, Roslin, Midlothian, EH25 9RG, UK

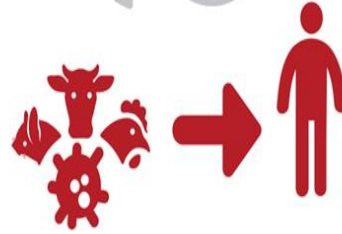
A comprehensive literature review identifies 1415 species of infectious organism known to be pathogenic to humans, including 217 viruses and prions, 538 bacteria and rickettsia, 307 fungi, 66 protozoa and 287 helminths. Out of these, 868 (61%) are zoonotic, that is, they can be transmitted between humans and animals, and 175 pathogenic species are associated with diseases considered to be 'emerging'. We test the hypothesis that zoonotic pathogens are more likely to be associated with emerging diseases than non-emerging ones. Out of the emerging pathogens, 132 (75%) are zoonotic, and overall, zoonotic pathogens are twice as likely to be associated with emerging diseases than non-zoonotic pathogens. However, the result varies among taxa, with protozoa and viruses particularly likely to emerge, and helminths particularly unlikely to do so, irrespective of their zoonotic status. No association between transmission route and emergence was found. This study represents the first quantitative analysis identifying risk factors for human disease emergence.

Keywords: emerging diseases; zoonoses; epidemiology; public health; risk factors

60% of existing human infectious diseases are zoonotic



At least 75% of emerging infectious diseases of humans (including Ebola, HIV, and influenza) have an animal origin



5 new human diseases appear every year. Three are of animal origin



80% of agents with potential bioterrorist use are zoonotic pathogens

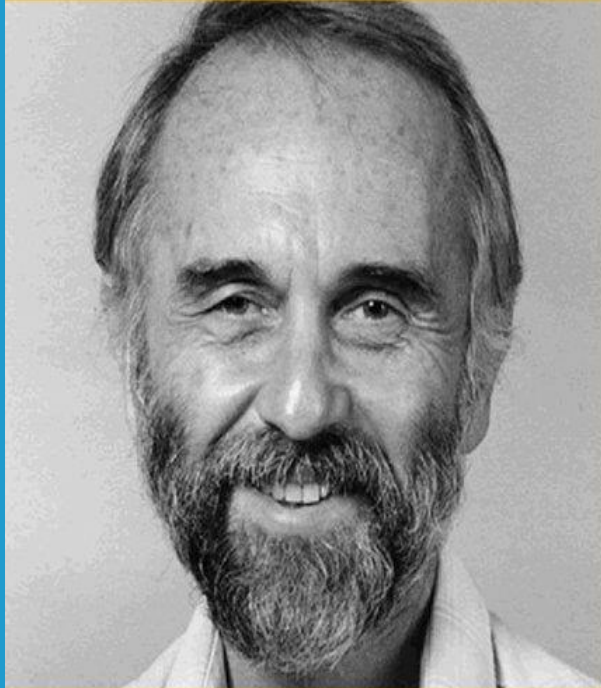


У кинеском тексту „О пореклу и развоју медицине“ из 18. века стоји:“ Темељи ветеринарске медицине подједнако су свеобухватни и суптилни као и темељи хумане медицине, и није могуће, нити праведно, једну медицину ставити изнад друге.“ (Driesch i Peters, 2003).

У 19. веку, немачки доктор и патолог Rudolf Virchow, изјављује: “Између хумане и ветеринарске медицине не постоји линија разграничења – нити би је требало бити. Објект посматрања јесте различит, али искуство произашло из заједничке праксе представља основу целокупне медицине (Klauder, 1958).



