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Editorial Open Access

European Animal Health Strategy and Transboundary Diseases

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Abstract

A new animal health strategy has been developed for the European Union in 2007. European Member States competent authorities implemented a 4 pillars action plan based on prioritization of intervention, legislative framework, prevention, surveillance and preparedness, and science, innovation and research. The initiative identified long term preventive approaches and recognized the strong relations among animal health and welfare and public health. A positive impact was demonstrated by reported epidemiological trends, showing decreases of certain infectious diseases incidences. However, despite steps toward the application of the new strategy, problems such as the full control of tuberculosis, object of prophylactic campaigns for more than 50 years, still remain to be solved. In addition, high attention is required to face emerging or re-emerging infectious diseases. Exotic diseases such as blue tongue, African swine fever and lumpy skin disease recently challenged Europe showing their potential of transboundary diseases, and indicating that sustainable animal health prevention strategies should be based on interdisciplinary approaches, international cooperation and in line with the "One health" principle.

Keywords: Animal health; Prevention; Strategy; Transboundary diseases

Editorial

A new animal health strategy has been developed for the European Union (EU) [1]. During a 7 years period (2007–2013), under the guidance of the Directorate-General for Health and Consumers (DG SANCO) of the European Commission, and after an extensive evaluation and a large stakeholders consultation, Member States competent authorities implemented a 4 pillars action plan based on prioritization of EU intervention, legislative framework, prevention, surveillance and preparedness, and science, innovation and research. The ambition of the new strategy could be resumed in a tailored slogan: "Prevention is better than cure". The initiative identified long term goals and recognized the strong relations among animal health and welfare and public health, aiming to put greater focus on precautionary measures, disease surveillance, controls and research, in order to reduce the incidence of animal disease and minimize the impact of outbreaks when they do occur.

The first pillar focuses on prioritization of EU interventions, to address new and emerging challenges to face such as diseases that have become more prevalent thanks to global warming. Priorities will be based on careful risk assessment and solid scientific advice, and funds will be primarily made available for diseases with high public relevance in terms of health, society and/or the economy. The second pillar (legislative framework) envisages a modern legal framework for clearer regulatory structure for animal health in the EU. A single regulatory framework should replace existing interrelated policy areas: one general, horizontal "Animal Health Law", a legislative instrument similar to the so called "Hygiene package" realized in the field of food safety. The new legislative framework on animal health will converge with the international recommendations, standards and guidelines of the World Organization for Animal Health (OIE) and Codex Alimentarius, and it will define the roles and responsibilities of operators, health professionals and veterinarians, and indicating the primary responsibility for animal health on operators (animal keepers). The third pillar focuses on threat prevention, surveillance and emergency preparedness. In order to identify problems before they emerge, prevent the risks, and improve the capacity to manage outbreaks and crises, a number of objectives have been defined: adequately staffed and funded Veterinary Services for more effective surveillance and controls; bio-security measures with isolation of animals and long term farm health management programs; traceability framework with identification systems, labeling, and TRACES (the Community TRAde Control and Expert System for traceability), and efficient early reporting systems; rapid response network, crisis management units and veterinary rapid response team, with the reinforcement of antigen and vaccine banks; import controls focused on high risk imports, with stronger measures against the illegal trade; and support third countries to combat threats to animal health and food safety at the source (essential aspect of international cooperation). This should result in enhanced preparedness, increased prevention for listed diseases, reduced administrative burden and economic losses due to disease outbreaks. The fourth pillar refers to science, innovation and research. Science is defined the base of the new animal health policy. Maximized knowledge and expertise, further development of national reference laboratories network, increased activities of the European Food Safety Authority in the field of animal health, increased scientific excellence, transparency and reliability are identified as primary objectives.

