Factors Affecting Anthrax Vaccine Intake in Meherpur District of Bangladesh

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Roll No: 0220/06

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Applied Veterinary Epidemiology

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Author

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List of symbols and abbreviations

APA	Annual Performance Agreement
AVA	Anthrax Vaccine Adsorbent
CEAL	Community Extension Agent for Livestock
CI	Confidence Interval
CVASU	Chattogram Veterinary and Animal Sciences University
$\chi 2$	Chi-square
DD	Divisional Director
DLO	District Livestock Officer
DLS	Department of Livestock Services
Ho	Null Hypothesis
HSC	Higher Secondary School Certificate
icddr,b	International Centre for Diarrheal Disease Research, Bangladesh
IEDCR	Institute of Epidemiology, Disease Control and Research
IgG	Immunoglobulin G
KII	Key Informant's Interview
LDDP	Livestock and Dairy Development Project
LRI	Livestock Research Institute
LSP	Livestock Service Provider
MS Excel	Microsoft Excel
NATP-2	National Agricultural Technology Project Phase-II
NDVI	Normalized Difference Vegetation Index
OR	Odds Ratio
PA	Protective Antigen
rPA	Ribonucleic Protective Antigen
SALO	Sub Assistant Livestock Officer
USA	United States of America
ULO	Upazilla Livestock Officer
WHO	World Health Organization

Abstract

Anthrax (*Bacillus anthracis)* is an acute infectious zoonotic disease. Outbreaks are repeatedly happening in animals and humans at anthrax-prone zones of Bangladesh; between 2009 and 2010, 140 animal cases and 273 human cases in 14 anthrax-affected villages were investigated by the International Centre for Diarrheal Disease Research, Bangladesh (icddr,b) and the Institute of Epidemiology, Disease Control and Research (IEDCR). Later on, 11 anthrax occurrences reported in Bangladesh in 2011 and a number of 1668 animal cases and 122 human cases were involved. Therefore, considering the public health significance of the circumstance, it is of utmost importance to implement effective preventive measures, particularly to vaccinate the livestock against anthrax. The overall aim of the study was to evaluate the production and distribution channel and practices of anthrax vaccine intake to livestock with the specific objectives to understand the factors affecting the intake of anthrax vaccine in livestock population in Meherpur district. A total of 311 cattle and 300 goat farms were randomly selected for interviewing the farmers. Besides, key informant interview (KII) was done to understand the vaccine distribution channel in Bangladesh. The recorded data were analyzed by STATA-13. The existing vaccine distribution channel was drawn based on the opinion of KII. A substantial association of 'educational status' (57.78% HSC & above, 95% CI, P=0.002) of cattle farmers, 'gender' (male-22.11%, female-33.66%, 95% CI, P=0.04) and 'age'(19 to 33: 40%, 34 to 36: 26.92%, 37 to 54: 19.48%, 55 to 78: 34.29%) of the goat farmers were observed with the outcome variable (intake of vaccine). Moreover, knowledge gap, experience of farming, willingness to use anthrax vaccine, source of vaccine etc. might have contributed to the lower intake of anthrax vaccine by the farmers. From the current investigation, it can be concluded that, the vaccine distribution channel needs to be rearranged through proportionate allocation of doses according to livestock population and requirement. Again, the factors found accountable for the lower intake of anthrax vaccine should be addressed by training, advocacy, communication and social mobilization.

Keywords: Anthrax, outbreak, vaccine, training, advocacy etc.