WIFSS
Western Institute for
Food Safety & Security



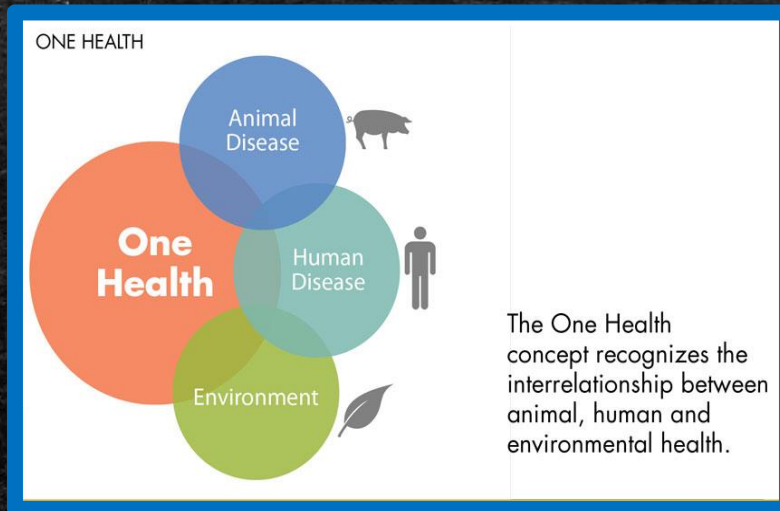
**"THERE IS ONLY
ONE MEDICINE."**

Prof. Calvin Schwabe,
School of Veterinary Medicine,
UC Davis



wifss.ucdavis.edu

- Новембар, 2005. - “Human and animal health: strengthening the link” – заједничко издање на тему „One Medicine”.



THE Veterinary Record
Volume 152, Number 21, November 30, 2005

BMJ
Vol 332, 26 November 2005

Animal and human health: strengthening the link

Human and animal health: strengthening the link

Joint issue with **Veterinary Record**

Journal of the British Veterinary Association

Joint issue with **Veterinary Record**

In 2005 *The Veterinary Record* and *BMJ* published an influential joint issue on the theme of 'one medicine'



Environmental health

**ONE
HEALTH**



Human health



Animal health

-
- International organizations such as the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) have institutionalised “one medicine” partly as Veterinary Public Health (VPH), the contribution of veterinary medicine to public health.

- Члан 3. ЗАКОНА О ВЕТЕРИНАРСТВУ

8) ветеринарско јавно здравство обухвата послове из делокруга ветеринарско-санитарне контроле животиња, производа животињског порекла, хране животињског порекла, хране за животиње и пратећих предмета, а који су директно или индиректно у улози заштите здравља људи од зооноза и штетних материја, као и заштиту животне средине;

Мишљења и други акти

Питања и одговори

Литература

Судска пракса



Претрага по приказаном тексту

1. Ветеринарска делатност

Члан 4.

Ветеринарска делатност, у смислу овог закона, обухвата:

- 1) праћење, заштиту и унапређење здравља животиња;
- 2) заштиту животиња од заразних и других болести;
- 3) откривање и дијагностиковање болести и лечење оболелих животиња;
- 4) спровођење мера здравствене заштите животиња;
- 5) заштиту људи од зооноза;
- 6) контролу безбедности хране животињског порекла и производа животињског порекла на месту узгоја животиња, производње и промета производа животињског порекла, хране животињског порекла и хране за животиње;
- 7) обележавање и регистрацију* животиња ради контроле кретања и обезбеђивања **следљивости*** у производњи и промету животиња, производа животињског порекла и хране животињског порекла;
- 8) контролу воде за напајање животиња ради обезбеђивања њене исправности;
- 9) контролу здравља приплодних животиња и њихове репродуктивне способности, као и спровођење мера за лечење стерилитета и вештачког осемењавања;
- 10) заштиту животне средине од загађења узрочницима заразних болести животиња;
- 11) заштиту животиња од мучења и патње, као и старање о добробити животиња;
- 12) контролу у производњи и промету ветеринарских лекова и медицинских средстава за употребу у ветеринарској медицини;
- 13) послове дезинфекције, дезинсекције, дератизације, дезодорације и деконтаминације;
- 14) ветеринарску едукацију и обавештавање.

*Службени гласник РС, број 30/2010

Закон о безбедности хране, Сл. лист бр. 41/2009-77, 17/2019-10

Члан 25.

Забрањено је стављање у промет хране која није безбедна.

Храна није безбедна, ако је штетна по здравље људи и ако није погодна за исхрану људи.

Храна није безбедна уколико садржи:

- 1) средства за заштиту биља, биоциде или контаминанте или њихове метаболите или производе разградње изнад максимално дозвољених концентрација;
- 2) средства за заштиту биља, односно биоциде чија употреба није одобрена или дозвољена;
- 3) супстанце са фармаколошким дејством или њихове метаболите који се не смеју давати животињама које служе за производњу хране или прекорачују максимално дозвољене количине остатака или нису одобрени или регистровани за примену на животињама које служе за производњу хране или нису одобрени као адитиви у храни за животиње које служе за производњу хране;
- 4) супстанце са фармаколошким дејством или њихове метаболите код лечених животиња, а да није испоштован прописани период каренце;
- 5) микроорганизме, вирусе, паразите и њихове развојне облике који представљају опасност за здравље људи;
- 6) материје (физичке, хемијске, радиоактивне) које саме или заједно са другим материјама прелазе максимално дозвољене вредности и представљају опасност по здравље људи.

