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Objetivos/ Objectives

Identificar y atender las necesidades de información, adquisición, organización, almacenamiento, generación, uso y difusión de la información en salud pública veterinaria y proveer recursos bibliográficos técnicos-científicos al equipo de profesionales de la unidad y a los usuarios externos.

Identify and take care of the needs of information, acquisition, organization, storage, generation, use and diffusion of the information in veterinary public health and provide technical scientific bibliographical resources to the professional staff of the unit and to the users external.

Temas de interés general / Subjects of general interest



World Rabies Day highlights the impact of human and animal rabies and promotes how to prevent and stop the disease by combating it in animals. Sponsors - the Alliance for Rabies Control and the United States Centers for Disease Control and Prevention - report that 55 000 people die every year from rabies, an average of one death every 10 minutes.

There are safe and effective vaccines available for people who have been bitten by an animal that might have the disease, but usage in developing countries is low due to the high cost.

<http://www.worldrabiesday.org/>

Informaciones disponibles en formato electrónico / Information available in electronic format

Análisis Espacial – Zoonoses Virais Emergentes / Spatial analysis – Emerging Viral Zoonoses



Emerging viral zoonoses: frameworks for spatial and spatiotemporal risk assessment and resource planning

Clements AC, Pfeiffer DU

Vet J. 2009 Oct; 182 (1): 21-30

Spatial epidemiological tools are increasingly being applied to emerging viral zoonoses (EVZ), partly because of improving analytical methods and technologies for data capture and management, and partly because the demand is growing for more objective ways of allocating limited resources in the face of the emerging threat posed by these diseases. This review documents applications of geographical information systems (GIS), remote sensing (RS) and spatially-explicit statistical and mathematical models to epidemiological studies of EVZ. Landscape epidemiology uses statistical associations between

environmental variables and diseases to study and predict their spatial distributions. Phylogeography augments epidemiological knowledge by studying the evolution of viral genetics through space and time. Cluster detection and early warning systems assist surveillance and can permit timely interventions. Advanced statistical models can accommodate spatial dependence present in epidemiological datasets and can permit assessment of uncertainties in disease data and predictions. Mathematical models are particularly useful for testing and comparing alternative control strategies, whereas spatial decision-support systems integrate a variety of spatial epidemiological tools to facilitate widespread dissemination and interpretation of disease data. Improved spatial data collection systems and greater practical application of spatial epidemiological tools should be applied in real-world scenarios.

Text in English

Brucelosis Bovina / Bovine Brucellosis



Pathogenesis of bovine brucellosis

Neta AV, Mol JP, Xavier MN, Paixão TA, Lage AP, Santos RL
Vet J. 2009 Sep

Bovine brucellosis is one of the most important zoonotic diseases worldwide, and is of particular significance in developing countries. The disease, which results in serious economic losses due to late term abortion, stillborn and weakly calves, is caused by Gram negative coccobacilli bacteria of the genus *Brucella*. Lesions consist of necrotic placentitis and interstitial mastitis in pregnant cows, and fibrinous pleuritis with interstitial pneumonia in aborted fetuses and newborn calves. This article considers the pathogenesis of *Brucella abortus* and reviews the ability of the pathogen to invade phagocytic and non-phagocytic host cells, resist the acidified intraphagosomal environment, and inhibit phagosome-lysosome fusion. Significant aspects of innate and adaptive immunity against brucellosis are also discussed.

Text in English (article in press)

Fiebre Aftosa / Foot-and-Mouth Disease



Different infection parameters between dairy cows and calves after an infection with foot-and-mouth disease virus

Orsel K, Dekker A, Stegeman JA, De Jong MC, Bouma A
Vet J. 2009 Aug

Clinical observations of a foot-and-mouth disease (FMD) virus infection in dairy cows and calves were different. This raised the question whether they would also differ with respect to virus excretion and transmission. Data were available from transmission experiments carried out with groups of dairy cows and calves. Half of each group was inoculated with FMDV O/NED/2001; the other half contact-exposed to inoculated animals. Virus excretion, clinical signs and antibody response were measured and virus transmission was quantified. Infected calves showed mild clinical signs which did not affect general health or appetite, and not all contact calves became infected. Dairy cows, on the other hand, showed severe FMD lesions resulting in clinical mastitis, severe lameness and decreased feed intake. Also fever was observed for three consecutive days. All contact cows became infected and showed the same severity of clinical signs. The total and mean daily virus excretion differed significantly between cows and calves ($P < 0.05$). Possibly, virus replication and clinical manifestation are associated, but the underlying mechanism of these differences needs to be elucidated. We did not observe a significant difference in virus transmission between calves and cows.

