Rev. sci. tech. Off. int. Epiz., 2011, **30** (1), 289-296

Managing the risks of disease transmission through trade: a commodities-based approach?

G.K. Brückner

1 Scholtz Street, Schoongezicht 30, Somerset West, 7130, South Africa

Summary

Since its founding in 1924, the World Organisation for Animal Health (OIE) has facilitated safe trade in animals and animal products by developing effective standards to prevent the spread of animal diseases across the globe. A protocol for recognising the disease-free status of countries is an integral part of this process and has been adopted and advanced through the years to assist OIE Member Countries in placing disease-free animals and their products on the international market. Options such as trade from disease-free zones and disease-free compartments are now available to Members and have proven to be a positive mechanism for facilitating trade. A further option is trading in safe commodities, i.e. animals and animal products that have been identified as safe to trade even in the presence of disease, either with or without applying risk mitigation measures before export. Although most Members have incorporated the acceptance of disease-free countries or zones into their animal health policies and sanitary measures, there still appears to be a reluctance to trade in commodities from infected countries, despite clear, scientifically based risk management standards that can be applied if needed. This paper offers some examples reflecting the apparent reluctance to trade in commodities and discusses how the standards in the OIE's *Terrestrial Animal Health Code* could be used to apply scientifically based risk management practices to review outdated policies.

Keywords

BSE – Bovine spongiform encephalopathy – Commodity – Deboned beef – Developing country – Encephalopathies – Foot and mouth disease – Risk management.

Introduction

The globalisation of international trade in animals and animal products has become an increasingly sensitive issue for both developed and developing countries, by posing a significant risk for the international spread of animal and human pathogens, whilst at the same time being accepted as a necessity if we are to meet the worldwide demand for food security and food safety (1). The founding of the Office International des Epizooties or International Office of Epizootics (OIE), as an independent inter-governmental international organisation in 1924, offered the international community a unique and much-needed decision-making forum to guard against the regional and global spread of infectious and trade-sensitive animal diseases and zoonoses. From the 28 founding countries, membership of the World Organisation for Animal Health, as it is known today, has since grown to 178 countries and territories (1). However, while the initial objectives of the OIE remain just as relevant now as when it was established, and while much has been achieved in its role as the international standard-setting organisation mandated by the World Trade Organization (WTO), the inability of many OIE Members to give acceptable guarantees of freedom from trade-sensitive animal diseases remains a major impediment to trade. For example, while tariff barriers are frequently low or non-existent for developing and less-developed countries in the boneless beef trade, non-tariff barriers, such as stringent disease control measures requiring guarantees of freedom from disease, remain a key limiting factor for these countries (6).

The OIE, with its noble vision of promoting global animal health, thus faces an important challenge in supporting this ideal while, at the same time, honouring its objective of

facilitating safe international trade. These tasks may appear contradictory. However, in fact, they not only support the mandate of the OIE but also reflect the organisation's essential prerequisite for international standard-setting; namely, that international standards must be based on sound scientific reasoning.

The reality is that, in spite of intensive global, regional and national efforts to control or eradicate the most important trade-sensitive diseases, more than 100 developing and transitional countries are still not free from foot and mouth disease (FMD) (9). They thus present a major challenge to a worldwide, liberalised but safe trade in animals and animal products which would contribute to both global food security and global market access. Since 1994, when the OIE initiated a system for recognising the favourable disease status of countries, this procedure's categories have progressed from the official recognition of disease-free countries, to the recognition of disease-free zones within infected countries and, more recently, to making provision for the establishment of disease-free compartments. The dual purpose of safe but liberalised trade has been further expanded to identify and list those animal products that can be traded as safe commodities even in the presence of disease. Two of the four most important trade-sensitive diseases recognised by the OIE are FMD and bovine spongiform encephalopathy (BSE). In the case of FMD:

– 65 Member Countries are recognised as being free from FMD without vaccination

– 1 is recognised as being free with vaccination

– 10 are recognised as having disease-free zones, without vaccination

– 6 are recognised as having disease-free zones with vaccination.

For BSE:

– 13 Members are recognised as having negligible risk status

– 34 are recognised as having controlled risk status (12).