APPROVED: 12 November 2021

doi: 10.2903/j.efsa.2021.6971

The European Union One Health 2020 Zoonoses Report

European Food Safety Authority
European Centre for Disease Prevention and Control

Abstract

This report of the EFSA and the European Centre for Disease Prevention and Control presents the results of zoonoses monitoring activities carried out in 2020 in 27 EU Member States (MS) and nine non-MS. Key statistics on zoonoses and zoonotic agents in humans, food, animals and feed are provided and interpreted historically. Two events impacted 2020 MS data collection and related statistics: the Coronavirus Disease 2019 (COVID-19) pandemic and the withdrawal of the United Kingdom from the EU. In 2020, the first and second most reported zoonoses in humans were campylobacteriosis and salmonellosis, respectively. The EU trend for confirmed human cases of these two diseases was stable (flat) from 2016 to 2020. Fourteen of the 26 MS reporting data on *Salmonella* control programmes in poultry met the reduction targets for all poultry categories. *Salmonella* results for carcasses of various species performed by competent authorities were more frequently positive than own-checks conducted by food business operators. This was also the case for *Campylobacter* quantification results from broiler carcasses for the MS group that submitted data from both samplers, whereas overall at EU level, those percentages were comparable. Yersiniosis was the third most reported zoonosis in humans, with 10-fold less cases reported than salmonellosis, followed by Shiga toxin-producing *Escherichia coli* (STEC) and *Listeria monocytogenes* infections. Illnesses caused by *L. monocytogenes* and West Nile virus infections were the most severe zoonotic diseases with the highest case fatality. In 2020, 27 MS reported 3,086 foodborne outbreaks (a 47.0% decrease from 2019) and 20,017 human cases (a 61.3% decrease). *Salmonella* remained the most frequently reported causative agent for foodborne outbreaks. *Salmonella* in 'eggs and egg products', norovirus in 'crustaceans, shellfish, molluscs and products containing them' and *L. monocytogenes* in 'fish and fish products' were the agent/food pairs of most concern. This report also provides updates on tuberculosis due to *Mycobacterium bovis* or *Mycobacterium caprae*, *Brucella*, *Trichinella*, *Echinococcus*, *Toxoplasma*, rabies, *Coxiella burnetii* (Q fever) and tularaemia.

© 2021 European Food Safety Authority and European Centre for Disease Prevention and Control.

Keywords: *Campylobacter*, foodborne outbreaks, *Listeria*, monitoring, parasites, *Salmonella*, zoonoses



Veterinary medicine and the lifeboat test: A perspective on the social relevance of the veterinary profession in the 21st century

Frederick A. Leighton

The issue

Over the past several decades, the veterinary profession in North America has become severely imbalanced and now serves society in a very lopsided way. What we do, we do very well. But what we do not do, or do too little, is a shameful disservice to society.

we imagine that the "Titanic" of our collective human enterprise runs into an "iceberg" of some unanticipated and severe difficulty. Society suddenly and unexpectedly is strained, its resources, its 'lifeboats,' too few to address its many social needs and expectations. Thus, society must quickly identify the essential social institutions that it cannot survive without. Anything not so

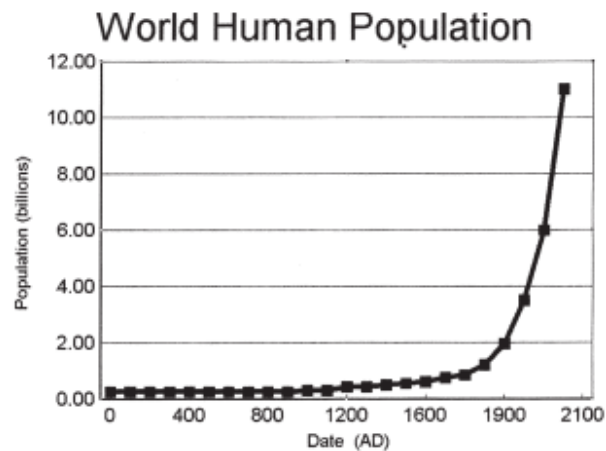


Figure 1. World population growth from 1 AD to 2000 AD, projected to an estimated of 11 billion people in 2050. Redrawn and projected from Cohen 1995 (2).

"VETERINARY MEDICINE, AS CURRENTLY PRACTICED, WILL GO DOWN WITH THE SHIP."

ЗАКЉУЧАК

IN CONCLUSION