



Zoonosen - Ursache, Verbreitung, Vorbeugung

Statement

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Federal Research Institute for Animal Health

Ursache

Zoonosen: Krankheiten und Infektionen, die auf natürliche Weise **zwischen Menschen und anderen Wirbeltieren** übertragen werden (WHO 1959).

von **Tieren** auf **Menschen** (Zooanthroponosen)

von **Menschen** auf **Tiere** (Anthropozoonosen)

Erreger:

- Bakterien:** Brucellose, EHEC, Rindertuberkulose, Rotz, Q-Fieber, Salmonellen, AB-resistente Keime ...
- Parasiten:** Echinokokkose, Leishmaniose, Toxoplasmose, Trichinose ...
- Pilze:** Hautpilzkrankungen: Mikrosporie, Trichophytie
- Prionen:** vCJD („Rinderwahnsinn“, BSE)
- Viren:** Aviäre Influenza, Borna, COVID-19, Ebola, FSME, Hantaviren, HIV, SARS, MERS, Tollwut, Westnilvirus, ...



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Bedeutung von Zoonosen



60%

der bekannten menschlichen Infektionskrankheiten sind zoonotischen Ursprungs.



mindestens
75%

neu auftretender Infektionskrankheiten des Menschen haben einen tierischen Ursprung.



5

neue menschliche Krankheiten treten jedes Jahr auf. **Drei** davon sind tierischen Ursprungs.



80%

aller Stoffe mit bioterroristischem Potential sind zoonotische Erreger.

Disease	Wildlife interface	Deaths human annual	Affected humans annual
Gastrointestinal (zoonotic)	Important	1,500,000	2,333,000,000
Leptospirosis	Very important	123,000	1,700,000
Cysticercosis	Some importance	50,000	50,000,000
Tuberculosis (zoonotic)	Some importance	100,000	554,500
Rabies	Important	70,000	70,000
Leishmaniasis	Important	47,000	2,000,000
Brucellosis	Some importance	25,000	500,000
Echinococcosis	Important	18,000	300,000
Toxoplasmosis	Important	10,000	2,000,000
Q fever	Important	3,000	3,500,000
Trypanosomosis (zoonotic)	Important	2,500	15,000
Anthrax	Some importance	1,250	11,000
Hepatitis E *	Some importance	300,000	14,000,000
<i>Chagas</i>	Important	10,000	8,000,000
<i>Chickungunya</i>	Very important	12,500	500,000
<i>Clostridium difficile disease</i>	Possible importance	3,000	300,000
<i>Dengue fever</i>	Minor	20,000	50,000,000
<i>Ebola</i>	Very important	500	800
<i>Hanta disease</i>	Very important	1,750	175,000
<i>Avian influenza</i>	Important	77	145
<i>Bov. Spongiform Encephalopathy^</i>	Some importance	182	188
<i>Psittacosis</i>	Important	2,250	22,000
<i>Japanese encephalitis</i>	Possibly, bats	11,000	40,000
<i>Buffalo pox</i>	Not important	Negligible	Common
<i>Rift Valley fever</i>	Important	45	150

Die wichtigsten Zoonoseerreger

- Auf die **13** wichtigsten Zoonosen entfallen **2,2 Millionen Todesfälle** und **2,4 Milliarden Erkrankungen**

Source: WHO, Grace et al., 2013



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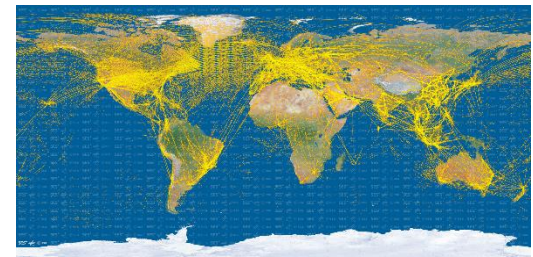
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Entstehung: Beispiel SARS-CoV-2

- **Übergang** eines Coronavirus, das wahrscheinlich von einer Fledermaus (Hufeisenfledermaus?) stammt, auf den Menschen.
 - **Interaktion Tier - Mensch**
- Hohe **Bevölkerungsdichte**
 - Selektion für effiziente **Mensch-zu-Mensch-Übertragung**
- **Globale Mobilität** führt zur **Ausbreitung**
 - Wir können fast jeden Punkt auf der Erde in der Inkubationszeit erreichen.