It is evident that obtaining official recognition of either a disease-free country or disease-free zones is a slow process that depends on the ability of Members to achieve and maintain that status. It is also costly, since it requires a sustainable and effective Veterinary Service and the political will and commitment to maintain it. It is acknowledged that many developing and in-transition countries experience their own unique problems in moving towards the ideal of a disease-free country or disease-free zones, and that the international community should consider appropriate ways of assisting them to gain access to international markets as they become active participants on the pathway to obtain disease freedom (6).

Disease-free countries, zones, compartments and commodities

The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (the 'SPS Agreement') specifically encourages trading parties to recognise the existence and application of disease-free zones (14). The OIE, as mandated by the SPS Agreement to set standards for establishing and recognising animal disease-free countries or zones, has further strengthened this concept as a mechanism to facilitate trade (1, 10, 14). It could be argued that Article 6 of the SPS Agreement, in which this principle is outlined, was intended to enhance the application of sanitary measures only to the extent necessary to protect human and animal health. However, it is unfortunately still applied as a prerequisite for trade in the policies of many countries (1, 3, 5, 7). The application of such policies inevitably excludes many countries from lucrative international markets because they do not have such disease-free zones. This is despite the fact that several chapters of the OIE's *Terrestrial Animal Health Code* (the *Code*) make provision for the safe trade of animals and commodities from infected countries or zones, subject to the application of risk mitigation measures which render them safe (10).

The concept of safe commodity trade is not new and has already been incorporated into the *Code* in which, for example, milk and milk products, semen, hides and skins, gelatine and collagen from hides and skins and deboned skeletal muscle meat from cattle can be traded without restriction from a country infected with BSE (10). The same principle is also applicable for deboned bovine meat that has undergone maturation and has a pH value of less than 6, to render it safe from FMD virus. Further research is under way to expand this concept to facilitate trade for areas with other OIE-listed diseases and commodities (3).

For the purposes of this paper, a distinction is made between those commodities already traded from zones officially recognised as being free from a disease such as FMD or BSE, and trade in commodities from countries that are not free of that disease, and from which such commodities are not officially listed as 'safe'. The focus of this paper is on the latter. A further distinction, proposed by Rich and Perry (4), which calls for a distinction between 'commodities' and 'products', is also used in this paper. While a 'commodity' is defined in the *Code* as: 'live animals, products of animal origin, animal genetic material, biological products and pathological material', the emphasis in this paper is on a primary commodity to which no further value has been added. Furthermore, this commodity must either have been identified in the *Code* as an item recommended for safe trade without the need for risk mitigation (such as milk from countries at risk of BSE),

or a commodity that has been subjected to risk mitigation measures described in the *Code*, such as deboned, chilled or frozen beef from FMD-infected countries. 'Products', on the other hand, are commodities to which value has been added in accordance with consumer preferences or as prescribed in private standards applicable to a specific item (4). It is proposed that the current definition of 'commodity' in the *Code* should be revised to enable a clear distinction between commodities and products and also to potentially exclude live animals, genetic material and biological products, which are not, in the common understanding of the word, really perceived as 'commodities'.

Trade in commodities, whether they come from disease-free zones or are listed in the *Code* as safe, is already common practice (7). The question could be asked, however: why do countries continue to insist on guarantees of disease freedom before the import of a specific commodity will be considered? One reason could be that the principle of using the *Code* and the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (the *Manual*) to assist decision-making for the importation of animals or animal products is often not applied. The *Code* should be read, used and applied in its entire context to assist in decision-making. For example, when FMD-related sanitary measures are considered for the importation of beef from an infected country, it is also necessary to note and apply a number of other standards from the horizontal chapters in the *Code* –examples include chapters on the evaluation of Veterinary Services and import risk analysis– as well as the vertical, disease-specific chapters.

