

Emerging diseases and implications for global trade

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Summary

Emerging diseases could have a devastating impact on international trade unless there is a change in the traditional approach to disease control and new holistic prevention and control strategies are adopted. The impact that emerging diseases will have on international trade will depend on several factors, such as the nature of the pathogen, the degree of co-ordination and integration between Veterinary Services and Public Health authorities, the ability to rapidly detect and respond to a disease appearance, and the existing trade relationship between countries.

Strategies to control emerging diseases will be more effective if competent authorities and veterinary infrastructures in particular, integrate their public and animal health objectives into a single strategy. The co-ordinating role of international standard setting organisations such as the World Organisation for Animal Health (OIE) will be crucial.

This paper discusses the events contributing to the appearance and spread of new emerging diseases and examines the changing roles of Veterinary Services and international organisations. Reference is also made to measures that can be taken towards minimising potential trade disruptions caused by the appearance of an emerging disease.

Keywords

Animal disease – Emerging disease – Globalisation – International standard – International trade – World Organisation for Animal Health – Zoonosis.

Introduction

Emerging diseases pose, and will continue to pose, a risk to public and animal health, and as these threats may not be limited to incursions as a result of international trade it will be necessary to take a more global approach to prevention and control and to implement strategies that are different from those used to control traditional diseases transmitted through trade.

Based on experience to date, it is difficult to predict the origin or the nature of future emerging diseases. Recently, newly emerging diseases have demonstrated that they originate primarily where there are high concentrations of different animal species, often in close contact with people. Some of the more important factors that have contributed to an increase in emerging diseases are as follows:

– the rapid increase in the movement of people and products as a result of globalisation

- environmental changes
- the expansion of the human population into areas not previously inhabited
- the destruction of animal habitats
- changes in animal husbandry and production technologies.

Critical factors of emergence

The impact that an emerging disease may have on international trade will depend on several factors:

a) The agent – how much is known about the agent is important, as unknown risks, posed by unknown agents, will usually be dealt with more severely than known risks,

as was the case with bovine spongiform encephalopathy (BSE) in its early stages. Similarly, if the agent has zoonotic potential and if the infection it causes can be fatal, even though the morbidity may be very low, more severe measures will be implemented. After having been controlled or eradicated from livestock populations, many well-known diseases have re-emerged: brucellosis and bovine tuberculosis are just two examples of diseases that have come back to threaten public health after being re-introduced from wildlife to livestock as a result of changes in habitat or animal management. The re-emergence of these diseases in livestock has had severe trade consequences. Countries which had been benefiting from unrestricted trade due to their 'free-country' status are now subjected to sanitary measures, and often suffer from totally unjustified trade restrictions as a result of this simple health status change, and in many cases, a misunderstanding over the risks posed by the disease.

b) The credibility of the affected country – the history of how the country has dealt with similar emergencies, the transparency of reporting and the quality of its surveillance and monitoring system will also play an important role when dealing with an unknown emerging disease.

c) The relationship between trading partners – a more reasonable approach to dealing with an emerging disease is more likely when there has been a favourable trading history between two countries. Often existing bilateral agreements take into consideration how to respond to such occurrences. It is often the case that the exporting country immediately notifies its trading partners when a disease is detected, or even if there is only the suspicion that a disease has been detected, and takes it upon itself to suspend trade until additional information can be obtained. Proactive and transparent relationships will pay long-term dividends.

d) International standards for similar conditions – while it is understood that there will be no specific international standards for an emerging situation, there are often situations when there are existing standards or recommendations on how to deal with a similar pathogen, or similar conditions. When taken into consideration by trading partners, these recommendations can minimise the impact on trade, yet still be protective of health.

The rapid detection of, and response to, the appearance of an emerging disease is critical. The appearance of a new emerging disease is often the result of a recombination of strains of a pathogen, or just a change in host preference by a known pathogen. However, from the time this new disease has developed until it is detected, a critical time period will elapse. The rapid detection of such a new epidemiological event is crucial, but often the disease will have spread undetected for a significant period of time before it has been detected and reported. This is

particularly the case when the new disease has originated or is evolving in a country or region where there are deficiencies in the veterinary infrastructure and, in particular, where there is a lack of the necessary surveillance capabilities and diagnostic capacity for such a previously unknown situation.

