VACCINATION STRATEGY FOR PREVENTION AND CONTROL OF ECONOMICALLY IMPORTANT LIVESTOCK DISEASES IN KARNATAKA

Prakashkumar Rathod, Mahesh Chander and B. A. Desai

Division of Extension Education

Indian Veterinary Research Institute, Izatnagar-243122 (U.P) India

Corresponding author : prakashkumarkr@gmail.com

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ABSTRACT

Foot and Mouth Disease (FMD), Haemorrhagic septicemia (HS), Black quarter (BQ), Peste des Petits Ruminants (PPR) and Enterotoxaemia (ET) are the major livestock diseases in Karnataka state. The authors observed that, though regular efforts were made by SDAH, Karnataka to control the disease incidence, an effective timely and location specific vaccine interventions must be emphasized in the state as preventive measure. Further, SDAH, Karnataka should take up extensive livestock extension activities to educate the farmers about the benefits of vaccination and the control over economical losses of the diseases.

KEY WORDS: Karnataka, Livestock disease, Vaccination strategy

INTRODUCTION

Poor health of livestock with innumerable endemic diseases causes considerably high economic losses to predominantly poor, marginal and landless farmers. The economic losses related to disease arise through morbidity, mortality, decreased production, reduced fertility and inefficient feed utilization resulting in inadequate weight gain and impaired draught power (CALPI, 2008). An effective and efficient disease prevention and control strategy is of paramount importance to mitigate these effects to improve the life of rural masses. Though, vaccination is considered to be the best strategy for disease control, it is being carried out only on the phase of outbreaks instead of preventive measures (GoI, 2009). In this context, an effort was made to study the most common diseases of economic importance in Karnataka and evolve a disease control strategy which may help the higher administration fine-tune its initiatives to provide timely livestock healthcare services to prevent disease incidence.

MATERIALS AND METHODS

The secondary data from annual reports, websites and occasional publications of the SDAH, appraisal reports of Planning Commission and other agencies were used to identify the most prevalent diseases in Karnataka. The group discussion and personal communication with veterinary officers and other experts was also conducted to evolve action plans to control 'five economically important livestock diseases'. The study is organized to depict background information of SDAH, Karnataka, disease incidences during 2004-05 to 2011-12 and propose the approaches for control strategy through vaccination.

Karnataka state at a glance:

Livestock production in Karnataka is the endeavour of the small holders and is considered as the major source of supplementary income for rural households. The state ranks eleventh in milk production with increasing rate of 6.2 percent while livestock and poultry population has a share of 6.2 per cent and 6.48 per cent, respectively (GoI, 2009).

The state has one Veterinary hospital per seven villages. There are 454 Assistant Directors and 1309 Veterinary Officers working in the state, which is accounted to 16,622 animals per veterinarian in the state (GoI, 2009).

Vaccine production and disease investigation services

Majority of the vaccines are produced by Institute of Animal Health and Veterinary Biologicals (IAH&VB) as per demand, while FMD vaccine is being procured from private manufacturers (Table 1).

Table 1. Current status of vaccines produced by IAH &VB for 2008-09. (GoI, 2009).

Sl. No	Vaccine	Approx. quantity which can be produced with available facilities (In lakh doses*)
1	Hemorrhagic Septicemia	75
2	Black quarter	15
3	Enterotoxaemia	80
4	Anthrax	10
5	PPR	100
6	Sheep pox	50
7	Newcastle- R2B	80
8	Newcastle -F	10
9	Tissue culture Rabies	2.0

Data about FMD Vaccine is not available since it is procured from private manufacturers.

Livestock diseases of economic importance:

Five diseases, FMD, HS, BQ, PPR and ET were identified for the study based on the retrospective disease attack rate data for the period 2004-05 to 2011-12 (Table 2).

Table 2. Disease attack rate during 2004-05 to 2011-12

Year/Disease	FMD	HS	BQ	PPR	Enterotoxaemia	Total
2004-05	4244	1051	1014	118	71	6498
2005-06	45568	2654	593	2625	1605	53045
2006-07	13392	1910	1006	801	1461	20125
2007-08	25169	1468	751	1113	1339	29840
2008-09	3010	1093	573	414	1215	6305
2009-10	5564	2418	567	456	883	9888
2010-11	3429	1117	566	71	482	5665
2011-12	4009	391	411	42	408	5261

GoI, 2009 and Annual Reports of SDAH, Karnataka

RESULTS AND DISCUSSION

Though regular efforts are made by SDAH, Karnataka to control the disease incidence, a decisive emphasis on strengthening of vaccine production infrastructure and timely and location specific

vaccine interventions can bring down the disease burden in the state.

Strengthening of vaccine production infrastructure

The proposed disease and time targeted vaccination approach can rationalize vaccine production levels and achieve optimal and sustained supplies. The projected vaccine requirements in the state for next five years are depicted in Table 3.

Table 3. Projected requirement for next five years in lakh doses (GoI, 2009).

Sl No	Vaccine	I Year	II year	III Year	IV Year	V Year
1	FMD	200	250	250	250	250
2	H S	100	100	110	110	110
3	Black quarter	40	45	45	45	45
4	PPR	90	90	100	100	100
5	Enterotoxaemia	90	90	100	100	100

Disease Control Programmes

Due to increased vaccination of the livestock through programmes like Assistance to State for Control of Animal Diseases (ASCAD), disease occurrences have declined over the years in the state (Table 4).