For example, an import risk analysis for a particular commodity might indicate some uncertainties about one or more of the risk mitigation measures recommended in the *Code* when importing that commodity. Nevertheless, it could be concluded that any risk is less than the appropriate level of protection of the importing country because the uncertainty is minimised, or the risk mitigated, by positive findings on the exporting country's horizontal standards, such as its level of disease surveillance or the quality of its Veterinary Services. The reverse could also be true. For example, when considering the importation of deboned skeletal muscle meat of cattle (beef), it would be against the spirit and intention of the *Code* to expect a developing country (for instance, some countries in Africa) to demonstrate a BSE surveillance programme when the *Code* already lists that commodity as safe for trade, irrespective of the BSE risk status of a country (10). It is also not always appreciated that the standards in the *Code* are themselves the outcome of a risk analysis process, and that the application of unnecessarily trade-restrictive disease control measures which are additional to, or stricter than, those in the *Code* must be scientifically justified (5, 7, 14).

Risk management principles to facilitate trade in commodities

Risk management is defined in the *Code* as: 'the process of identifying, selecting and implementing measures that can be applied to reduce the level of risk'. It involves a process of deciding upon, and carrying out, activities to achieve the Member's appropriate level of protection while, at the same time, ensuring that negative effects on trade are minimised. The objective is to manage risk appropriately to ensure that a balance is achieved between a country's desire to minimise the likelihood or frequency of disease incursions and their consequences, and its desire to import commodities and fulfil its obligations under international trade agreements (10).

The approach in the *Code* of recommending specific risk mitigation measures when importing commodities implies various risk management options depending on:
– the type of commodity
– the disease
– the disease situation in the country of origin.

These risk management options range from very basic to more intensive and focus primarily on risk mitigation measures applied in the country of origin. However, this does not exclude the importing country from applying risk management options after entry to achieve its appropriate level of protection. The *Code* also recommends that risk management decisions should not only be carefully evaluated but also monitored and reviewed to ensure that they continue to support the appropriate level of protection of the importing country (10).

When importing fresh meat from cattle and buffalo (*Bubalus bubalis*) (excluding feet, head and viscera) from a country infected with FMD, the *Code* recommends risk management procedures in the country of origin that include:

– an official control programme for FMD with compulsory systematic vaccination of cattle

– meat that comes from animals which have remained in the exporting country for at least 3 months prior to slaughter

– animals which have remained, during this period, in a part of the country where cattle are regularly vaccinated against FMD and where official controls are in operation

– animals that have been vaccinated at least twice, with the last vaccination not more than 12 months and not less than 1 month prior to slaughter

– animals that have been kept for the past 30 days in an establishment within a 10-km radius of which FMD has not occurred, during that period

– animals that have been transported, in a vehicle which was cleansed and disinfected before they were loaded, directly from the establishment of origin to the approved abattoir, without coming into contact with other animals which do not fulfil the required conditions for export

– animals that have been slaughtered in an approved abattoir that is officially designated for export and in which no FMD has been detected during the period between when the last disinfection was carried out before slaughter and when the shipment for export was dispatched

– animals that have been subjected to ante-mortem and post-mortem inspections for FMD with favourable results within 24 hours before and after slaughter

– meat that comes from deboned carcasses from which the major lymph nodes have been removed

– meat that, prior to deboning, has been submitted to maturation at a temperature above +2°C for a minimum period of 24 hours after slaughter, and in which the pH value was below 6.0 when tested in the middle of both *Longissimus dorsi*.

The FMD chapter of the *Code* does not list risk management considerations which are described in other chapters of the *Code* or *Manual*. These include, among others:

– the competence of the Veterinary Services of the exporting country

– the quality of disease surveillance

– vaccine quality and efficiency

– disease reporting.

These risk management recommendations should be taken into consideration before the FMD risk posed by the importation of deboned beef can be regarded as negligible and as meeting the appropriate level of protection of the importing country. The risk management options described above have been reviewed and used in a scenario tree by Metcalf *et al.* (2) and, more recently, by Paton *et al.* (3) to assess the risk of FMD virus introduction following a failure of one or more of these procedures. The conclusions of Paton *et al.* (3) are significant, in that they acknowledge that there are a variety of issues around which uncertainty still exists and which warrant further research. Additional risk management options are suggested to address some of these uncertainties. Examples include pre-slaughter quarantine and either a single vaccination three weeks before slaughter or, alternatively, two vaccinations during this period and serological sampling to confirm the presence of antibodies (3, 6, 8).