In order to strengthen the Community animal health services (CAHS) and to promote bio-security, the common financial framework, integrant part of the animal health strategy, defines eligible diseases for EU co-funding [2]. With an allocated budget of over €1.89 billion for the period 2014-2020, control and monitoring will be focused on Bovine tuberculosis, Bovine brucellosis, Ovine and Caprine brucellosis (*B. melitensis),* Bluetongue in endemic or high risk areas,

African swine fever, Swine vesicular disease, Classical swine fever, Avian influenza, Rabies, transmissible spongiform encephalopathies (TSE) and salmonellosis (zoonotic salmonellosis). Furthermore, research funding programs run parallel to the animal health strategy, and are an important tool in supporting research into animal health and welfare issues. The 7th Research Framework Program (2007-13) had a total budget of over € 50 billion. On 1 January 2014, the European Commission launched Horizon 2020, the biggest-ever EU research funding program with a total budget of nearly €80 billion over 7 years. In addition, the Animal Health and Welfare ERA-Net (ANIHWA), leading national financing bodies for animal health and animal welfare research in the EU, operates with funds estimated at over €250 million annually. This financial support is expected to contribute to prevent negative sanitary impact on zootechnic patrimony and the interrelated agro-food industry in the EU, taking into account that the food industry sector is one of the largest and most important manufacturing sectors in Europe, with 14.5% of total manufacturing turnover (€917 bn for the EU-27) and about the 14% employment of the total manufacturing sector (310,000 companies, and 4.8 million employees).

A positive impact of the new strategy was demonstrated by reported epidemiological trends, showing decreases of certain infectious diseases incidences. Prevalence of *S. enteritidis, S. typhimurium, S. infantis, S. virchow and S. hadar* positive breeding flocks of *Gallus gallus* significantly decreased during production in the EU 2007-2012 from about 1.5% to 0.4% [3]. This reflected positively in public health. Trend and number of reported confirmed salmonellosis cases decreased accordingly in EU during 2007 – 2011, from about 20,000 to about 10,000 cases [4]. Similarly, proportion of existing herds infected with or positive for *Brucella*, during the period 2005-2012 decreased in cattle from 0.18% to 0.05% and in sheep and goats from 1.20% to 0.14% [3]. Trend in reported confirmed cases of human brucellosis in the EU decreased from 542 cases in 2007 to 328 cases in 2012 [3,5].

However, despite steps toward the application of the new strategy, problems such as the full control of tuberculosis, object of prophylactic campaigns for more than 50 years, still remain to be solved. Proportion of existing cattle herds infected with or positive for *M. bovis*, 2006-2012 increased from 0.5% to 0.67% [3]. Despite most of the EU countries showed low positive proportions or were officially tuberculosis free, an unusual high prevalence of 10.4% has been reported in the UK, where badgers (*Meles meles*) were suspected to play a role in the epidemiology of the disease.

In addition, high attention is required to face potential emerging or re-emerging infectious diseases. Also well-known diseases as rabies demonstrated the risk of sudden epidemiological growth as the occurrence in Italy of an outbreak from 2008 to 2010 with 293 confirmed cases in north east regions [6]. Through the application of rapid and efficient control measures, the outbreak was resolved and only one case was declared in 2011. However, the pathogen pressure remained high and indicated the need of reinforced continuous vigilance, since in the same year 277 cases have been reported in the neighboring country of Croatia [6]. Recent serious outbreaks of Q fever in Holland have brought back attention on this zoonosis. From 2007 to 2010, in the North Brabant province, the disease was confirmed in 74 dairy goat flocks and 2 sheep flocks [6]. The outbreaks resulted in 41,000 slaughtered animals and about 4,000 human cases, including 20% hospitalizations with serious pulmonary inflammations and 18 deaths. Also new animal pathogens have been identified in Europe. The Schmallenberg virus (SBV) is a new Orthobunyavirus affecting cattle, small ruminants, bison, roe and red deer, and responsible of fever, diarrhea, decrease in milk yeld, abortion, stillbirths or malformation. Samples collected from arthropod vectors surveillance points showed positivity for SBV in Culicoides (*Obsoletus* Complex), suggestive of transmission mechanism. First reported in 2011 in Germany and Holland in cattle [7], the virus further spread in other countries. Only in France, in March 2013, 1,000 farms resulted SBV infected.