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Highly Pathogenic H5N1 Influenza Virus in Smuggled Thai Eagles, Belgium

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Mireille Decaestecker,* René Snacken,†
and Thierry van den Berg*

We report the isolation and characterization of a highly pathogenic avian influenza A/H5N1 virus from Crested Hawk-Eagles smuggled into Europe by air travel. A screening performed in human and avian contacts indicated no dissemination occurred. Illegal movements of birds are a major threat for the introduction of highly pathogenic avian influenza.

The 2003–2004 highly pathogenic avian influenza epidemic caused by an A/H5N1 virus has become established in 8 Southeast Asian countries (1). It affects not only birds but several mammals (2–4). As of February 2005, 55 laboratory-confirmed human cases, 42 fatal, have occurred after direct transmission of the virus (available from http://www.who.int/csr/disease/avian_influenza/country/en/).

The Study

On October 18, 2004, 2 Crested Hawk-Eagles (*Spizaetus nipalensis*) smuggled into Europe from Thailand were seized at Brussels International Airport (5). Clinical examination of the birds showed no symptoms. As import of birds and products from several Asian countries into the European Union (EU) is forbidden (DG Sanco Decision 2004/122/EC), the birds were humanely sacrificed and immediately sent to the Veterinary and Agrochemical Research Centre for routine diagnosis to exclude influenza and Newcastle disease viruses.

The eagles were transported in a hand luggage (Figure 1), with the zipper not totally closed to allow air to enter. The bird smuggler, a Thai resident, took connecting flights from Bangkok to Brussels, with a stopover in Vienna; he placed his hand luggage in an overhead

compartment during both flights. When interviewed, the Thai man declared that he "bought the eagles on a major Bangkok market, a few days before departure, as a present for [his] brother living in Belgium." The eagles reportedly had no contact with domestic animals before departure. A few days later, a Belgian falconer declared he had ordered the eagles and offered €7,500 for each bird.

Necropsy and further testing were carried out at the Veterinary and Agrochemical Research Centre (virologic procedures according to EU Council Directive 92/40/EEC of 19 May 1992). Both eagles had enteritis, and 1 had bilateral pneumonia. Samples were taken from lungs and injected into embryonating eggs, which died in <2 days. The isolated virus was designated A/crested eagle/Belgium/01/2004. The antigenic subtyping as H5N1 was made by hemagglutination inhibition using 12 mono-specific polysera. The diagnosis was confirmed by nucleoprotein gene (general for type A influenza) and H5-specific reverse transcriptase-polymerase chain reaction (RT-PCR) (primers summarized in Table). Sample quality was controlled by using 18S rRNA as housekeeping control gene



Figure 1. Crested Hawk-Eagles confiscated at Brussels International Airport in the hand luggage of a Thai passenger. The birds were wrapped in a cotton cloth, with the heads free, and each of them inserted in a wicker tube >60 cm in length, with 1 end open. Pictures courtesy of Paul Meuleneire, custom investigations officer, antidrug group.

Vogelschmuggel mit Vogelgrippefall (H5N1) in Österreich

(11.06.2013) Am 6. Juni 2013 entdeckte der Österreichische Zoll am Flughafen Wien-Schwechat in zwei Gepäckstücken 60 geschmuggelte Vögel (unterschiedliche Arten von Papageien und Paradiesvögeln). Die Vögel wurden sofort in die Quarantänestation des Tiergartens Schönbrunn gebracht.

39 Vögel waren bereits verendet und wurden routinemäßig in die AGES geliefert, um die Todesursache festzustellen und weitere Untersuchung betreffend möglicher Tierseuchen durchzuführen.

Bei einem der toten Tiere wurde das H5N1-Virus in der hochpathogenen Form nachgewiesen. Vorsorglich wurden alle betroffenen Stellen (Zoll/BMF, Tiergarten Schönbrunn, Amtstierarzt der Stadt Wien und Landessanitätsdirektoren) umgehend informiert.

Das Gefahrenpotenzial ist laut veterinär- und humanmedizinischen ExpertInnen als gering einzustufen.

