Chapter 17

On Piloting Web–Based Rabies Surveillance System for Humans and Animals:
Web–Based Rabies Surveillance System

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ABSTRACT

Rabies is a neurodegerative viral zoonotic disease that affects all warm blooded animals. It is estimated that about 99% of human rabies cases are caused by dog bites. High prevalence of rabies has been reported in different parts of Tanzania. The disease has continued to cause public health threat to the communities due to weak passive and active surveillance systems. The data piloted in this study was based on the information gathered from Kilosa district. The geo information collected was used to develop a geospatial based system that can easily show the hotspots of rabies. The use of WEB GIS is likely to strengthen disease surveillance in Kilosa and other Districts of Tanzania. This approach offers a model for sharing both human and animal diseases surveillance information. Adoption of this approach is likely to increase awareness and timely response to rabies incidences.

INTRODUCTION

Rabies is a viral neurodegenerative zoonotic disease that affects all warm blooded animals (Fitzpatrick et al., 2012). The rabies virus belongs to the Lyssavirus genus of the family Rhabdoviridae, and order Mononegavirales (Swai et al., 2010). The disease affect not only human being and dogs, but also other domestic and wild animals such as: cattle, goats, cats, horses, pigs, hyenas, jackals, lions, wild dogs, mongoose, primates and bats (Sambo, 2012; Swai et al., 2010; Swai et al., 2011). Rabies is endemic

and has challenged the health systems in different developing countries; pausing a big challenge in both human and animal health systems thus calling for one health approach to manage the disease in both human and animal (Mazet et al., 2009; Rweyemamu et al., 2013). From a global public health perspective, the domestic dogs are considered to be the main target for rabies control and principal reservoir for transmission of the virus to humans and domestic livestock (Mazigo, 2011).

Poorly coordinated rabies incidences reporting system to timely identify, prevent and respond to such cases remains one of the major challenge in establishing a sustainable surveillance system in Tanzania (Mazigo, 2011, Rweyemamu et al., 2013). Certainly, human deaths due to rabies can be prevented through delivery of prompt post-exposure prophylaxis (PEP) to bite victims (Cleaveland et al, 2002). Furthermore, the transmission cycle between humans and domestic dogs can be reduced through sustained mass vaccination programs of domestic dogs, strengthening the reporting system, detection of rabid animals, mapping of endemic areas and prompt response to treatment and prevention strategies (Blanton et al., 2006; Cleaveland et al., 2001; Cleaveland et al., 2013).

The application of ICT in rabies surveillance system in Kilosa district and other parts of Tanzania is very limited (Mboera and Rumisha, 2008). However advances in ICT observed in recent years increased possibilities for community members' involvement in rabies case identification, detection, alerting, monitoring, controlling and surveillance to reduce human deaths and hence minimize its socio-economic impact (Knobel et al., 2005). Application of ICT based rabies surveillance systems is likely assist the Veterinarians to sustain mass vaccination of domestic dogs, to keep records of vaccinated domestic animals and incidences of rabies in domestic animals; to enable public health workers, to create awareness on the magnitude of risks and steps to be taken upon exposure.

Thus, the overall objective of this study was to develop an effective, efficient and cost effective real time web based surveillance system for identifying, reporting, controlling and monitoring rabies incidences in Kilosa district, Morogoro, Tanzania. Specifically the study assessed the appropriateness of the real time rabies surveillance system for instant incidence identification, reporting, control, monitoring and surveillance. Ultimately the development of web based rabies surveillance system would enhance the capacity for; identifying, collecting and reporting of incidences to a central institution, aggregating and sharing data related to national rabies control using geographic web services and social media in appropriate combinations of traditional and novel media (including Internet based Google Maps, local radio and TV); livestock based organizations and the general public (Georgiadou et al, 2011).

SITUATION ANALYSIS

Rabies is one of major public health problems in different parts of Tanzania (Mwisongo et al., 2001). In Kilosa district, rabies has remained endemic for many years despite efforts to control it in domestic dogs (Bardosh et al., 2014). The district boarders Mikumi national park thus allows interactions between humans, domestic dogs and wild animals. The presence of a human-dog-wildlife interphase in the district offers a unique environment for the persistence of the disease in the area (Sambo, 2012). In addition,lack of timely communication during vaccination campaigns has remained to be the major setback in such a way that many people especially in rural areas of Kilosa do not vaccinate their dogs on annual basis as required because such information do not reach them timely. Lack of awareness is also a problem; most

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