43. Veterinary responsibilities within the One Health framework

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Abstract

In many cases a One Health strategy in zoonotic disease control results in the promotion of health of humans, animals and the environment. However, there are also situations where this mutual benefit is not that evident. For instance, when restrictions of veterinary use of antimicrobials to protect public health negatively affects animal health. This confronts veterinarians with a conflict of professional responsibilities. Society expects veterinarians to safeguard animal health and welfare as well as veterinary public health. But if a One Health strategy to combat zoonotic disease threats leads to a conflict of these interests, whose health should veterinarians protect? Working in the context of the food industry, veterinarians are sometimes forced to favour the economic interests of farmers over those of animals. With the One Health framework emphasizing the threat of zoonotic diseases for public health, veterinarians seem to have yet another reason to let human interests prevail. Our claim is that a more holistic perspective on One Health gives veterinarians an opportunity to strengthen their position as animal advocates. We will argue that the best way to safeguard human health is to promote the health of animals and the environment because prevention is better than cure. This implies the veterinary profession should promote animal husbandry systems in which the health and welfare of animals are integrated with attention to public health and the environment. We will substantiate this empirical claim by elaborating the role of veterinarians in antimicrobial resistance policies in the Netherlands and conclude that to serve public health, the central responsibility of veterinarians should be to champion animal health and welfare.

Keywords: veterinarian, public health, animal health, antimicrobial resistance

Introduction

The motto of the Royal Veterinary Association of the Netherlands (RVAN) is: 'hominem animalumque saluti', which stands for: 'to the health of humans and animals'. When taken literally one could argue that human health is the primary concern of veterinarians, because this is mentioned first. However in our opinion, the One Health paradigm gives us reasons to question this.

One Health can be defined as the collaborative effort of multiple disciplines – working locally, nationally, and globally – to attain optimal health for people, animals and our environment (American Veterinary Medical Association, 2008). In this view, especially veterinary and human medicine should cooperate to address health challenges at the human-animal-environmental interface. One Health's starting point is the awareness that the health of humans, animals and the environment are interconnected. Up till now, ideas about One Health have been developed beyond zoonotic diseases (Lerner and Berg, 2015; Meijboom and Nieuwland, 2017). Comparative or translational medicine and the positive effects of interaction with animals on the health of humans in hospitals, prisons or elderly homes, can all be covered under the One Health umbrella.

However, in this paper the focus is on the added value of One Health in the discussion on veterinary responsibilities in the context of zoonotic disease threats from intensive livestock farming. Our position

is that One Health calls upon veterinarians to publicly address the underlying causes of the negative externalities of animal husbandry. As a consequence, veterinarians should promote animal husbandry systems based on animal health and welfare. The claim is that keeping our animals healthy and caring for their welfare will automatically reduce the risk of zoonotic disease transfer and thereby indirectly promote human health. To substantiate this, we will elaborate the problem of antimicrobial resistance.

One Health stresses that both animal and human health should be addressed in an integrated way, yet unfortunately the concept does not automatically provide moral guidance in situations of conflict. Nonetheless, the One Health concept can still be of relevance here. Although it is not an ethical framework, it helps to search for innovations to deal with these conflicts, such as the switch to a more preventive approach towards animal and human health.

Public health risks

In a small country like the Netherlands, the number of farm animals (125 million) exceeds the number of humans (17 million) by a sevenfold (Statistics Netherlands, 2016). In this context, animals and humans have a direct and mutual impact on each other's health. Especially food producing animals are associated with several public health risks. Some of these public health threats start from animal health problems that are related to intensive production systems. A one-sided focus on productivity and efficiency increases the incidence of diseases like mastitis in dairy cows and post-weaning diarrhoea in piglets (Fleischer *et al.*, 2001; Rhouma *et al.*, 2017). To correct these negative side-effects of intensive animal production systems, veterinarians started to prescribe considerable amounts of antimicrobials. Thus, highly efficient animal production systems became possible thanks to (prophylactic and curative) veterinary interventions.

It is clear that the use of antimicrobials in animals causes antimicrobial resistance in pathogenic and commensal bacteria in animals. Furthermore, there is scientific and public consensus on the importance of restrictive use of antimicrobials in animal husbandry due to its potential impact on public health (World Health Organization, 2017). This has also been acknowledged by the Dutch government. In the past years the Netherlands implemented strict reduction policies on the basis of the precautionary principle. This resulted in a 64,4% decrease of antimicrobial use in the period 2009-2016 (Veterinary Medicines Institute, 2017). Although farmers and veterinarians were worried about the negative effects of these restrictions, it seems that, to date, there is little evidence that animal health is seriously affected by the reduction of antimicrobials in food producing animals (Council on Animal Affairs, 2016). Apparently, veterinarians and farmers were able to safeguard animal health and hence food quality in other ways, such as vaccination and improving biosecurity. This seems to fit perfectly in a One Health perspective. However, if we consider that this case should be the rule rather than the exception in dealing with public health risks, this requires reflection on the responsibility of veterinary professionals.

