

Animal health services delivery systems and disease surveillance in the smallholder pig value chain in Uganda

MM Dione^{1*}, EA Ouma¹, P Lule², D Pezo¹

¹International Livestock Research Institute, Kampala, Uganda

²Department of Agribusiness and Natural Resources Economics, Makerere University, Uganda

*M.Dione@cgiar.org

Keywords: smallholder, disease, surveillance, pig, Uganda

Summary

The assessment of the performance of the pig health delivery services is essential in order to determine constraints and opportunities for intervention along the value chain. Questionnaires and face-to-face interviews were administered to drug stockists, paraveterinarians and veterinary officers in three districts of Uganda in order to assess the pig health delivery and the disease surveillance systems. The results show that most of the service providers are para-veterinarians who act in a poorly-organized system, characterized by poor implementation of quality assurance of the products. The main constraints are related to lack of professional animal health workers, poor drug handling and administration, high transaction costs of drugs and services and poor transport means related to bad road status and high cost of fuel. As a result of these, smallholder farmers face low productivity and high pig mortality due to low effectiveness of treatments coupled with weak biosecurity measures. There is need to strengthen the health services delivery node and reinforce health delivery systems policies in the smallholder pig value chain in Uganda.

Introduction

Pork has become increasingly important in Uganda. Whereas pork accounted for only 1-2 % of the 11-12 kg/yr per capita meat consumption in the 1960s, it now accounts for at least a third of the current 10 kg/yr (1). Pigs help both rural and urban households to improve livelihood security and also serve as a source of cash in times of need.

However, high disease burden is considered to be one of the major limiting factors to pig production in Uganda (2). As a result of liberalization and decentralization of the provision of veterinary services in Uganda in the late 1980s, many actors are now offering veterinary services without adequate regulation (3). An in depth value chain assessment at the producers node in smallholder pig value chains using focus group discussion techniques showed the concerns of farmers regarding the poor quality of veterinary products and services (4).

However, close monitoring of service delivery and disease monitoring systems is needed to ensure that farmers have access to high quality animal health products and services. This study aims to characterize the existing animal health delivery systems and pig disease surveillance mechanisms in order to support interventions along the pig value chain in Uganda.

Materials and Methods

The study was conducted between March and July 2013 in Masaka, Mukono and Kamuli districts, where the Smallholder Pig Value Chains Development (SPVCD) project in Uganda operates. Thirty six drug stockists and 53 village veterinarians were randomly selected from lists of village veterinarians and drug stockists provided by livestock production/veterinary staff of the local governments in the three districts. The village veterinarians and drug stockists were interviewed using structured questionnaire. The District Veterinary Officer of each district was also interviewed. The data collected were entered in CSPro version 4.1 and descriptive analyses conducted in STATA version 13.

Results

Typology of drug stockists: There are three categories of drug stockists: retailer drug shops (55%), they buy drugs from wholesalers or from veterinary pharmacies in their area and stock in their shop in order to re-sell directly to farmers and paraveterinarians; veterinary pharmacists (31%), they are veterinarians owning animal drug shops, and consist of university trained veterinary medicine professionals; and wholesale drug shop sellers (14%), who buy big quantities of drugs from drug shops in the capital Kampala and store them in the district, from where retailers, paraveterinarians and private veterinarians get supplies.

The majority of drug sellers are male (72%) with long work experience, 44% between 5 to 15 years, and 22% for more than 15 years. Their levels of training vary, with 56% holding a Diploma, 22% a Bachelor in Veterinary Medicine, 17% a Certificate, 3% a Bachelor of Science and 3% high school level. Ninety eight percent of drug stockists sell drugs and at the same time provide other services including advisory (69%), treatment (53%), farm planning (6%), sale of feeds (3%) and farm equipment (3%).

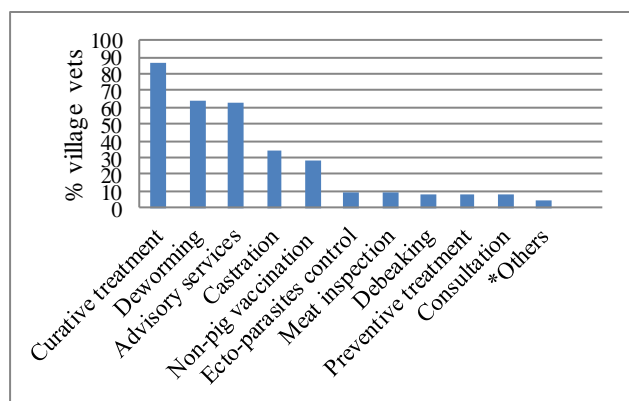
Drug use and quality management: Dewormers are the most sold drugs by stockists (93%), antibiotics (4%) and multivitamins (3%) are also sold. The most used anti-parasitic drugs by farmers are: *albendazole* (46%) and *ivermectin* (40%). Also *levamisole*, *praziquantel* and *piperazine* are used. Among the range of antibiotics used, *oxytetracyclin* (37%) was ranked highest followed by *penicillin/streptomycin* (28%), *tylosin* (18%), sulfonamides (16%) and *almayalin* (1%).