Text in English (article in press)



Options for control of foot-and-mouth disease: knowledge, capability and policy

Paton DJ, Sumption KJ, Charleston B

Philos Trans R Soc Lond B Biol Sci. 2009 Sep; 364 (1530): 2657-67

Foot-and-mouth disease can be controlled by zoo-sanitary measures and vaccination but this is difficult owing to the existence of multiple serotypes of the causative virus, multiple host species including wildlife and extreme contagiousness. Although intolerable to modern high-production livestock systems, the disease is not usually fatal and often not a priority for control in many developing countries, which remain reservoirs for viral dissemination. Phylogenetic analysis of the viruses circulating worldwide reveals seven principal reservoirs, each requiring a tailored regional control strategy. Considerable trade benefits accrue to countries that eradicate the disease but as well as requiring regional cooperation, achieving and maintaining this status using current tools takes a great deal of time, money and effort. Therefore, a progressive approach is needed that can provide interim benefits along the pathway to final eradication. Research is needed to understand and predict the patterns of viral persistence and emergence and to improve vaccine selection. Better diagnostic methods and especially better vaccines could significantly improve control in both the free and the affected parts of the world. In particular, vaccines with improved thermostability and a longer duration of immunity would facilitate control and make it less reliant on advanced veterinary infrastructures.

Text in English



Use of expert opinion for animal disease decisions: An example of foot-and-mouth disease status designation

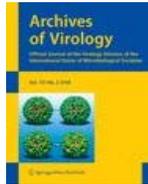
Garabed RB, Perez AM, Johnson WO, Thurmond MC

Prev Vet Med 2009 Aug

When data representing a preferred measurement of risk cannot be obtained, as is often the case for global animal diseases, decisions that affect millions of people and their animals are typically made based on expert opinion. Expert opinion can be and has been used to address the critical lack of data existing for prevalence and incidence of many global diseases, including foot-and-mouth disease (FMD). However, when a conclusion based on expert opinion applies to a topic as sensitive as FMD, which has tremendous economic, political, and social implications, care should be taken to understand the accuracy of and differences in the opinion data. The differences in experts' opinions and the relative accuracy of an expert opinion elicitation for "diagnosing" country-level FMD presence were examined for the years 1997-2003 using Bayesian methods. A formal survey of eight international FMD experts revealed that individual experts had different opinions as to the probability of finding FMD in a country. However, a weighted average of the experts' responses was relatively accurate (91% sensitivity and 85% specificity) at identifying the FMD status of a country, compared to using a method that employed information available from World Organization for Animal Health (OIE). The most apparent disagreements between individual experts and available information were found for Indonesia, South Korea, and South America, and, in general, the experts seemed to believe that countries in South Asia were more likely to be positive than other countries that reported FMD cases to OIE. This study highlights new methodology that offers a standardized, quantitative, and systematic means by which expert opinion can be used and assessed.

Text in English (article in press)

Hantavirus



Hantaviral infections of rodents: possible scenarios

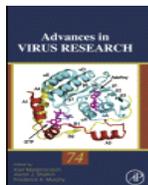
Calisher CH, Peters CJ, Douglass RJ, Kuenzi AJ

Arch Virol 2009; 54 (8): 1195-7

The author suggests various scenarios by which natural infections of young rodents by hantaviruses might occur; there may be more.