Veterinary responsibilities

Societal expectations with regard to the professional responsibilities of veterinarians are changing. The work of veterinarians is no longer restricted to curative medicine in the interest of individual animals and their owners. A modern veterinarian must also have the competence to take collective and global perspectives into account and has responsibilities to care for animal welfare and public health as well (Meijboom, 2017). In reality, many veterinarians are struggling with this plethora of responsibilities. In daily practice veterinarians often have to deal with situations where human and animal interests are in conflict and no easy solutions are available.

Within the profession this has opened the discussion on veterinary responsibilities and how to deal with expectations from society. In the Netherlands, for instance, an open letter of a group of veterinarians organised in The Caring Vets led to an intense internal debate about the role of the profession in the transition towards a more sustainable type of animal husbandry (Burgers, 2017). The Caring Vets claim that a veterinarian's main interest should be animal welfare. In contrast, many Dutch farm animal veterinarians felt a responsibility for food safety, public health and increasing the economic profit of farmers, too. The tendency towards a greater veterinary concern for animal welfare is also reflected by a position paper of the British Veterinary Association (BVA), in which the authors argue that neither emotions nor economic factors may trump animal welfare considerations (British Veterinary Association, 2016). The BVA argues that improving animal welfare should be the profession's primary aim and motivation. The profession's increased concern for animal welfare seems one of the answers to the societal expectations regarding veterinary responsibilities. Although the recent attention focuses mainly on animal welfare – of which health is an essential part –, veterinarians are still expected to promote public health and health of the environment as well. This is not only a responsibility that is placed on the veterinarian, but is acknowledged by the profession too. It is broadly recognized that with their cross-species pathobiological expertise, veterinarians can make an essential contribution to public health.

However, to make these responsibilities operational is not easy. It is within the context of this internal and public debate, veterinarians have to deal with possible conflicts between these assumed professional responsibilities. For instance, to safeguard the health and welfare of piglets veterinarians treat post-weaning diarrhoea with antimicrobials like colistin, that is also considered a critical important antimicrobial for human health. Many veterinarians realize this, but feel they have no other options on the short term.

Although captured in the One Health concept, this framework does not yet prescribe how exactly the relation between human, animal and ecosystem health should be shaped. On one aspect, there seems consensus: it requires a closer cooperation between veterinary and human medicine. This resulted in successfully sharing and assessing signals of zoonotic diseases. However, this only covers part of the responsibility, because (1) the cooperation as such is not novel and (2) it represents a reactive strategy to address zoonotic health risks.

With regard to the first point, collaboration between veterinarians and human medicine is not as new as presented in One Health advocacy. In an historic analysis of zoonotic disease control in the Netherlands (1898-2001) Haalboom concludes that this cooperation was actually not the biggest concern. She claims that the real problem of ineffective zoonotic disease control was an underlying conflict of interest between public health and economic interests of the food industry (Haalboom, 2017).

This leads to the second restriction: the reactive strategy to public health risks. Some first interpretations of the One Health concept seem to suggest that veterinarians should mainly identify and combat zoonotic disease threats for the sake of human health (National Institute for Public Health and Environment, 2018). In that case One Health would be just another form of public health. In our opinion we should start from a broader, more holistic perspective of One Health that does not consider animals as mere sources of infectious diseases or other public health risks, but that recognizes the independent value of animal health and environmental health. Such a frame offers opportunities for veterinarians to address underlying reasons for public health threats of animal husbandry. This is a more effective strategy to deal with public health issues than reactive strategies. To structurally improve human and animal health, it is necessary to publicly discuss the negative externalities of animal husbandry. Based on their expertise veterinarians should play an important role in this debate, e.g. by stressing the animal and human health costs of animal production systems that are only focussed on cost efficiency. Moreover, in the long run

this strategy could help veterinarians to prevent some value conflicts between animal health and public health. Rather than solving all problems, this implies that veterinarians should share their concerns with society via advices to public policy, formulating and communicating position papers and hands-on advice to animal owners. The Dutch approach to tackle antimicrobial resistance is an example of how this could work.

