Iranian Journal of Virology 2019;13(1): 41-45

Short Communication

Vaccine Knowledge and Attitude of veterinarians working in veterinary vaccine supplier and administrator centers in Iran

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Abstract

Background and Aims: Poultry vaccines are intensively used to prevent and control infectious poultry diseases. The aim of vaccination is to reduce the occurrence of clinical disease. Several factors affect vaccination programmers which emphasize the crucial responsibility of person designing the vaccination program. There are limited studies evaluating the knowledge and attitude of veterinarians toward veterinary vaccination. A veterinarian working in veterinary vaccine supplier and administrator centers have a significant role in assisting farmers and poultry owners for vaccination and disease control decisions. The objective of this study was to evaluate the perception, knowledge, and attitude of a veterinarian regarding poultry vaccination. Semi-structured interviews were conducted in 31 centers in different provinces of Iran. The data were analyzed using Excel and SPSS. The analysis revealed that most of the veterinarians are highly familiar with veterinary vaccines, vaccination programs, side effects and effect of maternal antibody on vaccination. However, most of them believed that poultry owners have low knowledge about vaccination and decided to put the opinion of poultry owners in low priority during decision making. Effectiveness of the vaccine and scientific evaluation of new vaccine was the main criteria for choosing a vaccine for the herd. Most respondents believed that proper vaccination program and matching between field and vaccine are the main factors for successful vaccination. Furthermore, they believed that the most effective route of vaccination for ND, IBD, and IB are eye drop, drinking water and spray respectively. Further evaluation of poultry owners regarding their knowledge of vaccination is recommended.

Keywords: Poultry, Vaccination, Veterinarians, Iran.

Introduction

Intensive poultry production is considered as one of the largest economic activity in many countries [1]. However, poultries are susceptible to a wide range of infectious disease. Viral diseases such as Newcastle disease (ND), infectious bronchitis (IB), avian influenza (AI) and infectious bursal disease (IBD) are still a great challenge, especially in developing countries causing considerable

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economic losses [2]. Although several strategies have been implemented disease control, currently the administration of vaccines remains one of the most important tools for disease control [3, 4]. The major goal of vaccination in poultry production is reducing the occurrence of clinical mani-festation of diseases at farm level .It has been proved that appropriate vaccinations can mitigate the effect of infections on the farm and enhance performance and productivity in the herd [5]. The history of vaccination in veterinary medicine dates back to the 16th century when lambs were inoculated with sheep pox [6]. Proper and science-based implementation of vaccination is important in the poultry industry, as vaccination contributes to the control and prevention of diseases. Successful and effective vaccination needs correct administration route, appropriate time and selection of the proper population of animals [7]. Balance of costs, vaccine adverse side effects, the safety of workers, type of poultry production, the densities of different bird species, the prevailing disease situation, vaccine availability, the use of other vaccines and available resources need to be considered before designing a vaccination program [8]. In Iran, vaccines are prescribed and administered by practitioners and authorized veterinarians working in. Little is known about the general and specialized knowledge and attitude towards vaccines of veterinarians working in veterinary vaccine supplier and administrator centers. The objective of this study was to collect data on vaccine knowledge and attitude of Iranian veterinarians across the country.

Methods

The current study was carried out over a 3-week period (December 2018). The target population was 31 veterinary vaccine supplier and administrator centers in different provinces of Iran. The authorized veterinarians of the centers were asked to participate in the study. Veterinarians were asked to complete a two page anonymous, close-ended and semi-structured questionnaire on-site. The questionnaire tried to assess the general and specialized knowledge and attitude towards veterinary vaccines, vaccination programs, route of administration, side effects, vaccine brands and manufacturers. The data was collected and recorded in the Excel sheet.

Descriptive statistics and graphs were presented for variables.

Results

A total of 31 veterinarians were interviewed. In Tables 1 and 2, data on general and specialized knowledge of veterinarians regarding poultry vaccination are shown.

Table 1. General knowledge and attitude of veterinarian towards veterinary vaccines

Parameter	Percentage	P-value
Fully familiar with veterinary vaccines		
Yes	96	< 0.0001
No	4	
Participation in workshops on veterinary vaccines		
Yes	56	0.23
No	44	
Familiar with proper use of vaccines based on different condition		
Yes	88	< 0.0001
No	12	
Familiar with vaccine side effects and how to reduce them		
Yes	88	< 0.0001
No	12	
Familiar with antibody titer and their effect on vaccination		
Yes	76	< 0.0001
No	24	
Familiar with procedures to enhance vaccine effects		
Yes	76	< 0.0001
No	24	
Familiar with emergency vaccination for different diseases		
Yes	64	0.005
No	36	
Agree with the use of all vaccine brands in different provinces		
Yes	20	< 0.0001
No	80	
Familiar with reasons of vaccination failure		
Yes	100	< 0.0001
No	0	
Familiar with the prevalent disease of the poultry industry		
Yes	92	< 0.0001
No	8	
Farmers are fully familiar with vaccines and proper vaccine administration		
Yes	36	0.005
No	64	