Text in English

Influenza Aviar / Avian Influenza



Use of animal models to understand the pandemic potential of highly pathogenic avian influenza viruses

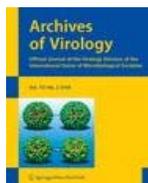
Belser JA, Szretter KJ, Katz JM, Tumpey TM

Adv Virus Res. 2009; 73: 55-97

It has been 40 years since the last influenza pandemic and it is generally considered that another could occur at any time. Recent introductions of influenza A viruses from avian sources into the human population have raised concerns that these viruses may be a source of a future pandemic strain. Therefore, there is a need to better understand the pathogenicity of avian influenza viruses for mammalian species so that we may be better able to predict the pandemic potential of such viruses and develop improved methods for their prevention and control. In this review, we describe the virulence of H5 and H7 avian influenza viruses in the mouse and ferret models. The use of these models is providing exciting new insights into the contribution of virus and host responses toward avian influenza viruses, virus tropism, and virus transmissibility. Identifying the role of individual viral gene products and mapping the molecular determinants that influence the severity of disease observed following avian influenza virus infection is dependent on the use of reliable animal models. As avian influenza viruses continue to cause human disease and death, animal pathogenesis studies identify avenues of investigation for novel preventative and therapeutic agents that could be effective in the event of a future pandemic.

Text in English

Influenza A (H1N1)



Origin of the 2009 Mexico influenza virus: a comparative phylogenetic analysis of the principal external antigens and matrix protein

Babakir-Mina M, Dimonte S, Perno CF, Ciotti M

Arch Virol 2009; 154 (8): 1349-52

Triple-reassortant swine influenza A (H1) viruses, containing genes from avian, human, and swine influenza viruses, emerged and became an outbreak among humans worldwide. Over a 1,000 cases were identified within the first month, chiefly in Mexico and the United States. Here, the phylogenetic analysis of haemagglutinin (HA), neuraminidase (NA), and matrix protein (MP) was carried out. The analysis showed that the H1 of this reassortant originated from American pigs, while NA and MP were more likely from European pigs. All of the 2009 isolates appear homogeneous and cluster together, although they are

distinct from classical human A (H1N1) viruses.

Text in English

<http://www.springerlink.com/content/q5227636lmw23h72/fulltext.pdf>

Supplementary material

http://www.springerlink.com/content/q5227636lmw23h72/MediaObjects/705_2009_438_MOESM1_ESM.doc



Swine CAFOs and Novel H1N1 Flu: Separating Facts from Fears

Schmidt CH

Environmental Health Perspectives 2009 Sep; 117 (9)

Hypotheses about the genesis of novel H1N1 influenza (the pandemic strain of swine flu) range far and wide. Some public health and epidemiology experts are taking a fresh look at concentrated animal feeding operations (CAFOs), which they say provide ideal conditions that facilitate the mutation of viral pathogens into novel strains. Evidence to date suggests zoonotic disease strains routinely pass from livestock to farm workers and veterinarians, who can then infect others in the community. No such events have been definitively linked with human disease outbreaks, and the agriculture industry insists a suite of biosecurity measures adequately protect the health of both workers and animals. However, a lack of coordinated surveillance of CAFO workers hampers the ability of health agencies to track events with the potential for a broad public health impact.

Text in English

<http://www.ehponline.org/members/2009/117-9/EHP117pa394PDF.PDF>

Malaria



The role of simple mathematical models in malaria elimination strategy design

White LJ, Maude RJ, Pongtavornpinyo W, Saralamba S, Aguas R, VAN Effelterre T, Day NPJ, White NJ

Malaria J. 2009; 8: 212

Malaria has recently been identified as a candidate for global eradication. This process will take the form of a series of national eliminations. Key issues must be considered specifically for elimination strategy when compared to the control of disease. Namely the spread of drug resistance, data scarcity and the adverse effects of failed elimination attempts. Mathematical models of various levels of complexity have been produced to consider the control and elimination of malaria infection. If available, detailed data on malaria transmission (such as the vector life cycle and behaviour, human population behaviour, the acquisition and decay of immunity, heterogeneities in transmission intensity, age profiles of clinical and subclinical infection) can be used to populate complex transmission models that can then be used to design control strategy. However, in many malaria countries reliable data are not available and policy must be formed based on information like an estimate of the average parasite prevalence.