Once a new emerging disease has begun its global voyage, its spread is likely to be very rapid as a result of the increase in the speed and volume of international transport (human and animal), as well as other, perhaps novel, means of spread, such as the adaptation of new vectors. For example, severe acute respiratory syndrome (SARS) spread into thirty countries and multiple continents very quickly even though it was not a highly infectious pathogen.

For the above-mentioned reasons, action programmes must take a global or at least a regional approach, as opposed to the more traditional national approach, and preventive and control strategies must be well integrated between public health and animal health authorities. The traditional approach to utilising border controls and quarantines was thought to be an excellent line of defence in the past. However, current levels of global trade, as well as the introduction of pathogens through non-trade related means, such as by migratory wildlife, exotic animal movements, vector movement, travelling passengers etc., has rendered these traditional approaches obsolete.

The importance of veterinary infrastructure

The preparedness and response capability of a country faced with an emerging disease will largely depend on the effectiveness of its infrastructure, particularly the Veterinary Services. Most of the recent emerging diseases have had an animal origin, and most have zoonotic potential. At present and in the future, the obligations of Veterinary Services must go far beyond those of a traditional government entity responsible for the control of animal diseases of importance and the issuance of veterinary export certificates. The traditional mission of national Veterinary Services has been to protect domestic agriculture and, over time, most of their resources were channelled toward the control of pests and diseases that threatened primary production. The focus was on providing services from the national borders inward and the credibility of these services, in the eyes of stakeholders and trading partners, depended in large measure on the effectiveness of domestic programmes, and the response to emergencies arising from the entry of recognised and notifiable foreign pests or diseases.

In light of growing international requirements and trading opportunities, national Veterinary Services must adopt a broader mandate and vision, and provide new services that complement the portfolio of the more traditional services. This will entail stronger alliances and closer co-operation with other competent authorities, including public health services, the private sector and non-agriculture stakeholders, as well as other countries.

The World Trade Organization Sanitary and Phytosanitary (WTO/SPS) Agreement reaffirms the right of member countries to protect plant, animal and human life or health, but the agreement also requires that countries base their SPS measures on scientific principles – the fundamental basis of operation to ensure that international trade is free of discrimination and scientifically unjustified restrictions. Therefore, the modern Veterinary Service will have to review and perhaps update its legislation and trade policies according to these new WTO obligations. But most importantly, these services must expand their focus, responsibility and partnership beyond the traditional animal health and veterinary paradigms of the past.

To deal with emerging threats, modern Veterinary Services should integrate their public and animal health objectives into a single strategy. There has to be a continuum of surveillance, monitoring, and inspection activities from the farm, through the slaughterhouse, processing establishments and food marketers to the consumer. The activities of these modern Veterinary Services cannot be conducted by official veterinarians alone. The skills of many professionals and para-professionals have to be incorporated into one responsive Veterinary Service, which in turn may need to be an integral part of a broader 'competent authority' responsible for all related activities. The activities of modern Veterinary Services will be conducted by a multi-skilled workforce and other government personnel, but also by those outside of the government. While the ultimate certification responsibility will reside with the Veterinary Services as part of the competent authority, the activities, particularly those related to emergency preparedness, will be accomplished through integrated teams. These teams will invariably involve the private sector, such as farmers, producers, private veterinarians, para-veterinarians, and new socio-economic groups that are impacted by, and involved in, emerging zoonoses.

In order to have the ability to rapidly detect and report emerging diseases within its territory, a Veterinary Service must have a robust surveillance system. Such a system relies on several essential components, e.g. well trained producers, field veterinarians and stockmen; a diagnostic laboratory network capable of analysing submissions of rare and unknown pathogens and reporting them efficiently to the central authorities; and a team of

epidemiologists and other experts capable of rapidly developing response strategies.

This surveillance system must be aimed at reporting significant epidemiological events and must not only focus on the traditional notifiable diseases. Emerging diseases will often be expressed by clinical manifestations not previously seen, or pathogens which cannot be identified by standardised diagnostics, reagents or protocols.

Based on recent experience, emerging diseases will require a more holistic strategy, as risks are likely to come from more diverse and less traditional sources. It will not be enough to monitor target hosts and tissues alone, because it is likely that these diseases will come via novel vectors and migratory wildlife, as well as passengers and their goods. Part of the holistic approach will be based on an understanding of the complexities of the ecology of emerging diseases and the dynamics of transmission due to newly recognised factors and the implication of these for global trade.