Policy versus risk management considerations

While the benefits of freer commodity-based trade may be subject to debate, there is little doubt that allowing trade in safe commodities from countries or zones that are not yet free from disease will open up markets previously denied to many developing countries (3, 4, 5, 6, 7). However, despite the science-based and internationally adopted standards in the *Code*, many countries are still reluctant to import such safe commodities from countries or zones not certified free from certain diseases. In some instances, importing countries are even reluctant to import these commodities from countries or zones that *have* been certified free from disease. This issue has several times been raised as a trade concern at meetings of the SPS Committee of the WTO (13). Official recognition of a country's or zone's FMD, BSE, contagious bovine pleuropneumonia or rinderpest status is extended by the OIE in accordance with the standards in the *Code* (10), as is the listing of commodities which are safe for trade, irrespective of the disease status of the exporting country. Disease-free zones and safe commodities, as defined by the *Code*, therefore represent international standards for trade purposes, as agreed in the SPS Agreement, and should be recognised in trade negotiations.

Even where countries accept the scientific rationale underlying the standards of the *Code* for importing commodities from infected countries or zones, the alleged remaining uncertainties around possible exposure of susceptible animals (or humans, in the case of BSE) to the pathogenic agent in the importing country may be a reason for these countries to remain risk-averse in trade negotiations and not to deviate from their existing zero-risk policies. For a number of countries, therefore, 'safe' import implies the importation of animals and animal products only from those countries where the total absence of the pathogen for a particular disease can be demonstrated.

In the case of deboned beef from an FMD-infected country, one possible entry route for any virus that has escaped all the recommended risk mitigation options is the uncontrolled feeding of food waste (swill) to pigs. Domestic restrictions on swill feeding therefore constitute a risk management option that could be taken into account in an import risk analysis conducted by an importing country. However, the amount of virus required to infect pigs is uncertain and this aspect should be judged together with other risk mitigation factors, such as the dilution factor of one piece of infected meat within the total mixture of swill (3). It has also been documented that, since 1969, when only deboned beef was permitted to be imported from Argentina to the United Kingdom (UK), there has been no FMD outbreak attributable to these imports (3).

This arguably reflects the application of good risk management practices in both Argentina and the UK. It also emphasises that risk management in trade is a two-way process that should be applied in both the exporting and importing countries.

Where an exporting country infected with FMD complies with all the *Code*'s risk management standards, as in the case of deboned meat, for example, an importing country should not discriminate against that country but rather should ensure that appropriate risk management practices are put in place domestically. For example, the importing country could place a prohibition on feeding uncooked or untreated swill to pigs.

One of the many arguments given for adhering to a zero-risk policy (that is, importing commodities only from countries or zones certified as disease free) is that countries that are not free from disease but which do promote commodity-based trade might regard this as an alternative to practising good veterinary governance. Importing countries, therefore, are reluctant to trust certification where there are doubts about the competence of the certifying veterinary authority.

Although the scientific rationale and risk management options recommended in the *Code* are apparently accepted as sufficient to mitigate the risk of pathogen introduction, some countries require additional, accompanying pre-slaughter guarantees from exporting countries, such as:
– disease surveillance
– transparency of disease reporting
– diagnostic capability
– vaccine efficiency.

It would, therefore, be irresponsible for exporting countries to adopt an approach based solely on the systematic inactivation of pathogens in commodities, while at the same time relaxing surveillance for animal diseases and policies for their control. The positive impact of animal health policies on poverty reduction and public health is, in itself, ample justification for financing and maintaining surveillance networks and rapid response mechanisms to deal with animal health risks (1).

To establish trust with trading partners, a non-negotiable prerequisite for countries would be to provide evidence that their delivery of Veterinary Services complies with OIE standards. Such compliance includes taking responsibility for the integrity of the veterinary certificates they issue (10, 11).

While the ideal is still for most risk mitigation to be applied in the country of origin of an intended export, the importing country should also ensure that appropriate risk management measures are applied domestically, to ensure that the estimated risk falls within its appropriate level of protection.

