Journal of Rural Studies 45 (2016) 43–53

Contents lists available at ScienceDirect

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud

Framing the agricultural use of antibiotics and antimicrobial resistance in UK national newspapers and the farming press

Carol Morris [a, *], Richard Helliwell [b], Sujatha Raman [b]

[a] School of Geography, University of Nottingham, United Kingdom
[b] School of Sociology and Social Policy, University of Nottingham, United Kingdom

ARTICLE INFO

Article history:
Received 17 August 2015
Received in revised form
13 January 2016
Accepted 6 March 2016
Available online 16 March 2016

Keywords:
Antibiotics
Agriculture
Antimicrobial resistance
Frames
Animal health

ABSTRACT

Despite links to animal disease governance, food and biosecurity, rural studies has neglected consideration of how actors make sense of the use of antibiotics in animal agriculture and the implications for animal and human health. As antimicrobial resistance (AMR) has become a high-profile problem, the contribution of animal antibiotics is frequently mentioned in scientific and policy documents but how different agricultural actors interpret its significance is less clear. This paper offers the first social scientific investigation of contestation and consensus surrounding the use of antibiotics in agriculture and their implications for AMR as mediated through mainstream news-media and farming print media in the UK. Frame analysis of four national newspapers and one farming paper reveals three distinct frames. A 'system failure' frame is the most frequently occurring and positions intensive livestock production systems as a key contributor to AMR-related crises in human health. A 'maintaining the status quo' frame argues that there is no evidence linking antibiotics in farming to AMR in humans and stresses the necessity of (some) antibiotic use for animal health. A third frame – which is only present in the farming media – highlights a need for voluntary, industry-led action on animal antibiotic use in terms of farmer self-interest. Common to all frames is that the relationship between agricultural use of antibiotics and problems posed by AMR is mostly discussed in terms of the implications for human health as opposed to both human and animal health.

1. Introduction

Within rural studies agricultural and other rural animals are now well established as a legitimate research interest, with animal health and welfare governance being one important theme (e.g. Bock and Buller, 2013; Enticott, 2009, 2012; Miele and Bock, 2007; Miele et al., 2005). Livestock disease episodes, for example, of bovine tuberculosis, avian flu, foot and mouth disease, and BSE, have been a particular focus of concern, reflecting their profound and immediate implications both for the agricultural community and its animals, rural society more broadly and policy-makers (Law, 2006; Law and Mol, 2010). However, in spite of the burgeoning interest in animal diseases and their management, the use of antibiotics in animal agriculture has received very little attention from social scientists. Although limited discussion has taken place in agricultural and environmental ethics (e.g. Anomaly, 2009; Duckenfield, 2013; Rollin, 2001; Pluhar, 2010) the relative absence of social scientific interest is remarkable for a number of reasons.

First, within rural studies there is a long tradition of examining the adoption of technologies in agriculture (Ruttan, 1996) with a recent special issue of the Journal of Rural Studies devoted to the co-production of animals and technology (Holloway et al., 2014). Given this history it might be anticipated that antibiotics would have been a technology subject to one of these forms of analysis. Second, biosecurity has become a central concept within rural animal studies (Donaldson, 2008; Donaldson and Wood, 2004; Enticott, 2008a; Enticott and Franklin, 2009; Enticott et al., 2012; Ilbery, 2012; Mather and Marshall, 2011; Nerlich et al., 2009). Arguably, antibiotics constitute an important technology in the 'securing of life' (Hinchliffe and Bingham, 2008) in animal agriculture and yet their role within this process has been ignored. A third reason why it is surprising that sociologists of agriculture have neglected antibiotics as an object of in-depth analysis is because of their link to food. To be sure, food scholars (e.g. Carolan, 2011; Weis, 2013) do highlight the presence of antibiotics in livestock

* Corresponding author.
E-mail address: Carol.Morris@nottingham.ac.uk (C. Morris).

http://dx.doi.org/10.1016/j.jrurstud.2016.03.003
0743-0167/

agriculture but as part of a wider critique; a detailed look at how different rural actors are making sense of the significance of antibiotic use is lacking.

The use of antibiotics in farming has long been controversial, particularly the practice of adding small doses to pig and poultry feed in order to promote growth. This has been challenged because of concerns that it stimulates the rise of antibiotic-resistant bacterial strains, making it harder to treat bacterial infections (Lappe, 1982). In the US, antibiotic growth-promoters have been the subject of a protracted disagreement between agri-industry groups arguing that the practice is unproblematic and groups campaigning against the practice, with both claiming that scientific evidence – or the lack thereof – supports their case (Martin, 2005). In 2013, the Food and Drug Administration (FDA) signalled a shift in its position, calling for industry to phase out the use of medically important antibiotics. The European Union (EU) took regulatory action as far back as 1999 to ban the use of several antibiotic growth-promoters overriding farming groups who, like their US counterparts, had argued that the practice posed no risks.