Text in English

<http://www.malariajournal.com/content/pdf/1475-2875-8-212.pdf>

**Metodología Estadística-Brotos de Enfermedades /
Statistical Methodology- Disease Outbreaks**



**Statistical approaches to the monitoring and surveillance of infectious diseases for
veterinary public health**

Höhle M, Paul M, Held L

Prev Vet Med 2009 Sep; 91 (1): 2-10

This paper covers the aspect of using statistical methodology for the monitoring and surveillance of routinely collected data in veterinary public health. An account of the Farrington algorithm and Poisson cumulative sum schemes for the prospective detection of aberrations is given with special attention devoted to the occurrence of seasonality and spatial aggregation of the time series. Modelling approaches for retrospective analysis of surveillance counts are also described. To illustrate the applicability of the methodology in veterinary public health, data from the monitoring of rabies among fox in Hesse, Germany, are analysed.

Text in English

Movimentación de Animales / Animal Moviments



Estimation of distance related probability of animal movements between holdings and implications for disease spread modeling

Lindström T, Sisson SA, Nöremark M, Jonsson A, Wennergren U
Prev Vet Med. 2009 Oct; 91 (2-4): 85-94

Between holding contacts are more common over short distances and this may have implications for the dynamics of disease spread through these contacts. A reliable estimation of how contacts depend on distance is therefore important when modeling livestock diseases. In this study, we have developed a method for analyzing distant dependent contacts and applied it to animal movement data from Sweden. The data were analyzed with two competing models. The first model assumes that contacts arise from a purely distance dependent process. The second is a mixture model and assumes that, in addition, some contacts arise independent of distance. Parameters were estimated with a Bayesian Markov Chain Monte Carlo (MCMC) approach and the model probabilities were compared. We also investigated possible between model differences in predicted contact structures, using a collection of network measures. We found that the mixture model was a much better model for the data analyzed. Also, the network measures showed that the models differed considerably in predictions of contact structures, which is expected to be important for disease spread dynamics. We conclude that a model with contacts being both dependent on, and independent of, distance was preferred for modeling the example animal movement contact data.

Text in English

Rabia / Rabies



Complete genome analysis of a rabies virus isolate from Brazilian wild fox

Mochizuki N, Kobayashi Y, Sato G, Itou T, Gomes AA, Ito FH, Sakai T
Arch Virol 2009 Aug

The complete genome sequence of wild-type rabies virus (RABV) isolated from a wild Brazilian hoary fox (*Dusicyon sp.*), the BR-Pfx1 isolate, was determined and compared with fixed RABV strains. The genome structure and organization of the BR-Pfx1 isolate were composed of 11,924 nt and included the five standard genes of rhabdoviruses. Sequences of mRNA start and stop signals for transcription were highly conserved among all structural protein genes of the BR-Pfx1 isolate. All amino acid residues in the glycoprotein (G) gene associated with pathogenicity were retained in the BR-Pfx1 isolate, while unique amino acid substitutions were found in antigenic region I of the nucleoprotein gene and III of G. These results suggest that although the standard genome structure and organization of the RABV isolate are common between the BR-Pfx1 isolate and fixed RABV strains, the unique amino acid substitutions in functional sites of the BR-Pfx1 isolate may result in different biological characteristics from fixed RABV strains.

Text in English (article in press)



Estudio retrospectivo de la Rabia en Animales de Importancia Económica en el Estado de Puebla, México, del año 2001 al 2008

Ortega-Chávez V, Calderón-Tirado F, Rosas-Altamirano A, Vázquez R, Santos E, Balderas-Torres JM,
REDVET 2009; 10 (9)

La rabia paralítica bovina es una enfermedad vírica que causa graves pérdidas económicas directas e indirectas en ganadería, y representa un grave riesgo sanitario debido a los contactos entre personas y animales infectados principalmente. Por lo que, se realizó un estudio retrospectivo de la rabia de animales de importancia económica, de acuerdo a los registros de los focos rábicos desde el año 2001 al 2008 analizando las características geográficas de la región. El Estado de Puebla a nivel sanitario está dividido en 10 Jurisdicciones Sanitarias (J.S.). Se presentaron 333 casos de rabia durante los años de 2001 a 2008 en el Estado, de los cuales el 52.9% de los casos correspondió a rabia paralítica, de éstos 151 casos se presentaron en bovinos. Los casos de rabia paralítica se han presentado en 6 J.S. y 95 localidades han sido afectadas que corresponden a 40 municipios; la J.S. No. 1 presentó mayor número de localidades afectadas y un mayor número de casos (117) durante el periodo de estudio. De acuerdo a las zonas sonde se han presentado los casos de rabia, se dedujo que los principales factores que influyen en la distribución del murciélago hematófago en el Estado de Puebla, son la disponibilidad de alimento y hábitat, esto último está determinado por factores antropogénicos como la deforestación y la presencia de zonas ganaderas.