Conclusion

Veterinary decision-makers all over the world have experienced the inescapable truth that decisions based on scientific rationale alone are often subject to political interference. Policy decisions, particularly those related to sanitary measures for trade, are prone to reflect political preferences which may or may not be part of the appropriate level of protection set by an importing country. However, the *Code* and *Manual* offer the basis for decision-makers to ensure that good scientific reasoning receives preference when it comes to protecting the animal health status of a country. Of particular significance are the guidelines for countries on how to conduct a science-based import risk analysis, how to choose the most suitable risk management options to meet their appropriate level of protection, and how to apply the standards to review and, if necessary, amend their policies to reflect the latest scientific advancements. Many countries are still reluctant to import commodities from countries or zones not officially certified as being free from disease. While it remains the prerogative of countries to determine their own appropriate level of protection, this should not be used as an excuse for ignoring scientific advances, as published in the *Code*, the adoption of which would lead to a timely revision of animal health policies and risk management practices.

■

Gérer les risques de transmission de maladies par le commerce international : une approche axée sur les marchandises ?

G.K. Brückner

Résumé
Depuis sa création en 1924, l'Organisation mondiale de la santé animale (OIE) a contribué à assurer la sécurité sanitaire des échanges internationaux d'animaux et de produits d'origine animale grâce à l'élaboration de normes efficaces visant à prévenir la propagation des maladies animales au niveau mondial. Le protocole de reconnaissance du statut indemne de maladie fait partie intégrante de ce processus, conçu et développé au fil des années pour aider les Membres de l'OIE à placer sur les marchés internationaux des animaux et des produits d'origine animale exempts de maladie. La possibilité désormais offerte aux Membres d'exporter à partir de zones et de compartiments indemnes de maladie est un mécanisme facilitateur dont les effets sur les échanges ont été positifs. Une autre option consiste à axer les échanges sur des marchandises sûres, c'est-à-dire à commercialiser des animaux et des produits d'origine animale reconnus sûrs aux fins du commerce international, même en cas de présence de la maladie dans le pays, en appliquant ou non des mesures d'atténuation du risque préalables à l'exportation. Si la plupart des Membres de l'OIE ont incorporé la reconnaissance du statut de pays ou de zone indemnes dans leurs politiques de santé animale et adapté leurs mesures sanitaires en conséquence, il semble que des réticences perdurent lorsqu'il s'agit d'importer certaines marchandises en provenance de pays infectés, malgré l'existence de normes de gestion des risques, claires et fondées scientifiquement, qui peuvent être appliquées par les pays en cas de besoin. Après avoir présenté quelques exemples illustrant les réticences apparentes à importer de telles marchandises, l'auteur livre ses réflexions sur les possibilités d'utiliser les normes du *Code sanitaire pour les animaux terrestres* de l'OIE pour développer des pratiques de gestion scientifique des risques afin de moderniser des politiques sanitaires devenues obsolètes.

Mots-clés
Bœuf désossé – Encéphalopathie spongiforme bovine – Encéphalopathies – Fièvre aphteuse – Gestion du risque – Marchandise – Pays en développement.

¿Aplicación de un método centrado en las mercancías para gestionar el riesgo de transmisión de enfermedades por el comercio?

G.K. Brückner

Resumen
Desde su fundación en 1924, la Organización Mundial de Sanidad Animal (OIE) ha venido velando por la seguridad del comercio de animales y productos de origen animal con la elaboración de normas eficaces para prevenir la diseminación de enfermedades animales en el mundo. Parte integrante de este

proceso es un protocolo para reconocer el estatuto de "libre de enfermedad" de los países, adoptado y perfeccionado a lo largo de los años con el fin de ayudar a los Países Miembros de la OIE a colocar en el mercado internacional animales y productos de origen animal libres de enfermedades. Los Miembros disponen ahora de opciones de probada utilidad para facilitar el comercio, como la de operar desde zonas o compartimentos libres de enfermedad. Otra posibilidad es comercializar mercancías seguras, esto es, animales y productos de origen animal considerados seguros para el comercio intercional incluso si la enfermedad está presente en el país, aplicando o no medidas de mitigación del riesgo antes de la exportación. Aunque la mayoría de los Miembros han incorporado la aceptación de países o zonas libres de enfermedad en sus políticas zoosanitarias y sus medidas sanitarias, parecen subsistir reticencias al comercio con mercancías procedentes de países infectados, pese a que existen normas de gestión del riesgo claras y científicamente contrastadas que se pueden aplicar en caso necesario. El autor expone una serie de ejemplos que ponen de relieve la aparente reticencia a comerciar con mercancías y explica cómo podrían utilizarse las normas incluidas en el *Código Sanitario para los Animales Terrestres* de la OIE para aplicar métodos científicos de gestión del riesgo a fin de revisar políticas que han quedado anticuadas.