One Health in practice

The risk of transmission of zoonotic diseases from farm animals to humans is greatly influenced by the current system of intensive animal husbandry (Kimman *et al.*, 2013). Over the past decades, intensification of animal husbandry in the Netherlands is predominantly driven by reducing costs. Because of the pressure of global markets on food prices, retail and food producers force farmers to scale up and focus on maximizing production against costs that are as low as possible. Within this system, veterinarians and farmers still aim to keep animals healthy. However, due to these suboptimal economic circumstances addressing health problems with high use of antimicrobials seemed to be most effective. It was a cheaper option to (preventively) treat bacterial infectious diseases than to invest in biosecurity, feed or housing. As a result, until 2011 the Netherlands led the European charts of antimicrobial use in farm animals. Since then, the Dutch government issued strict policies for antimicrobial use in animals because of scientific and societal worries about public health risks. This resulted in the so-called 'Dutch Model' to reduce antimicrobial use. This approach appeared to be very effective and led to a significant reduction of antimicrobial us. as the policy has even been presented as an example for reduction policies in animal husbandry (Sheldon, 2016). This success of the strategy can be partly attributed to a stronger position of veterinarians on farms (one-on-one contract, herd health plan and regular farm visits), registration and benchmarking of antimicrobial use, vaccination strategies and better biosecurity.

In spite of the success, the current question in the Netherlands is whether it is possible to reduce antimicrobial use any further. The Dutch government and the Veterinary Medicines Authority both indicate that additional reduction is possible, certainly on farms that are registered as structural high users (Ministry of Economic Affairs and Ministry of Health, 2016; Veterinary Medicines Institute, 2017). This will probably be true. However, under current circumstances veterinarians often have no choice but to treat sick animals with antimicrobials. Instead of attempting to maintain animal health with the use of antimicrobials under difficult circumstances, we argue that veterinarians could achieve more for animal health – and therefore human health – if they publicly addressed the underlying system errors. Veterinarians could use their Aesculapian authority (cf. Rollin, 2002) to inform the public about the downside of intensive food production, like antimicrobial resistance.

There are many definitions of human, animal and environmental health. In veterinary medicine health is sometimes defined in terms of production or reproduction (Gunnarsson, 2006). From this perspective, one could maintain that a focus on production automatically implies that animals have to be healthy. However, it is clear that pushing animals towards high productivity increases the risk of certain diseases (Rauw *et al.*, 1998). Within the context of zoonotic diseases and antimicrobial resistance it is perhaps more appropriate to understand One Health as the absence of disease (cf. Boorse, 1977). This definition is understandable for veterinary practioners and gives them a reason to promote disease prevention. However, within the One Health framework we would suggest to understand health as resilience: the capacity or ability of an individual or a system to react to an external force and to maintain or return to a state of equilibrium (Bhamra *et al.*, 2011). This concept can be applied to all components of One Health: humans, animals and ecosystems. This approach provides grounds to transform animal husbandry systems in a way that resilience of animals is promoted. Consequently human and environmental health will benefit from this.

With their specific expertise, the veterinary profession is qualified to guide this transition towards a sustainable animal husbandry in which antimicrobial use can be minimized further.

For individual veterinarians starting this process can be difficult. The problem is not rooted in moral indifference. For most veterinarians their main concern is the health and welfare of the animals under their care. However, the influence of farm animal veterinarians is limited, because they provide veterinary care on request of farmers. These interventions are often directed at solving disease problems on the short-term.

Of course, veterinarians will advise farmers how to prevent diseases and have healthier animals on the long-term as well. This can be problematic because veterinarians are dependent on the will and the (financial) possibilities of farmers to change circumstances for the better of their animals. Therefore, we propose to start this change at the level of professional organisations of veterinarians. They have a different position. They can translate their concerns into position papers that transcend the problems on individual farms. Veterinary organisations should publicly address structural underlying causes in the food production chain that precede diseases in animals, like the transport of veal calves or growth rate in broilers. They should call on all responsible parties in the food production chain (farmers organisations, food producers, banks and retail) as well as the government and consumers to take action. By doing so veterinary associations will support individual veterinarians in their daily work to improve animal health and welfare on farm level. Veterinarians truly contribute to the idea of One Health if they collectively promote animal husbandry systems that are not primarily focussed on production but on animal health and welfare.

Conclusion

Current intensive livestock farming in the Netherlands is at odds with animal health as well as public health. In our opinion, to optimally promote One Health the primary interest of veterinarians should be to promote animal health. Instead of the current curative and control focussed perspective of many One Health strategies to address zoonotic diseases, veterinarians should advocate a more preventive strategy with healthy animals as a precondition of animal husbandry. This starts with veterinarians who give animal health and welfare priority over economic interests of the food production chain if human health is at stake. On an individual level this can be a difficult task for veterinarians since they are financially dependent on farmers. Professional organisations of veterinarians, however, can play an important role: they can publicly address these issues, call for the necessary structural changes in animal husbandry systems and support individual farmers in making a step from a curative control based approach to a strategy that focus on prevention. In the long run, such a preventive approach can mitigate possible conflicts between animal health and public health veterinarians are confronted with.

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