Text in English

<http://www.veterinaria.org/revistas/redvet/n090909/090909.pdf>

Zoonosis / Zoonoses



Livestock infectious diseases and zoonoses

Tomley FM, Shirley MW

Philos Trans R Soc Lond B Biol Sci. 2009 Sep; 364 (1530): 2637-42

Infectious diseases of livestock are a major threat to global animal health and welfare and their effective control is crucial for agronomic health, for safeguarding and securing national and international food supplies and for alleviating rural poverty in developing countries. Some devastating livestock diseases are endemic in many parts of the world and threats from old and new pathogens continue to emerge, with changes to global climate, agricultural practices and demography presenting conditions that are especially favourable for the spread of arthropod-borne diseases into new geographical areas. Zoonotic infections that are transmissible either directly or indirectly between animals and humans are on the increase and pose significant additional threats to human health and the current pandemic status of new influenza A (H1N1) is a topical example of the challenge presented by zoonotic viruses. In this article, we provide a brief overview of some of the issues relating to infectious diseases of livestock, which will be discussed in more detail in the papers that follow.

Text in English

<http://rstb.royalsocietypublishing.org/content/364/1530/2637.full.pdf>



Neglected and endemic zoonoses

Maudlin I, Eisler MC, Welburn SC

Philos Trans R Soc Lond B Biol Sci. 2009 Sep; 364 (1530): 2777-87

Endemic zoonoses are found throughout the developing world, wherever people live in close proximity to their animals, affecting not only the health of poor people but often also their livelihoods through the

health of their livestock. Unlike newly emerging zoonoses that attract the attention of the developed world, these endemic zoonoses are by comparison neglected. This is, in part, a consequence of under-reporting, resulting in underestimation of their global burden, which in turn artificially downgrades their importance in the eyes of administrators and funding agencies. The development of cheap and effective vaccines is no guarantee that these endemic diseases will be eliminated in the near future. However, simply increasing awareness about their causes and how they may be prevented—often with very simple technologies—could reduce the incidence of many endemic zoonoses. Sustainable control of zoonoses is reliant on surveillance, but, as with other public-sector animal health services, this is rarely implemented in the developing world, not least because of the lack of sufficiently cheap diagnostics. Public-private partnerships have already provided advocacy for human disease control and could be equally effective in addressing endemic zoonoses.

Text in English

Eventos / Events

XXI Congreso Latinoamericano de Avicultura

6-9 **Octubre**, 2009

La Habana, Cuba

http://www.veterinaria.org/enlace_exterior.php?url=http://www.avicultura2009.com

X Congreso Latinoamericano de Microbiología e Higiene de los Alimentos

4-7 **Octubre**, 2009

Punta del Este, Uruguay

<http://www.colmic2009.org.uy/paginas/bienvenida.html>

Taller regional sobre el uso del ELISA CFL aplicado al control de potencia de Vacuna Antiaftosa

6-9 **Octubre**, 2009

(Laboratorio de Referencia OIE para Fiebre Aftosa)

Martínez, Buenos Aires, Argentina

<http://www.rr-americas.oie.int/calendario/index.htm>

Curso online Siglo XXI: Era de las Zoonosis

02 **Noviembre**-23 **Diciembre**, 2009

http://www.veterinaria.org/index.php?option=com_content&view=article&id=414:curso-online-siglo-xxi-era-de-las-zoonosis&catid=58:curso&Itemid=106



Salud Pública Veterinaria
Centro Panamericano de Fiebre Aftosa



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Pan American Foot and Mouth Disease Center

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