Table 4. Livestock vaccinated during 2006-07 to 2011-12

Year/Disease	FMD	HS	BQ	PPR	Enterotoxaemia
2006-07	7955599	6065724	1011151	3939646	6292289
2007-08	10083026	6139839	937874	4308435	7107524
2008-09	10924457	6426162	928437	4089139	6825476
2009-10	11050252	6498921	853659	4655428	7046921
2010-11	11131174	5684163	813081	3380784	8189449
2011-12	20880446	5653208	546919	13147499	6812146

(Annual Reports of SDAH, Karnataka)

Foot and Mouth Disease: Since FMD, is highly endemic, strengthening of repeated vaccination and other control measures can be the best option to buildup herd immunity and bring down the disease incidence. Inclusion of location specific serotypes in vaccines based on sero-surveillance study should be carried out for effective control. Karnataka government has implemented Foot & Mouth Disease Control Programme (FMD-CP) to prevent economic losses through regular vaccinations in the selected districts which has substantially declined occurrence and severity of the disease.

Haemorrhagic septicemia: A list of villages and blocks (with their bovine population), which suffered HS in the past 2-3 years must be included on priority basis for mandatory prophylactic vaccination campaigns. A tangible approach for HS control would be to bring down the outbreak by pre-monsoon vaccinations by initiating in high-risk areas to low risky areas for optimal protection.

Blanket vaccination may be followed for susceptible animals in the hyperendemic and mesoendemic districts, while ring vaccination may be followed in low endemic districts.

Black quarter: 'Chronically infected villages' which have recorded highest incidence of BQ, should be mapped and annual vaccinations in April-May months must be rigorously introduced. A sustained vaccination of susceptible population for 3-5 years will drastically reduce, if not eliminate, the foci of infection. Blanket prophylactic vaccinations twice a year can be carried out in hyper-endemic districts/regions and once before the early monsoon in mesoendemic and low endemic districts. This can be supplemented with ring vaccinations covering a radius of 5 kms where outbreaks are reported.

Peste des Petits Ruminants: Since sheep are migratory in nature, blanket vaccination of all susceptible animals is advocated. The perfect annual vaccination period against PPR is September and October months (extendable up to November also), which produces lifetime protection. In addition, there is a definite need to create strict interstate buffer immune belt of about 50 km towards off incursion of infection from the endemic neighboring states. Karnataka government has implemented Peste Des Petits Ruminants (PPR) Control Programme to control the disease incidence in the state.

Enterotoxaemia: Since ET vaccine is a toxoid conferring immunity for short duration, an appropriate action plan would be to vaccinate all the sheep twice a year. A flexible vaccination campaign to suit the shepard's migratory habits is required. The "green card (shephard's pass book)" which records all the details of vaccinations during their migration ventures is a big success in Karnataka state.

Institutionalizing Disease Control Programmes

The following are the key points that need immediate attention:

1. Though field veterinarians did not report any disease outbreaks in the state, the livestock farmers responded that they faced disease incidences (Create System Report, 2007). Hence, disease reporting should be made proactive, realtime and preferably, online (internet), than the present system of reporting.

2. As per new guidelines for procurement of the vaccines, nodal disease information officers, at district levels should be identified and a working network should be established with a mandate to circulate/share disease incidence information at the earliest. A hotline approach from field hospitals to the state epidemiologist should be encouraged and necessary inputs must be made available by strengthening infrastructure and human resource management.

3. A state level computerized database of all veterinary institutions (preferably coded), livestock and disease profiles should be created to include their operational jurisdiction of villages and mandals preferably including a Geographical Information System (GIS) based approach.

4. The higher authorities of state headquarters through respective district officers must ensure effective timely implementation of the vaccination schedules as recommended.

5. Existing veterinary services must be intensified by strengthening/upgrading institutions to achieve both preventive and therapeutic veterinary care through door step services.

6. Systematic disease surveillance system should be strengthened for eradicating diseases through strengthening disease diagnostic system at different requisite strategic places.

7. Emergency veterinary services on round the clock basis to be provided with private public partnership models.

8. Thrust on research and development for production of newer cost effective vaccines and treatments for both existing and emerging diseases.

9. Though record keeping of the vaccines is satisfactory, stock of vaccines in most of the institutions is either maintained in plain paper register or in some note books (Create System Report, 2007). Hence, complete and updated stock record of vaccines is necessary in veterinary institutions.

10. The SDAH, Karnataka should take up extensive livestock extension activities to educate the farmers on the benefits of vaccination and the control over economical losses of the diseases (Create System Report, 2007).

REFERENCES

CALPI (2008): Control Strategy and Action Plan for Animal Diseases of Economic Importance in Andhra Pradesh CALPI Programme Series 8 Intercooperation Delegation Hyderabad, India

Create System Report (2007). Final Report on Evaluation of Vaccine Production, Distribution And Utilization of Institute of Animal Health and Veterinary Biologicals, Bangalore-56002

Government of India (2009) Report of Advisory Committee on Animal Husbandry & Dairying, Volume-II, Planning Commission, Government of India, New Delhi.

Government of Karnataka.(2006-07 to 2011-12). Annual Reports of Animal Husbandry and Veterinary Services, Government of Karnataka, Bangalore.

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