International trade actions

In the past, importing countries have applied strict restrictions and even total bans on products posing known risks, and often these import measures have gone far beyond what is recommended by international standards. Severe restrictions or total bans on the importation of meat and milk products due to diseases such as foot and mouth disease (FMD) or BSE are among the better-known examples of such excessive restrictions in international trade.

Import decisions often have to be made in the absence of sufficient scientific information, and at times, in the absence of relevant international standards. Government decision-makers have often taken premature and overly restrictive measures (some of which have also been scientifically unjustified), as these are later easier to defend in front of a critical public or media. These situations are likely to continue unless there is an acknowledgement that such actions are counterproductive in the longer term, and unless there is a trusting relationship between trading partners and a more transparent and honest risk communication strategy with the public.

While strategies regarding the prevention and control of emerging diseases should be holistic, broad and not just focused on international trade, this is not likely to occur in the near future. The appearance of a new disease, or even a new epidemiological event of a known pathogen, is likely to result in a much more severe impact on international trade. Recent government decisions intended to prevent the introduction of BSE have gone as far as prohibiting the importation of commodities known to be safe, regardless

of the country of origin, such as milk and milk products, semen and embryos. Some countries have even banned the import of pork products and fishmeal, commodities unrelated to the transmission of BSE, as a measure to prevent the introduction of BSE.

Because of the unique features of these new challenges and in order to prevent, or at least minimise, trade restrictions which are unjustified and potentially damaging in the longer term, the responses to emerging diseases will have to be co-ordinated both at national as well as international level between those responsible for public and animal health. The role of international organisations such as the World Organisation for Animal Health (OIE) is crucial in this global co-ordination effort.

International organisations play a key role in the establishment, management and interactions of information systems. It is vital that information on disease occurrence is collected, analysed and disseminated as efficiently and rapidly as possible. There are already good examples of this type of collaboration between the OIE and the Food and Agriculture Organization (FAO) of the United Nations, as well as between the OIE, the FAO and the World Health Organization (WHO), e.g. the co-ordinated efforts that took place during the recent outbreaks of avian influenza (AI) in Asia.

As the world population continues to grow and expand, the demand for animals and animal products increases and the factors of emergence and re-emergence are set in motion, emerging diseases will continue to be an important part of our future. Thus, global trade can only be optimised through stronger scientific decision-making, adherence to international standards, effective use of new technologies and an increased collaboration among public and veterinary health authorities and international organisations.

Evaluation of Veterinary Services

Experience has shown that well-developed, successful and effective Veterinary Services that are credible in the eyes of their stakeholders and trading partners have the following four fundamental characteristics in common:

- the technical capability to address new issues based on scientific principles
- the human and financial capital to attract resources and retain professionals with technical and leadership skills
- the interaction with, and full participation of, the private sector in the implementation of joint programmes and services
- the ability to access and maintain markets through the implementation of new disciplines such as harmonisation of standards, equivalence and regionalisation.

These factors are even more important as we consider the creation and recognition of emerging and re-emerging zoonoses.

To be better prepared to manage emerging diseases, countries should conduct an evaluation of their Veterinary Services. National Veterinary Services can also audit the Services of their trading partners to assess conditions of equivalence and address the management of potential emergencies in advance. Specialised instruments for conducting such evaluations and planning activities are currently available: the OIE *Terrestrial Animal Health Code* contains a detailed chapter entitled 'Guidelines for the evaluation of Veterinary Services'. The OIE and the Interamerican Institute for Collaboration in Agriculture (IICA) have jointly developed a Performance, Vision and Strategy (PVS) instrument. The PVS instrument can assist national Veterinary Services to evaluate their current level of performance, form a shared vision with the private sector, establish priorities and facilitate strategic planning in order to evaluate their preparedness to face emerging diseases, and take full advantage of the new opportunities and obligations of globalisation. This instrument can serve as a benchmark to compare Veterinary Services, help prioritise resources and actions, and better prepare for the rapidly changing world of emerging diseases.