<https://vet-magazin.at/tierarzt-magazin/aktuelle-meldungen/Vogelschmuggel-Vogelgrippe.html>

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Legalier Tierhandel (außer Nutztiere) 2014-2019

	Afrika	Mittel-amerika	Nord-amerika	Süd-amerika	Karibik	Asien	Australien Ozeanien	Europa
Kleinkamele			36	97			169	
Makaken	1.564		92			1.046		
Frettchen			135				1	
Kaninchen	1		1.970			5	3	
Andere Nagetiere	9		89.886	16		1.603	428	12
Säugetiere*	2.532	13	100.003	437	8	3.743	1.020	7.633
Hühner			41.264					
Enten			83.744					
Tauben			239					
Andere Vögel	2.293		287	1.234		367	80	1
Papageien	80		42	148		996	770	3
Vögel ohne Geflügel	2.373		599	1.382		1.594	853	21
Amphibien	56.364	3.980	338.581	4.059		236.382	1.291	
Krokodile	1.649			3.220		3.635	1	
Echsen	92.026	22.408	104.480	11.118	376	102.231	1.512	
Schlangen	34.329	1.051	93.400	6.278		45.761	1.078	2
Schildkröten	42.009	2.675	86.535	8.000		299.292		
Reptilien	131.459	8.241	284.415	7.783	376	450.919	16	2

*ohne Equiden, Rinder, Schweine, Schafe, Ziegen

Quelle: TRACES, 2020-05-06



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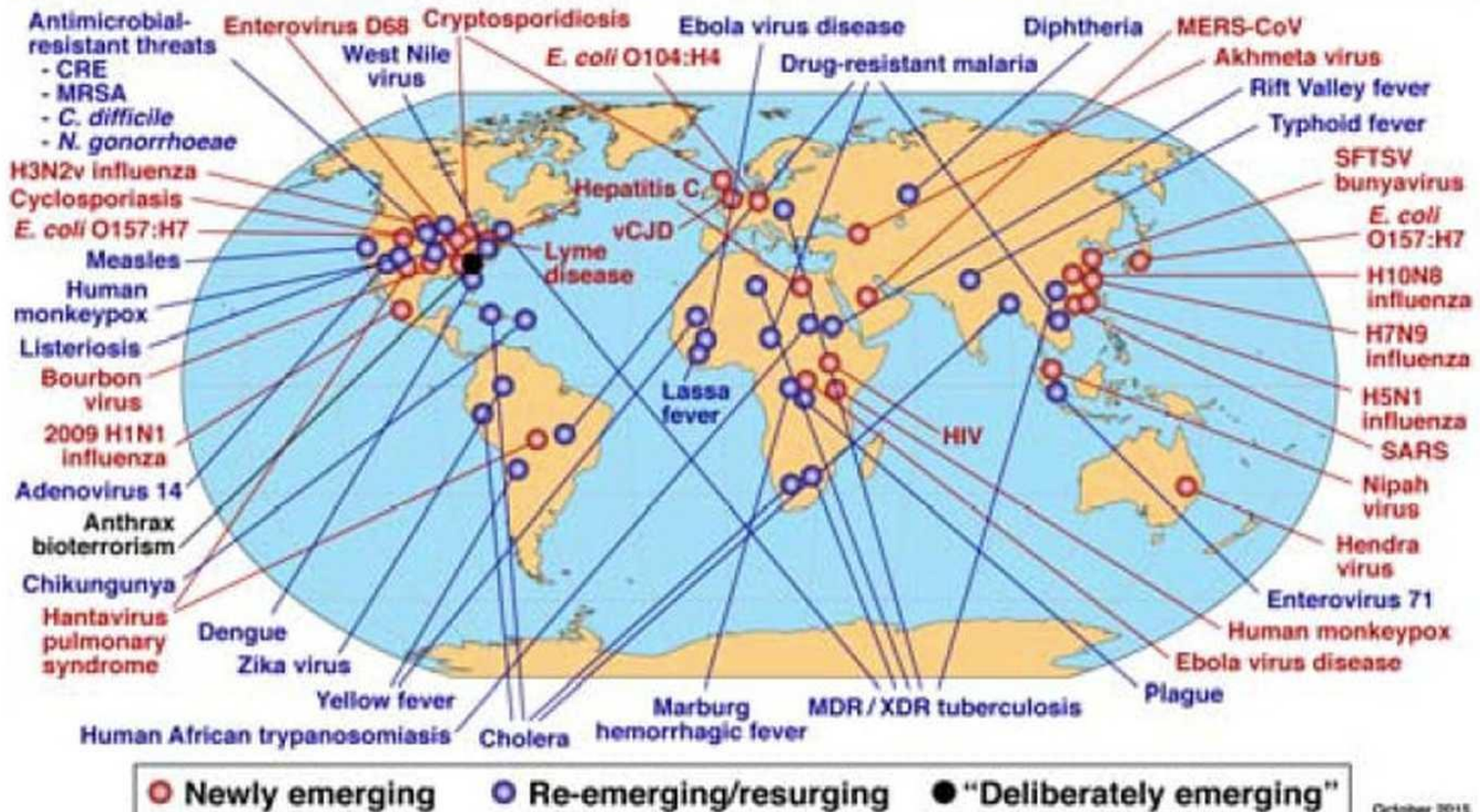
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Vorkommen

