

Collaboration between a non-governmental organisation, scientists and policy makers in order to improve control of Glanders in Uttar Pradesh, India

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Abstract

Glanders is a contagious, zoonotic and notifiable disease of equids which has re-emerged in India over that last ten years. Cases of disease are seen primarily in Uttar Pradesh, the Indian state that is most populous in terms of equids. Brooke India, an equine welfare organisation has facilitated a range of activities with a variety of stakeholders in order to implement an effective Glanders control programme in the state. These activities include direct reporting of suspected cases; coordination of government meetings; interaction with reporting laboratories; organisation of capacity-building workshops; awareness-raising at a community level with equid owners; facilitation of the revision of compensation policy and changing the disease control measures at local equine trade fairs. Surveillance shows that there are still cases of Glanders in Uttar Pradesh at an average 3% prevalence. Future activities include increasing state-wide surveillance, reducing the bureaucracy associated with compensation payout, developing improved diagnostic tests and increasing regional biosecurity measures at equine fair events. Continued collaboration and cooperation between scientists, non-governmental organisations and policy makers at all levels is instrumental in ensuring that disease control policy is effective and implemented.

Keywords: *Glanders, disease surveillance, policy implementation, Animal husbandry department Uttar Pradesh*

Introduction

Glanders is a highly contagious disease of horses, donkeys and mules caused by *Burkholderia mallei*. Due to its zoonotic nature, humans are accidental hosts and become infected through contact with affected equids and while working in research laboratories. In India major outbreaks were reported from different states between 1976 and 1982. Subsequently sporadic cases were recorded until 1998. After a gap of eight years, the disease re-emerged in 2006. Glanders surveillance was intensified during 2011 to 2014, revealing that most cases occurred in Uttar Pradesh followed by Himachal Pradesh and Chhattisgarh (1). Recent outbreaks in 2015 and 2016 have reported a large number of Glanders cases from the states of Gujarat, Jammu & Kashmir, Uttar Pradesh and Haryana. India is a vast country with its equine population spread out across many states, but there is only one referral laboratory

(National Research Centre on Equines; NRCE) recognised for Glanders diagnosis.

Uttar Pradesh has the largest equine population in the country. Consequently, the state also hosts many equine trade fairs, where up to 15,000 animals are brought to a single location to be bought and sold. Animal movement data reveal Uttar Pradesh as a potential hotspot for Glanders (2); it is likely that the cases in 2015 and 2016 in Gujarat, Jammu and Kashmir and Haryana originated from disease in Uttar Pradesh state due to equine migration (3,4).

Brooke India is an equine welfare non-governmental organisation with a large programmatic presence in Uttar Pradesh, Considering the potential impact of Glanders both on working equids and their owners, Brooke India has facilitated the development and implementation of an action plan for the surveillance and eradication of Glanders in Uttar Pradesh.

Materials and methods

Brooke India staff facilitated a series of interactions and meetings with policy makers, scientists and disease control authorities at National and State level between June 2015 to August 2016 which aimed to improve disease surveillance in 11 districts of Uttar Pradesh.

Results

The following series of activities were undertaken by Brooke India.

Reporting of suspected cases of Glanders to the relevant State Animal Husbandry Department

Brooke India's field veterinary team reported 30 suspected cases of Glanders during 2013 to 2016 to government veterinarians. Twenty seven from Uttar Pradesh. Serum samples were taken from affected equids by government veterinarians and sent to NRCE for confirmation. Subsequently positive cases were euthanised.

Communication of disease situation with the Department of Animal Husbandry, Dairying and Fishery and Ministry of Agriculture, in the Central Government of India

Meetings were held with Directors of Animal Husbandry of relevant states and the Commissioner of Animal Husbandry, Government of India as well as other officials to discuss

measures for Glanders control in the country. In subsequent meetings an action plan was formulated and forwarded to State Animal Husbandry Departments. The action plan was followed-up with State Animal Husbandry Directors by the Commissioner Animal Husbandry through video conferencing.

Interaction with NRCE

Brooke India ensured regular communication with NRCE scientists to follow-up on the outcome of samples forwarded by State Animal Husbandry Departments in order to ensure that the serum samples of in-contact animals were obtained and sampled and appropriate sanitary measures were instituted.

Organisation of joint workshops with Uttar Pradesh State Animal Husbandry Department and NRCE

Four major workshops were held in Ghaziabad, Noida, Meerut and Aligarh districts. These were attended by government field veterinarians including the districts' Chief Veterinary Officers. The workshops aimed to build the capacity of government veterinarians in detection and handling of Glanders cases, collection of serum samples, as well as updating their knowledge about the policies relating to Glanders control.

Collaboration with Uttar Pradesh State Animal Husbandry Department during sampling

Brooke India has a close relationship with the equid-owning communities it works with. The Director of Disease Control for Uttar Pradesh requested that Brooke India worked at a village level to work with equid-owning communities so that they would cooperate with government agencies and allow to sample collection from their equids. Subsequently, Brooke India trained government veterinarians and para vets on collection and transport of serum samples. Sampling was carried out from suspected and in-contact animals. All equids were randomly sampled within a radius of 5km around the site of a positive case and 50% of equids are sampled over the next 5km.