Fifty four per cent of stockists manage to re-stock their drugs more than once a month to avoid challenges due to expiration, while 37% re-stock once a month and only 9% take more than a month to re-stock. In case of drug expiry, 28% of stockists send back the expired drugs to their supplier, 22% dispose them off by throwing in the pit latrines or burying them, 6% remove them from the shelves, but don't give any details on the next destination, 3% give the drugs to the farmers free of charge and another 3% alert the district drug inspector for advice. Drug stockists claimed that the main causes of drug ineffectiveness are related to farmer's self-medication, including wrong dosage due to poor mixing (38%), poor administration (24%) and poor handling and storage (19%).

Typology of village veterinarians: The majority of village veterinarians hold a diploma in animal husbandry (55%) or a certificate in any topics related to agriculture or livestock (28%). Only 5% hold advanced degree training in animal health including Bachelor of Veterinary Medicine and the others have training related to extension services. Seventy-nine per cent of them are established in private business while 9% and 8% are hired by development institutions such as NGOs or local government, respectively while 2% are employed by a relative and another 2% act as volunteers. The majority (97%) of them have secondary activities including feed selling, crop production or breeding services.

The main services provided by the village veterinarians are curative treatments, deworming which is also applied as preventive measure and advisory services (Figure 1). Advisory services include, training farmers in piggery business management.

Figure 1: Type of veterinary services provided by the village veterinarians (n=53)



*others: Artificial insemination; Movement permit insurance

Thirty-six per cent of the veterinary service providers cover between 2-5 villages per subcounty; 34% cover between 6-10 villages; 15% between 12-20 villages and 15% more than 20 villages. They spend equal time providing support to pig and cattle (27% each), followed by poultry (23%) and small ruminants (22%). Very minimal time is spent on other species including dogs and cats. Within the pigs business, smallholder pig keepers are the main clients, as

they represent 63%, followed by medium-large scale pig holders (25%) and group producers (12%).

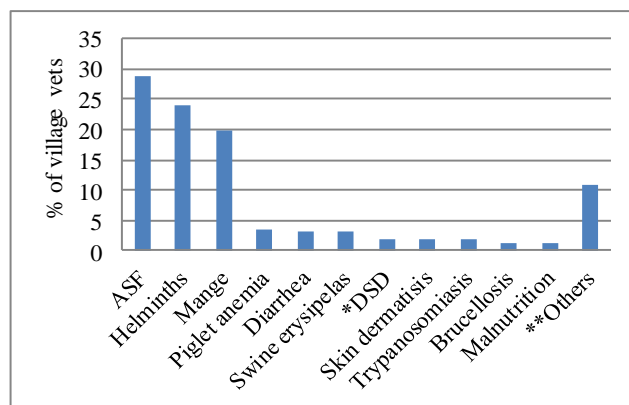
Most common diseases encountered: The most common pig production diseases encountered by the village veterinarians are African swine fever (ASF), helminthiasis and mange infestation (Figure 2). The most common zoonotic diseases are brucellosis, porcine cysticercosis and helminthiasis (Figure 3).

Pig disease surveillance/monitoring: Only 36% of village veterinarians declare practicing disease surveillance and monitoring as part of their activities. Sixty nine per cent of them do surveillance for swine fever in general by regular monitoring of the body temperature of the pigs, while 16% through visualization to monitor parasite infestations. There is no ongoing vaccination program for pig diseases in Uganda.

Alert on ASF outbreaks are recorded based on clinical symptoms. The first action taken by the district veterinary office after outbreak detection is sensitization of farmers on biosecurity measures and quarantine imposition. At the same time, samples are collected from the target pig population and sent to the National Animal Diseases and Diagnostic Laboratory (NADDEC). According to the interviewees, the feedback of laboratory results is often late or lacking and quarantine reinforcement is also very weak, due to lack of logistic facilities resulting in limited movement for the veterinary officer to monitor the animals for the entire required period. In addition, the lack of knowledge by health workers of clinical symptoms for ASF and other diseases often result into poor diagnosis which results into poor recording of cases.

Twenty-five per cent of village veterinarians declare being part of a platform on information sharing on disease control, outbreaks monitoring and syndrome surveillance. The platform is mainly constituted by farmers who are organized in groups and hold regular meeting.