Global Examples of Emerging and Re-Emerging Infectious Diseases



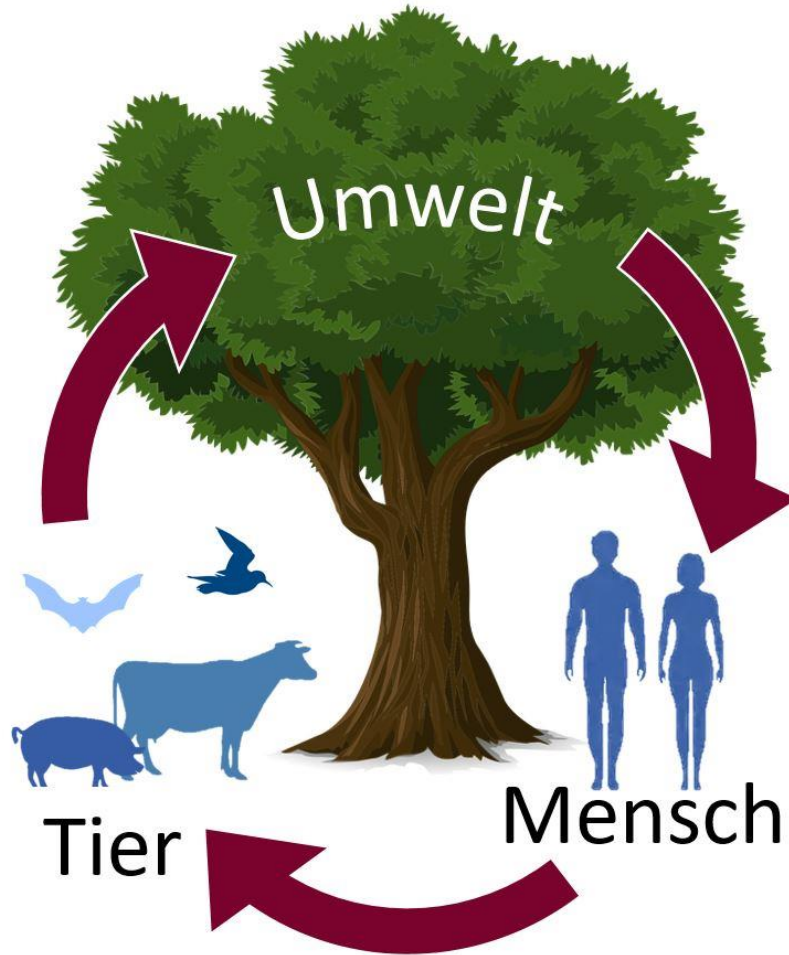
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Vorbeugung: ONE HEALTH und Register



Mindestens
Registrierungspflicht
für Haltungen
„exotischer“ Tiere

...

Grundsätzliches
Verbot der Einfuhr
von „exotischen“ Tieren

<https://www.zoonosen.net/coronavirus-pandemie-zeigt-notwendigkeit-von-one-health-ansaetzen>



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Vielen Dank



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