Recent developments in this domain indicate that social scientific investigation of the issue is especially timely. Despite the EU ban on growth-promoters, the question of the extent to which antibiotics ought to be used in farming and how they relate to problems posed by the rise of resistance remains unsettled. A recent case of 'pig-MRSA' reported in the British media suggests that familiar concerns about biosecurity in agriculture (e.g. around contamination of food by pathogens such as *E. coli* and Salmonella) are converging in new ways with those around the use of antibiotics (Harvey et al., 2015). In 2015, the *Guardian*, a British national newspaper, reported the discovery of the bacterium, MRSA, in pork products sold in British supermarkets. Notably, this became a story not only about food contamination, infection and ways of handling them, but also about what was represented as the root cause, namely: (over)use of antibiotics in pig farming; antibiotic-resistant bacterial strains (in this case, MRSA) becoming endemic in farms and eventually finding their way into livestock products; and the implications for human health. Although the distinction was made between livestock-associated MRSA and the human variant, it was stressed that both biosecurity measures and 'responsible antibiotic usage' were needed in order to avert a wider health crisis in the future.

Responsible antibiotic use has particular resonance at a time when antibiotic and other forms of antimicrobial resistance (commonly referred to by the acronym, AMR) have become prominent policy concerns. The UK Department of Health together with the Department of Food, Agriculture and Rural Affairs (DEFRA) issued a 5-year AMR Strategy in 2013, highlighting multiple threats from the rise of AMR and initiatives for prudent use of antibiotics in both humans and animals. The Prime Minister commissioned a review of AMR by economist Jim O'Neill who recommended, in the first of a series of reports for the review, "coherent international action" on antibiotic use "across humans, *animals* and the environment" (O'Neill 2014, p. 2, emphasis added). These documents appear to signal an emerging policy consensus on the need to curtail all uses of antibiotics including farm-level usage that extends beyond growth-promoters.

Yet, this consensus is more ambiguous than initially apparent with the UK AMR Strategy calling for action to reduce farm-level antibiotic use and simultaneously appealing to scientific evidence to claim that "clinical issues with antimicrobial resistance that we face in human medicine are primarily the result of antibiotic use in people, rather than the use of antibiotics in animals" (Department of Health and DEFRA, 2013, pg. 8). In evidence presented to the House of Commons Select Committee on Science and Technology (2014), groups campaigning for changes in agricultural systems have challenged this argument with a different interpretation of the evidence, suggesting that the link between farm antibiotics and problems of AMR in human health might be more open to contestation than apparent from headline policy statements. Against this background, key questions arise that social scientists are well equipped to address though the few social science papers on AMR (Brown and Crawford, 2009; Landecker, 2015; Lee and Motzkau, 2013; Nerlich, 2009) largely ignore the agricultural dimension. Martin (2005) and a series of other contributors to a book on scientific controversies (Barlam, 2005; Mlot, 2005; Salyers, 2005) do explore agricultural antibiotics but focus on controversy over their use as growth-promoters in the US. Although Carolan (2011) highlights the role of antibiotics in contributing to the production of his primary object of interest – cheap food – and its real costs and Weis (2013) signals the role of antibiotic use in fuelling the process of 'meatification' these authors are not concerned with the controversy or different positions on antibiotics in agriculture. By contrast, we focus on the UK – where growth-promoters are banned under EU legislation, but other uses are permitted – where a detailed analysis of discussions around farm-use of antibiotics has not been forthcoming.

The paper is motivated by a lack of clarity on how different agricultural actors position themselves on how antibiotic use should be governed. So, beyond the policy context, how strong is the consensus in the UK that antibiotic use in farming needs to be curtailed? Who are the key actors involved in the debate, what perspectives do they adopt and on what basis? Also of interest is the relative significance accorded to animal health vis-à-vis human health in the debate on antibiotic use. The UK's AMR Strategy is framed in terms of clinical problems created by AMR in human medicine, but it makes no mention of possible implications for animals or for agricultural systems more generally. UK policy also makes reference to the concept of OneHealth where human and animal health are seen as linked, but how far does this carry over into wider discussions of agricultural antibiotics and AMR? How do the farming community and groups campaigning to transform farming practices perceive these issues?

This paper undertakes a preliminary examination of both contestation and areas of consensus surrounding the use of antibiotics in agriculture and their implications for AMR as these are publicly expressed and mediated through mainstream news-media and farming print media in the UK. Specifically, it will explore how actors involved frame the relationship between agricultural use of antibiotics and problems posed by AMR. In doing so the paper argues that this relationship is discussed largely in terms of the implications for human health as opposed to both human and animal health in spite of the mobilisation of the Onehealth agenda. Within this debate scientific evidence serves in the familiar role of arbiter, a role that remains impossible to fulfil given that evidence is open to interpretation and uncertainty. However, new opportunities for reframing the issue in terms of farmers' self-interest in voluntary action on animal antibiotic use (rather than evidence on health risks per se) are opening up, perhaps reflecting a wider neoliberal turn in animal health governance (Enticott, 2008b, 2012). It should be noted that while our analysis sheds light on debate that is played out in the media on how farm-level antibiotic use should be governed, investigation of the policymaking process in which governance decisions are made on the subject is beyond the scope of this paper.

The paper will proceed as follows. In the next section further contextualisation is provided by a discussion of AMR and the recent efforts to govern the use of antibiotics in agriculture. The paper then specifies a methodological approach to studying the different framings of agricultural use of antibiotics and AMR before justifying an investigation of these frames through analysis of various forms