Exotic diseases such as blue tongue, African swine fever and lumpy skin disease challenged recently Europe showing their potential of transboundary diseases. Bluetongue (BT) historically is an African disease largely distributed in tropic and sub tropic regions. Despite previously recognized as a sub-tropical virus, did hit Cyprus in 1943 and then Portugal and Spain in 1956, where they suffered 200,000 losses, before the virus disappeared three years later. Currently, the virus is present in a broad band of countries. Bluetongue virus infection associated with clinical disease is present in most countries of Africa, the Middle East, India, China, the United States, and Mexico. With concern to Europe, since 1999 there have been widespread outbreaks in Greece, Italy, Corsica (France) and the Balearic Islands (Spain). Cases also occurred in Bulgaria, Croatia, Macedonia, Kosovo and Serbia. Between 2006 and 2007, the disease was revealed in north Europe: Netherland, Belgium, Germany, Luxemburg, Czech Republic, UK, Switzerland and Scandinavian countries. In 2010, the infection diffused further in northern European countries. The BT distribution in 2014 and 2015 indicates annual recrudescence of the infection in southern European territories. *Culicoides imicola* is the classical BTV vector, common in Africa and Mediterranean area. *Culicoides obsoletus* and *C. pulicaris* showed to be sensible and capable to transmit the disease, and they significantly contributed to the diffusion of Bluetongue in north Europe, resulting in a more rapid diffusion in northern habitats than the potential expansion due general global warming. African swine fever (ASF), highly fatal disease of domestic pigs with morbidity and mortality of almost 100%, is enzootic in most countries of sub-Saharan Africa. In Europe it has been reported in the Iberian Peninsula (now eradicated) and in Sardinia. It was present in four South American and Caribbean countries, but has been eradicated. In 2007 appeared in Russia initially in Caucasian territories, and then caused a number of outbreaks in different zones of the Federation. In 2013, it was declared in Belarus and in 2014 in Ukraine. In 2014, the virus diffused in wild boar populations in EU Baltic countries (Poland, Latvia, Lithuania, Estonia). In Lithuania also domestic pig holdings were affected. In 2015 the total number of outbreaks in European Union countries, Ukraine and Belarus corresponds to 287, and in June 2015 the circulation of the virus is still ongoing. Lumpy skin disease (LSD), caused by a virus belonging to the family *Poxviridae*, genus *Capripoxvirus*, affects mainly cattle (*Bos taurus*, zebus and domestic buffaloes). Until 1988 LSD was confined to sub-Saharan Africa, but then spread into Egypt. As of 1995, there has been only one laboratory confirmed outbreak of LSD outside Africa, in Israel in 1989, which was eliminated by slaughter of all infected and in-contact cattle, and vaccination. In 2009 occurred in Oman, and in 2012-2014 spread to Azerbaijan, Middle East (Lebanon, Israel, Palestine, Jordan, Kuwait, Bahrain, Oman, Iraq and Iran), Turkey and North Cyprus. With morbidity rate of 5-85% and mortality rate very variable, LSD symptoms range from subclinical to severe disease, and are characterized by swellings or nodules of 1-5 cm in diameter in the skin. Generalization usually occurs. Nodules involve all layers of skin and subcutaneous tissue, with congestion, haemorrhages, oedema, vasculitis and necrosis, and affect sometimes the musculature, causing

severe losses. Council Directive 82/894 made ASF and BT compulsorily notifiable throughout the European Community [8]. LSD was further considered by Commission Decision 2004/216/EC [9]. These 3 diseases are subject to the provisions of Directives 92/119 and 2002/60/EC introducing general Community measures for the control of certain animal diseases [10,11].

In conclusion, the European strategy for animal health derived from previously undertaken approaches, and represents their evolution on the base of new raised problems and subsequent choices, thus expression of continuity and maturity. The application of the strategy generated beneficial effects not only on animal health, but extended to public health, food safety and economic improvement for agro-food sector. A positive trend will require continuous evolution and attention to future threats. The choice of priorities needs an inter-disciplinary evaluation of different aspects to reach a common platform and taking into account local realities. Harmonization and cooperation at national and international level to support to veterinary services and correct monitoring are key aspects for optimal orientation, rational use of resources and improvement for the control and prevention of animal diseases. For a successful harmonization of animal epidemic prevention strategies, the first choice approaches should be based on interdisciplinary and international cooperation in line with the "One health" principle.

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