

The use of participatory disease searching in Pakistan as a form of active disease surveillance for rinderpest and more.

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## Summary

Comprehensive animal health surveillance programmes require components that ensure the overall sensitivity and timeliness of surveillance data. Participatory epidemiology (PE) is the application of participatory rural appraisal techniques to the collection of epidemiological intelligence. Participatory disease searching (PDS) is the use of PE techniques in active disease surveillance and outbreak investigation. This paper describes the results of a PDS programme in Pakistan implemented as part of the national disease surveillance system designed to meet the needs of international disease control and local stakeholders. The experience highlighted the importance of attention to stakeholder priorities for the sustainability of disease surveillance.

## Introduction

The PDS approach was developed in Africa as an accurate and rapid method to understand the distribution and dynamics of rinderpest (RP) in pastoral areas (Mariner and Roeder, 2003). PDS relies on traditional livestock owner's knowledge of the clinical, gross pathological and epidemiological features of diseases that occur locally. The PDS approach has gained respect for its ability to understand disease patterns, identify effective intervention strategies and the verification of rinderpest eradication for the purpose of accreditation by the Office International des Epizooties.

After three years without detecting rinderpest, over the course of 2000, Pakistan confirmed three separate, single-herd outbreaks in peri-urban dairy farms close to Karachi (Hussain et al., 2001). The dairy farmers of Karachi primarily purchase buffaloes and cattle in milk from the rural areas of Sindh and Punjab Provinces and sell them at the end of their lactation. The trace-back from these three outbreaks involved extensive rural areas of the interior and indicated that livestock owner reports were not adequately captured in existing passive reporting systems. Whilst absent from the large dairy colonies, the initial studies showed that rinderpest virus had continued to circulate in small buffalo dairy holdings of northern Sindh in the past. Rinderpest eradication is the target of a national eradication programme within the Global Rinderpest Eradication Programme.

## Objectives

The objective was to enhance the sensitivity and timeliness of the overall surveillance system through the incorporation of a PDS programme that actively utilized livestock owner information and that responded to both the immediate priorities of the beneficiaries and long term national disease control objectives.

## Materials and Methods

The PDS programme was initiated with a field assessment conducted by an experienced practitioner of PDS. The results were utilized to design a locally appropriate system of disease searching. These included an inventory of surveillance and service delivery issues that affected information flow between livestock owners and the veterinary services. The design plan outlined personnel selection, training, interview, reporting and data management methodologies. Women were identified as a key, but neglected, source of animal health information and the inclusion of female staff in the PDS programme was an explicit component. The PDS programme was finalized in participatory discussions with the six teams designated to implement the programme in Sindh and Punjab Provinces as an integral part of the participatory training process.

The training programme consisted of four days of theory and in-class practice followed by four days of field practice with daily discussions of field experiences. The course placed emphasis on the concepts, attitudes and philosophy considered fundamental to participatory approaches. Techniques incorporated in the programme included semi-structured interviewing, mapping, proportional piling, matrix scoring and seasonal calendars. Thereafter, trainees were given field assignments and the groups reconvened after three months to revise work programmes based on the lessons learnt. In order to retain the participatory nature of the process, the assignments were relatively flexible in terms of content as long as key topics were adequately covered. Key activities included open-ended questions on priority livestock diseases and a proportional piling exercise scoring the five most important diseases in terms of impact on livelihood followed by a piling exercise on prevalence. The teams probed reports of rinderpest, foot-and-mouth disease or peste des petits ruminants received in response to the open-ended questions. The teams asked probing questions relative to a stomatitis-enteritis case definition used in rinderpest surveillance and were equipped with rinderpest pen-side tests and sampling equipment. The reporting methodology established both routine hierarchical and database approaches as well as direct debriefing of teams by decision-makers in participatory settings.

## Results

At three months after training, the veterinarians had a new respect for farmer's knowledge and strong communication skills. They replaced unproductive stereotypic images of small livestock owners with the recognition that livestock owners made logical decisions based upon a defined body of traditional knowledge and the impact of choices on their livelihood. It was not unusual for women to be better informed than their male partners about the occurrence of animal diseases in the area. Key findings were that small holders were receiving limited attention from the formal services, that most small farmers consulted traditional healers (*siana*) for enteritis cases and as a result small holders and traditional healers were important but neglected sources of reports for rinderpest surveillance.

Disease ranking exercises demonstrated that livestock owners understood the difference between prevalence and importance in terms of livelihood impact. For example, foot-and-mouth disease was frequently ranked as a common problem but usually did not rank as an important disease in terms of impact. On the other hand, mastitis was both common and important. Haemorrhagic septicaemia was

described to occur intermittently but was uniformly ranked as an important disease in terms of livelihood impact. As expected, reports that included the signs of stomatitis-enteritis were received and investigated using laboratory-based techniques recommended by the Office International des Epizooties. No rinderpest positive events were confirmed. Peste des petits ruminants was confirmed to be a localized but serious, emerging problem affecting mainly the interface between pastoral and sedentary communities in more arid parts of Punjab and the Northern Areas.

The PDS teams, as expert teams, had access to decision makers and were able to effectively communicate the priorities of small livestock owners without the customary filtering of information that occurs in hierarchical reporting systems.

## Discussion

Successful disease surveillance will detect and investigate events. This requires an enabling environment that encourages both professionals and livestock owners to freely share information regarding disease syndromes that occur. A system that is not finding suspicious events is not functioning. The introduction of the PDS activity into Pakistan's disease reporting system greatly enhanced the sensitivity of the system and created an alternative channel for livestock owner's voices to be heard. Initially, this change provoked some anxiety on the part of middle level managers who had grown accustomed to negative monthly reports, but now these same stakeholders want even more local content in the programme. The emphasis on locally priorities and women's involvement will be increased.

Initially, several trainees were sceptical of PDS and the usefulness of livestock owner perceptions. All trainees realized the value of PDS after only a few days of field experience. Through PDS, the management of the veterinary services became aware that haemorrhagic septicaemia was of greater concern to farmer's livelihoods than the three target diseases of international concern. This illustrates that the participatory strength of PDS was preserved in an institutionalized disease surveillance programme. The PDS programme greatly enhanced the sensitivity of active clinical rinderpest surveillance and directly contributed to Pakistan's confidence in the decision to declare provisional freedom from rinderpest to the OIE in January of 2003. Supportive surveillance data continues to accrue from the PDS programme and its expansion is planned.

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