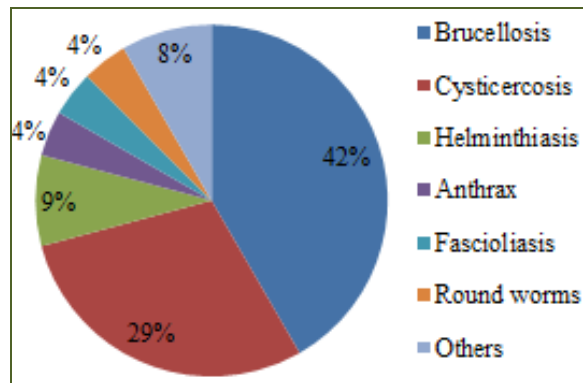
Figure 2: Most common pig diseases encountered by village veterinarians (n=53)



*Diamond Skin Disease **Coccidiosis; Collibacillosis; Respiratory syndroms; Cysticercosis; Foot and Mouth Disease; Agalactia; Hog cholera; Lumpy skin disease; Salmonellosis; Stomoxysis; Swine disentry; Ticks and flies.

Only 4% of the village veterinarians declare having interaction with public health authorities including medical doctors on issues related to zoonoses and food-borne diseases. Topics addressed are meat hygiene, porcine and neuro-cysticercosis, general control of worms, hygiene through awareness campaigns, and training.

Figure 3: Pig zoonoses encountered by village veterinarians (n=53)



*others: Jiggers, Meningitis, Trichinellosis

There is lack of proper pig slaughtering facilities, in all districts where the survey was done, and the few meat inspection activities implemented are based on clinical lesions of organs, mainly targeting those caused by worms. These activities are done by the veterinary services in collaboration with the public health sector usually prior to “big days” like New Year and religious ceremonies occasions.

Main constraints faced by animal health service providers include self-medication practiced by farmers, lack of knowledge of farmers on pig management, poor drug handling and storage, lack of transportation means for health workers, and poor market harmonization.

Discussion

The effectiveness of delivery of veterinary services to smallholder farmers is a key factor influencing the productivity of the livestock sector (5). In the pig value chain in Uganda, the largest part of veterinary service activities is delivered by paraveterinarians. This category of providers emerged as a result of liberalization and decentralization of veterinary service provision in the late 1980s. Many of these actors are involved in providing veterinary services without adequate regulation and supervision (3). However it should also be noted that they fill in the gaps of veterinary service provision since the qualified veterinarians are very few and are often reluctant to establish their business in rural areas because of low profit. Paraveterinarians are present in remote areas and the services provided are usually affordable to farmers. In our study area, poor implementation of quality assurance systems and policies in the pig industry has resulted in disorganization of the business, thus affecting the pig farming negatively.

The commonly used drugs by farmers are dewormers, antibiotics and multivitamins. The fact that worms and ecto-parasites are the most common pig health problems, explain why dewormers are used at a high rate. The broad-spectrum anti-parasitic activity for ivermectin for both internal and external parasites, and for albendazole for internal parasites has made them widely used. Some farmers use antibiotics to treat fever and also for preventive measures. However, poor quality management of these drugs has been one of the major constraints. This could be related to poor handling and administration, or self-medication practiced by farmers. Farmers end up poorly administering the drugs to the pigs with over or under dosage or wrong administration route. Lack of control of drugs could result into an increase in pathogen resistance to specific drugs mainly antibiotics and acaricides.

The lack of operational disease surveillance systems and vaccination programs on pigs in Uganda has increased the worry among the smallholder pig actors because it contributes to increasing the risk to diseases for the pig population. Few para-veterinarians help in collection of basic pig health parameters regularly which is useful for the early detection of a set of infections. Capacity of para-veterinarians should be enhanced in order to involve them as much as possible in the diseases surveillance system.

Zoonotic infections are often overlooked by veterinary services although they are highly reported by health service providers. No action is taken by public health authorities or by farmers themselves who usually don't have knowledge on them. The connection between public health actors is still very weak, the later should be re-enforced in order to be able to successfully tackle these diseases.

There is need to strengthen the pig value chain and reinforce policies in the area of health services delivery in order to improve productivity in a sustainable maner.

References

1. FAOSTAT, FAO (2010) Statistics Division. Food and Agriculture Organization of the United Nations.
2. Muhanguzi, D., *et al* (2012), *Vet. World*. 5: 346-351.
3. Ilukor, J., *et al* (2012). *Social and Institutional Change in Agriculture Development*. University of Hohenheim.
4. Ouma, E., *et al* (2013) 4th International Conference of the African Association of Agricultural Economists held in September 2013 in Hammamet, Tunisia on Commercialising Agriculture in Africa: Social, Economic and Environmental Impacts. Conference proceedings.
5. Holden, S., *et al*. (1996). *Livestock In Development*. A report to the Overseas Development Administration of the United Kingdom.