How to avoid or minimise trade disruptions

While it is difficult to predict the trade impact of the appearance or the threat of introduction of an emerging or re-emerging disease, there are certain measures trading partners can take to prevent or minimise this impact. These measures are especially important if the diseases are zoonotic and both public and animal health are involved.

The transparency and credibility of government competent authorities will play an important role in preventing trading partners from taking excessive measures such as a total ban on imports. It is the quality and timeliness of the animal health information disseminated internationally before the event that will make the difference. It is for this reason that the OIE places obligations on Member Countries to provide disease reports quickly and transparently. Countries showing a lack of transparency in disease reporting may wait a long time before trust can be re-established.

A clear risk communication policy will mean that countries share information with stakeholders, including producers and consumers, as quickly and honestly as possible. Consumers do not need to know everything at the onset of an emerging disease event; however, they need to know

what the authorities do and do not know, and how they are addressing the risks. Again, for emerging zoonoses, there must be communication and co-ordination between experts and officials from both veterinary and public health.

Levels of consumer risk aversion vary from country to country. However, consumer confidence can be lost rapidly even among the least risk averse societies if information relating to an emerging disease is not communicated promptly and honestly. The lessons learned from the recent outbreaks of SARS and AI underline the need for open communication and reporting and the importance of sharing critical information.

Pre-emptive action by government authorities in the affected country will also help to minimise overreaction by trading partners. If rapid and appropriate risk mitigating measures are implemented by the affected country during the early stages of the outbreak, this may help to prevent importing countries having to apply excessive measures themselves.

Conclusion

In conclusion, with the commitment and active participation of their Members, international organisations such as the OIE can significantly help to minimise trade impacts resulting from emerging diseases. To support their work and to help ensure the health and safety of animal and human populations, the following areas will need to be emphasised.

Information sharing

Improvement in the speed and accuracy of disease reporting will significantly contribute to avoiding or at least minimising unnecessary reactions by importing countries. The OIE is continuing to modernise its animal disease reporting system: the notification system of the OIE has recently been re-examined and new reporting criteria have been adopted. Emphasis will be placed on the nature of the epidemiological event, rather than whether or not the disease is listed by the OIE. However, this system is only going to be as rapid and transparent as the diagnostic and detection capacity of Member Countries and of the information they provide.

Transparency

Future efforts towards improving the transparency of disease reporting will depend heavily on how importing countries continue to respond to early and rapid reports of

new disease occurrences. Recently, countries reporting a first occurrence of a disease have been faced with serious trade restrictions if not total trade bans. Unless countries begin to base their import decisions on international standards, it is likely that the willingness to be transparent in reporting will be negatively affected. There should be a shift towards rewarding countries which report honestly, rather than creating a situation where rapid detection and reporting is discouraged. If this is not done, it will have a negative impact on the safety of trade, and, more importantly, on the ability of countries to manage emerging diseases in a co-ordinated manner, thereby increasing the threat of human disease if the disease is zoonotic.

Mediation

In the absence of international standards, which is likely to be the case during the initial phases of an emerging disease outbreak, trading countries could seek technical mediation from the OIE. In this case, the OIE would provide the names of experts in the field and would encourage trading countries to come to a mutual agreement and to consider measures that are scientifically-based and as unrestrictive on trade as possible.

New approach to standard setting

There is a need for a shift in the paradigm of standard setting. Historically, too much emphasis has been placed on how a country or zone can reach 'disease-free' status and then base the safety of its trade on such freedom. While freedom of disease in a country or an animal population is important, it does not offer absolute guarantees of the safety of the trade. In considering new standards, it will also be important to move towards risk-based, scientific and regionalised approaches. Since zero risk is impractical, modernised prevention and rapid response capabilities will be of increasing importance.

The OIE is taking a new approach to setting standards and revising existing ones: the categorisation of a country/zone status is first based on the assessment of the overall level of risk present in the country/zone or animal population, rather than on whether a disease has been reported or not. Specific trade recommendations for each traded commodity are based on the risk posed by such a commodity. The end result of such a new approach, provided the standards are implemented properly by Member Countries, is that trade decisions will be risk-based, and on a commodity-by-commodity basis. While this new approach will be as safe, if not safer, than the current system, which focuses primarily on country freedom, it also has the potential for minimising unjustified trade restrictions, whether in the case of known or emerging diseases.