Table 2. Specialized knowledge and attitude of veterinarian towards poultry vaccines

Parameter	Percentage	P-value
Familiar with "Clone" concept in Newcastle disease vaccination		
Yes	96	< 0.0001
No	4	
Familiar with different serotypes of Infectious Bronchitis (IB) virus		
Yes	92	< 0.0001
No	8	
Familiar with the importance of live vaccines in poultry		
Yes	84	< 0.0001
No	16	
Familiar with the importance of inactivated vaccines in poultry		
Yes	80	< 0.0001
No	20	
Familiar with a special term associated with vaccines such as LD50, ICPI, and HAU		
Yes	40	0.046
No	60	
Sufficient information about the vaccine is provided by the manufacturer or vaccine import company		
Yes	76	< 0.0001
No	24	
Prefer to use the products of which manufacturer company		
Internal	22	< 0.0001
External	78	
Criteria for purchasing and using a vaccine		
Preference of poultry owner	20	< 0.0001
The advice of poultry clinicians	52	
The price and offered discounts	72	
The popularity of the vaccine brand	32	
Effectiveness of vaccine	88	
Farmers are fully familiar with vaccines and proper vaccine administration		
Yes	36	0.005
No	64	
Vaccine preference in broiler flocks		
Live vaccines	13	< 0.0001
Inactivated vaccines	4	
Both	83	
Vaccine preference when using inactivated vaccines		
Monovalent	15	< 0.0001
Polyvalent	85	
Proper route of live Newcastle vaccine administration		
Spray	36	< 0.0001
Eye drop	80	
Drinking water vaccination	12	
Proper route of live IB vaccine administration		
Spray	56	< 0.0001
Eye drop	48	
Drinking water vaccination	16	
Proper route of live Infectious Bursal Disease (IBD) vaccine administration		
Spray	4	< 0.0001
Eye drop	4	
Drinking water vaccination	80	
Criteria for purchasing and using a new vaccine brand		
Preference of poultry owner	13	0.005
The advice of poultry clinicians	29	
Selection based on scientific assessment	37	
Company advertisement	21	
Factors affecting successful Newcastle vaccination		
Vaccination program	26	0.177
Type of vaccine (alive or inactivated)	14	
Vaccine brand	14	
Route of administration	23	
Matching between field and vaccine strain	23	
Factors affecting successful IB vaccination		
Vaccination program	36	0.004
Type of vaccine (alive or inactivated)	13	
Vaccine brand	15	
Route of administration	25	
Matching between field and vaccine strain	23	
Factors affecting successful IBD vaccination		
Vaccination program	16	0.804
Type of vaccine (alive or inactivated)	13	
Vaccine brand	15	
Route of administration	16	
Matching between field and vaccine strain	20	
Factors affecting successful Avian Influenza (AI) vaccination		
Vaccination program	22	0.257
Type of vaccine (alive or inactivated)	17	
Vaccine brand	18	
Route of administration	15	
Matching between field and vaccine strain	28	

Discussion

The current study tried to investigate the beliefs, knowledge, and attitude of veterinarian employed in veterinary vaccine centers in Iran toward veterinary and poultry vaccination.

The study population included veterinarians working in different provinces of Iran.

The result shows that most veterinarians are fully familiar with veterinary vaccines and their proper administrations. Regarding that vaccination is considered as an important element in disease prevention and control programs, these high level of knowledge contributes to the successful prevention of diseases.

Generally, veterinarians are involved in different steps during the vaccination decision-making process and contribute to facilitating awareness of the potential need to vaccinate.

Furthermore, most veterinarians were aware of prevalent infectious disease in their regions.

Since farmers and poultry owners rely on vets for disease control and prevention, high knowledge level on local diseases is crucial to perform the task successfully.

Maternal antibodies are believed to interfere with the protective effects of vaccination and led to a remarkable reduction in seroconversion and clinical protection [9, 10].

Fortunately, veterinarians reported a high level of knowledge regarding this issue.

Despite the wide range of benefits offered by vaccines, sometimes they are accompanied by adverse side effects [11, 12]. Such side effects include local reactions, toxic shock syndrome, anaphylaxis and even death [13]. Despite their rare occurrence, adverse side effects following vaccination procedure should be managed carefully. Veterinarians reported a high level of knowledge regarding unwanted side effects due to vaccination.

The veterinarians in this study believed that farmers and poultry owners have low knowledge regarding vaccination and considered themselves as being responsible for disease control and vaccination on their farm. Farmers were given least priority during the administration of previously used or new vaccine. Although veterinarians have the main responsibility in disease control and prevention, previous studies emphasize the need for an integrated approach and enhanced vet–farmer relationship which put some responsibilities on both sides [14, 15]. The opposite opinions between farmer and veterinarian have been reported previously [16] which acts as a barrier in the vaccination process. Effective communication between farmers and vets could play an important role in achieving optimization of vaccination strategies.