Influence the government to revise compensation following compulsory euthanasia

According to the Glanders and Farcy Act, 1899, equids found positive for Glanders were required to be destroyed and the owners were given a meagre compensation of INR 50 (\$0.7). This Act was repealed and replaced with The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009. This new act did not have provision for providing compensation to the owners following euthanasia of their animals. Brooke India worked with government authorities to release a new notification in August 2015, which fixed a compensation of INR 25,000 (\$373) (Exchange rate 1 USD = 66.94 INR on 12 September 2016) for horses and 16,000 (\$239) for donkeys and mules. This policy amendment could bring a significant change among equid owners in reporting clinical cases. Owners who previously hid Glanders cases are now coming forward to report cases to the authorities; thereby, helping in implementation of the disease control policy.

Implementation of awareness events for equid owners and traders

Brooke India field staff carried out a series of awareness campaigns to educate equid-owning communities about detection of the early signs of Glanders and the importance of early reporting to the authorities. Keeping in view the zoonotic importance of the disease, the community was advised to segregate animals immediately if disease was suspected and take precautionary measures while handling them. Additionally, the community was made aware about the provision of compensation from the government following confirmation of a positive case. Owners were also advised to keep newly-purchased equids from the fairs separate from other equids for at least 21 days as a quarantine precaution.

Issue of advisory note on conduct of equid fairs

Brooke India obtained an advisory issued for equine welfare at equine fairs from the Chairman of the Animal Welfare Board of India, which improved disease control measures in equine fairs by ensuring the establishment quarantine facilities.

Sharing information with the international community

Data on the recent outbreak of three cases of Glanders in July 2016 in Haryana state were shared with ProMED (International Society of Infectious Diseases) following that platform's request for further information.

The state Animal Husbandry Department carried out sampling between July and August 2016 in 11 districts of Uttar Pradesh according to the action plan (Table 1).

Table 1. Results of random sampling by the Animal Husbandry Department.

District	Number of samples taken	Positive cases	Prevalence (%)
Badaun	110	5	5
Baghpat	79	1	1
Bareilly	232	1	0.5
Bijnour	49	1	2
Etah	50	6	12
Ghaziabad	782	20	3
Hapur	69	2	3
Hathras	34	1	3
Mathura	28	1	4
Muzaffarnagar	57	2	4
Shamli	17	1	6
Total	1507	41	3

Discussion

The survey carried out by Uttar Pradesh's State Animal Husbandry Department confirmed that Glanders is still present in the state. The state government has requested funds from the National Government to allow screening of the State's entire equine population. Brooke India will continue to facilitate these discussions, as well as to bring the two levels of government together for a discussion on

developing an accountable and rapid process for payment of compensation to owners following a positive case.

Previously, Mallein test was used in India for Glanders screening, but limitations of its cross-reaction with other infections and low sensitivity to detect early infections stopped its further use (6). The Mallein test has been replaced with the Complement Fixation Test (CFT), the recommended OIE test for Glanders. However sensitivity and specificity can be low; false positives are problematic for equid owners while false negatives may allow reintroduction of the infection (7). The NRCE is currently standardising an indirect ELISA field diagnostic test in order to improve the accuracy and speed of diagnostic testing (8).

Migration of equids out of Uttar Pradesh to other parts of the country is always a threat for disease spread (2). Equine fairs are a potential epicentre for spread of Glanders; therefore continued efforts are required to establish appropriate disease control measures at these events. It may also be appropriate to consider the establishment of check-points at inter-state borders at appropriate times to test all equids moving out of the state. Additionally there is free movement of equids between Uttar Pradesh and Nepal. The disease status within Nepal is unknown, and may pose a risk for reinfection of animals in Uttar Pradesh.

A multi-stakeholder and multifaceted approach facilitated the development of effective measures of disease control for Glanders in Uttar Pradesh. This echoes the experience in Canada, which pioneered the establishment of effective policies for the Glanders eradication. The success of Canadian Glanders control policy was mainly due to synergy and collaboration between scientists and policy makers (5). Brooke India has been central in creating an environment that enables the timely reporting of suspected cases of Glanders to government veterinarians. The trust placed in the organisation by equid-owning communities has been instrumental in their acceptance of government policy. Surveillance has been implemented in suspected and in-contact animals according to the central government's action plan. Therefore, a regular surveillance and monitoring will help in detecting the latent cases of Glanders and ultimately stamping out the disease.

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References

1. **Malik P et al.** *Vet Rec Open* 2, 1-7, 2015
2. **Malik P et al.** *Vet Italiana* 48(2), 167-178, 2012
3. <http://timesofindia.indiatimes.com/city/chandigarh/Haryana-govt-issues-advisory-for-Glanders-disease/articleshow/53588006.cms>
4. <http://timesofindia.indiatimes.com/city/ahmedabad/Glanders-disease-detected-in-Gujarat-horses-40-put-to-sleep/articleshow/53073408.cms>
5. **Derbyshire JB.** *Can Vet J* 43, 722-726, 2002
6. **Naureen A et al.** *J. Vet Diagn. Invest* 19, 362-367, 2007
7. **Kettle ANB, Wernery U.** *Equine Vet J.* 48, 654-658, 2016
8. **Malik P.** *Vet Rec* 178, 630-631, 2016