Rabies: A preventable disease still killing thousands

Caption: A mass dog vaccination drive in Arusha, Tanzania

Rabies is one of the deadliest infectious diseases in the world. Though preventable, it continues to be a very big public health threat causing thousands of human deaths annually, mostly due to bites from infected domestic dogs.

A Neglected Tropical Diseases (NTD), rabies predominantly affects poor and vulnerable populations living in remote rural locations. According to World Health Organisation (WHO) estimates, rabies kills about 60,000 people every year worldwide, particularly in rural parts of Africa and Asia. Approximately half of the cases are attributable to children under 15 years of age.

The disease is virtually 100 percent fatal once symptoms set in. In up to 99 per cent of cases, domestic dogs are responsible for transmission of the rabies virus to humans. Yet, rabies can affect both domestic and wild animals. The disease is spread to people and animals through bites or scratches, usually via saliva. Although effective human vaccines and immunoglobulins exist for rabies, they are not readily available or accessible to most of those in need.

In the EAC region rabies causes more than 2000 human deaths annually, according to a 2018 study by the PLoS Neglected Tropical Diseases journal. Additionally, rabies causes wild animal and livestock losses across the region.

Rabies Prevention

Dog-mediated human rabies can be eliminated by tackling the disease at its source: infected dogs. Making people aware of how to avoid the bites of rabid dogs, to seek treatment when bitten and to vaccinate animals can successfully disrupt the rabies transmission cycle.

WHO names the three pillars for eliminating rabies as expanding access to rabies post-exposure prophylaxis (PEP), building mass awareness on rabies and implementing mass dog vaccination to stop the disease at its source. PEP typically includes four shots of the rabies vaccine taken over two weeks, as well as a dose of rabies immune globulin, a serum that neutralizes the virus at the site of the bite and offers protection as the body mounts an immune response. This prevents virus entry into the central nervous system resulting in imminent death.

However, according to WHO, managing a rabies exposure, where the average cost of rabies PEP is currently estimated at an average of US$ 108 can be a catastrophic financial burden on affected families whose average daily income may be as low as US$ 1–2 per person.

Identifying rabies

It is not possible to tell if an animal has rabies by just looking at it—the only way to know for sure if an animal (or a person) has rabies is to perform laboratory testing. According to the US Centers for Diseases Control and Prevention (CDC), the earliest symptoms of rabies are similar to the flu, including weakness, fever, a headache and tingling at the site of the bite. As the virus spreads to the brain—a journey that can take weeks or even months—a variety of more severe symptoms can emerge.

WHO describes two main manifestations of the disease: furious rabies and paralytic rabies. People or animals with furious rabies may appear agitated, become aggressive and drool excessively, while other symptoms include hyperactivity, fear of water and even fear of fresh

air. The symptoms of paralytic rabies, on the other hand, are more understated—typically causing gradual paralysis as a patient remains calm and lucid.

Treatment

Unlike most illnesses, one should not wait for symptoms to diagnose rabies. The person who have been bitten or scratched by an animal that might have rabies, should immediately seek medical help. Once a rabies infection is established, there is no effective treatment. Though a small number of people have survived rabies, the disease usually causes death.

For post-bite first aid, the WHO recommends flushing and washing the wound for a minimum of 15 minutes. This cleaning should include the use of soap and water and a povidone-iodine solution if available.

According to the US CDC, animal-based research has shown that thorough wound cleansing alone may significantly reduce the likelihood of developing rabies. Animal bites require fast, effective treatment, especially if the patient is unable to confirm whether the animal has been vaccinated against rabies. If there is even a small risk of the animal being rabid, a healthcare provider will embark on PEP which starts with extensive washing and local treatment of the wound followed by doses of rabies vaccine and human rabies immune globulin (HRIG). When given in time, PEP can stop the rabies virus from entering the central nervous system and, in turn, prevent the onset of rabies symptoms. It is the only treatment strategy known to prevent rabies-related deaths.

Controlling rabies

Rabies is a vaccine-preventable disease. Vaccinating dogs, including puppies, is the most cost-effective strategy for preventing rabies in people because it stops the transmission at its source. Moreover, dog vaccination reduces the need for PEP. Education on dog behaviour and bite prevention for both children and adults is an essential extension of rabies vaccination programmes and can decrease both the incidence of human rabies and the financial burden of treating dog bites.

“Increasing awareness of rabies prevention and control in communities includes education and information on responsible pet ownership, how to prevent dog bites and immediate care measures after a bite. Engagement and ownership of the programme at the community level increases reach and uptake of key messages,” says Dr Maganga Sambo, who coordinates the National Rabies Programme in Tanzania.

Given all that is known about the disease, experts say that eradication would be an easy win for public health—and momentum has been building in recent years. In 2018, the World Health Organization and its partners announced a plan to eliminate human deaths from rabies by 2030.

“Mass dog vaccinations to stop rabies transmission is the cornerstone to this global target. I would advise the whole EAC regional authorities to make use these opportunities to get rid of this deadly disease in EAC region. Tanzania, Kenya, Rwanda have already developed their national strategic plan (NSP) to control and eliminate rabies. Uganda and Burundi are in the

final stages of their NSP. It is important for the EAC secretariat to help the remaining Partner States to develop their NSPs, these countries can massively benefit from other EAC countries where NSPs have been developed. Only countries with official NSP can access rabies vaccine banks," according to Dr Sambo.

He urges the EAC as a region to coordinate the development of the East African Road Map for rabies elimination. Tanzania and Kenya have been catalysing mass dog vaccination programmes as the means to control and eliminate rabies for several years now.

"The EAC Secretariat can coordinate these inhouse experiences and expand to other EAC countries where investment in dog vaccinations is slowest. I believe that this could be for several reasons: it will provide an opportunity to share operational experiences within the same geographic region and draw upon lessons learnt to improve planning and delivery of large-scale dog vaccination programmes. Importantly, it could provide initial steps in facilitating cross border collaborations of the kind required for regional elimination initiatives that are at a much earlier stage in Southern East Africa."