Palabras clave
Carne vacuna deshuesada – Encefalopatía espongiforme bovina – Encefalopatías – Fiebre aftosa – Gestión del riesgo – Mercancía – País en desarrollo.

References

1. Brückner G.K. (2009). – The role of the World Organisation for Animal Health (OIE) to facilitate the international trade in animals and animal products. *Onderstepoort J. vet. Res.*, **76** (1), 141-146.

2. Metcalf H.E., Blackwell J.H. & Acree J.A. (1996). – Application of risk assessment to international trade in animals and animal products. *Ann. N.Y. Acad. Sci.*, **791**, 280-295.

3. Paton D.J., Sinclair M. & Rodríguez R. (2010). – Qualitative assessment of the commodity risk for spread of foot-and-mouth disease associated with international trade in deboned beef. *Transbound. emerg. Dis.*, **57** (3), 115-134.

4. Rich M. & Perry B.D. (2010). – Whither commodity-based trade? NUPI Working Paper No. 776. Norwegian Institute of International Affairs (NUPI), Oslo, 1-44.

5. Scoones I., Bishi A., Mapitse N., Moerane R., Penrith M.-L., Sibanda R., Thomson G. & Wolmer W. (2010). – Foot-and-mouth disease and market access: challenges for the beef industry in southern Africa. *Pastoralism*, **1** (2), 135-164.

6. Thomson G.R., Leyland T.J. & Donaldson A.I. (2009). – De-boned beef – an example of a commodity for which specific standards could be developed to ensure an appropriate level of protection for international trade. *Transbound. emerg. Dis.*, **56** (1-2), 9-17. E-pub.: 29 October 2008.

7. Thomson G.R., Tambi E.N., Hargreaves S.K., Leyland T.J., Catley A.P., Van't Klooster G.G.M. & Penrith M.-L. (2004). – International trade in livestock and livestock products: the need for a commodity-based approach. *Vet. Rec.*, **155** (14), 429-433.

8. World Organisation for Animal Health (OIE) (2008). – Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, 6th Ed. OIE, Paris, 1343 pp. Available at: www.oie.int/en/international-standard-setting/terrestrial-manual/access-online/ (accessed on 1 November 2010).

9. World Organisation for Animal Health (OIE) (2010). – Proceedings of the OIE/Food and Agriculture Organization of the United Nations Global Conference on Foot and Mouth Disease, 24-26 June, Asunción, Paraguay. Available at: www.oie.int/fileadmin/Home/eng/Conferences_Events/sites/A_FMD_2009/presentations-FMD.html (accessed on 3 November 2010).

10. World Organisation for Animal Health (OIE) (2010). – Terrestrial Animal Health Code, 19th Ed. OIE, Paris, 774 pp. Available at: www.oie.int/en/international-standard-setting/terrestrial-code/access-online/ (accessed on 28 October 2010).

11. World Organisation for Animal Health (OIE) (2010). – The OIE Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool). Available at: www.oie.int/en/support-to-oie-members/pvs-evaluations/oie-pvs-tool/ (accessed on 7 November 2010).

12. World Organisation for Animal Health (OIE) (2010). – World Official Animal Health Status. Available at: www.oie.int/en/animal-health-in-the-world/official-disease-status/ (accessed on 3 November 2010).

13. World Trade Organization (WTO) (2006). – Sanitary and phytosanitary measures: informal meeting, 30-31 January. SPS enhanced informal meeting on Article 6 (regionalization). Available at: www.wto.org/english/tratop_e/sps_e/meet_jan06_e/meet_jan06_e.htm (accessed on 23 November 2010).

14. World Trade Organization (WTO) (2010). – The Agreement on the Application of Sanitary and Phytosanitary Measures. WTO, Geneva. Available at: www.wto.org/english/tratop_e/sps_e/spsagr_e.htm (accessed on 1 November 2010).