Collaboration

Because of the complexities of the emergence and re-emergence of zoonoses, a new premium must be placed on collaboration. This collaboration should encompass the following elements:

- international organisations focusing on both public and animal health
- research into the factors involved in emerging diseases to enable the development of effective response programmes
- multidisciplinary experts from a broad range of fields
- diagnostic laboratories
- food safety agencies
- private and corporate entities and government agencies
- standard setting organisations and national animal and public health officials.

Today, in a world of globalisation, increased trade and complex factors that will continue to create more emerging and re-emerging zoonotic diseases, veterinary and public

health officials must adopt new strategies to prevent and respond to these new threats, and adopt new paradigms to consider the implications for global trade. Central to this mission is the need for individual countries and international organisations to improve their scientific and technical capacities and their ability to collaborate and co-operate, to expand their critical infrastructures and to minimise the impact of trade disruption by adopting an approach that is very different from the traditional and more simplified veterinary health strategies of the past.

As the eye of the storm regarding emerging diseases intensifies, global trade involving animals and animal products can only continue to function effectively if the role of Veterinary Services evolves to include an increased emphasis on public health and if there is a greater acknowledgement of the role of international organisations such as the OIE.



Les maladies émergentes et leurs conséquences pour le commerce mondial

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Résumé

Les maladies émergentes pourraient avoir un effet dévastateur sur le commerce international, à moins de modifier l'approche traditionnelle de la lutte contre les maladies et que l'on adopte de nouvelles stratégies holistiques de prévention et de contrôle. L'impact des maladies émergentes sur le commerce international dépendra de plusieurs facteurs, tels que la nature de l'agent pathogène, le niveau de coordination et d'intégration entre les Services vétérinaires et les autorités chargées de la santé publique, la capacité de détecter rapidement l'apparition d'une maladie et d'y réagir promptement, ainsi que les relations commerciales existantes entre les pays.

Les stratégies de lutte contre les maladies émergentes seront plus efficaces si les autorités compétentes, et les infrastructures vétérinaires en particulier, intègrent leurs objectifs en matière de santé publique et de santé animale pour en faire une seule stratégie. Les organisations internationales chargées d'élaborer des normes comme l'Organisation mondiale de la santé animale (OIE) joueront un rôle de coordination crucial.

Cet article analyse les événements qui ont contribué à l'apparition et à la propagation des nouvelles maladies émergentes et examine l'évolution des rôles des Services vétérinaires et des organisations internationales. Il aborde aussi les mesures que l'on peut prendre pour réduire au minimum les perturbations éventuelles du commerce que provoque l'apparition d'une maladie émergente.

Mots-clés

Commerce international – Maladie animale – Maladie émergente – Mondialisation – Norme internationale – Organisation mondiale de la santé animale – Zoonose.



Las enfermedades emergentes y sus consecuencias para el comercio mundial

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Resumen

A menos que se produzca un cambio en los sistemas tradicionales de lucha contra las enfermedades y que se adopten nuevas estrategias holísticas en materia de prevención y control, las enfermedades emergentes podrían tener consecuencias devastadoras para el comercio internacional. Los efectos que tengan dichas enfermedades sobre los intercambios internacionales dependerán de varios factores, entre otros la naturaleza del patógeno, el grado de coordinación e integración entre los Servicios Veterinarios y los organismos de salud pública, la capacidad de detectar una enfermedad y responder a ella con rapidez o las relaciones comerciales que existan entre los países.

Las estrategias de lucha contra enfermedades emergentes serán más eficaces si las autoridades competentes y las infraestructuras veterinarias, en particular, integran sus objetivos de salud pública y sanidad animal en una sola estrategia. En este sentido será básica la función de coordinación que ejercen organizaciones normativas internacionales como la Organización Mundial de Sanidad Animal (OIE).

El autor describe los fenómenos que contribuyen a la aparición y propagación de enfermedades emergentes y examina las funciones de los Servicios Veterinarios y organizaciones internacionales, que van cambiando con el tiempo. También hace referencia a las medidas que pueden adoptarse para minimizar los eventuales trastornos del comercio provocados por la aparición de una enfermedad emergente.

Palabras clave

Comercio internacional – Enfermedad animal – Enfermedad emergente – Globalización – Norma internacional – Organización Mundial de Sanidad Animal – Zoonosis.