Most veterinarians preferred to use vaccines produced in external companies. The high quality of externally produced vaccines probably is the main motive to use them. There is an alert for internal vaccine producing companies to improve the quality of vaccines while the prices are still affordable.

Successful vaccination program depends on various factors. During designing a vaccination program these factors should be considered to prevent vaccine failure.

A vaccination failure occurs when the herd doesn't develop sufficient antibody titer levels and stay susceptible to a field disease outbreak. Vaccination failure is mainly attributed to antigen factors, Improper formulation of vaccine, non-usage of local antigens, Improper storage temperature, exposure to direct sunlight, Use of expired vaccines, Stress on birds, Immunosuppressive diseases, Interaction with maternal antibodies, Improper route of administration, Lack of booster dose and climatic factors [2].

Diseases such as AI, ND, IB, and IBD are endemic in Iran and if not prevented properly, cause serious economic losses to poultry owners. All veterinarians believed that proper and scientific vaccination program and matching between vaccine and field strain are key factors to reach a successful vaccination. Furthermore, they believed that the most effective route of vaccination for ND, IBD, and IB are eye drop, drinking water and spray respectively. These findings are useful for practitioners and farmers who prescribe and perform vaccination in farms.

This study provides clear evidence that veterinarians have a leading role in assisting farmer decision-making in all stages of vaccination, including vaccine distribution and advice on implemen-tation.

Given this finding, it is recommended to investigate the attitudes of farmers and poultry owners towards vaccination and how they evaluate the role of veterinarians in disease prevention.

Ethics

We hereby declare all ethical standards have been respected in preparation of the submitted article.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. OIE. Epidemiological analysis and interpretation of serious poultry diseases. Available on: https://www.oie.int/doc/ged/D5653.PDF.
Accessed: 5/4/2019. 2019 [cited 2019 5/4/2019]; Available from: https://www.oie.int/doc/ged/-D5653.PDF.
2. Sharif, A. and T. Ahmad, Preventing Vaccine Failure in Poultry Flocks, in in: Immunization-Vaccine Adjuvant Delivery System and Strategies. 2018, IntechOpen.
3. Tizard, L.R., Veterinary Immunology: an introduction. 8th ed, ed. R.M. Schubot. 2009, St Louis, Mo: Elsevier. 574.
4. Knueppel D, Cardona C, Msoffe P, Demment M, Kaiser L. Impact of vaccination against chicken Newcastle disease on food intake and food security in rural households in Tanzania. Food Nutr Bull. 2010; 31(3):436-445.
5. Bosha JA, Nongo NN. Commom breaches in poultry vaccine handling and administration in makurdi metropolis: A recurrent phenomenon in the tropics. Vom J Vet Sci. 2012;9:11-16.
6. McVey S, Shi J. Vaccines in veterinary medicine: a brief review of history and technology. Vet Clin North Am Food Anim Pract. 2010;40(3): 381-392.
7. Cresswell E, Brennan ML, Barkema HW, Wapenaar W. A questionnaire-based survey on the uptake and use of cattle vaccines in the UK. Vet Rec Open. 2014;1(1):e000042.
8. Marangon S, Busani L. The use of vaccination in poultry production. Rev Sci Tech, 2007;26(1): 265.
9. Forrest HL, Garcia A, Danner A, Seiler JP, Friedman K, Webster RG, et al. Effect of passive immunization on immunogenicity and protective efficacy of vaccination against a Mexican low-pathogenic avian H5N2 influenza virus. Influenza Other Respir Viruses. 2013;7(6):1194-1201.
10. Faulkner O, Estevez C, Yu Q, Suarez DL. Passive antibody transfer in chickens to model maternal antibody after avian influenza vaccination. Vet Immunol Immunopathol. 2013;152(3-4):341-47.
11. Valli JL. Suspected adverse reactions to vaccination in Canadian dogs and cats. Can Vet J. 2015; 56(10):1090–1092.
12. Ko EY, Jung S, Jeong HK, Han JH, Son JH. Effects of foot-and-mouth disease vaccination location and injection device on the incidence of site lesions in pork. Korean J Food Sci Anim Resour 2018;38(3):498-505.
13. Rashid A, Rasheed K, Asim M, Hussain A. Risks of vaccination: a review. J Venom Anim Toxins incl Trop Dis. 2009;15(1):19-27.
14. Statham J, Green M. Cattle veterinary services in a changing world. Vet Rec. 2015;176(11):276-280.
15. Richens I, Hobson-West P, Bernnan ML, Lowton R, Kaler J, Wapenaar W. Farmers' perception of the role of veterinary surgeons in vaccination strategies on British dairy farms. Vet Rec. 2015;177(18):465.
16. Hall J, Wapenaar W. Opinions and practices of veterinarians and dairy farmers towards herd health management in the UK. Vet Rec. 2012; 170(17): 441.