

Dog ecology and demography information to support the planning of rabies control in Machakos District, Kenya

Kitala, Philip; McDermott, John; Kyule, Moses; Gathuma, Joseph; Perry, Brian; Wandeler, Alexander

Date: 2001

Abstract

A study of 150 dog-owning households from six randomly selected sublocations was conducted in Machakos District, Kenya. Initially, all households were visited to collect information on dog ecology and demography based on WHO guidelines and to collect serum for rabies antibody detection. A second visit was made 1 year later, to obtain follow-up data on births, deaths, dog movements and other events since the first visit. Dog ownership was common, with a range of 53-81 % (mean = 63%) of households owning dogs in the six sublocations. Dog density for the five more rural sublocations ranged from 6 to 21 dogs km⁻² and for the peri-urban sublocation was 110 dogs km⁻². The dog population was estimated to be growing at 9% p.a. (95% C.I. 4-14%). This growth was a function of very high fecundity (1.3 females per female per year) more than compensating for high mortality, particularly among females. Life expectancy from birth was 3.5 years for males and 2.4 years for females. Half the dogs at any one time were less than 1 year of age. All dogs, by design of the study, were owned. Of these, 69% were never restricted and roamed freely to forage for food and mix with other dogs. Only a small proportion of dogs (5%) were fed commercial dog food. Most households reported observing dogs scavenging their garbage, including: their own dogs (81%), their neighbours' dogs (75%) and unknown dogs (45%). Only 29% of dogs at least 3 months of age were reported to be vaccinated against rabies. The proportion vaccinated varied widely between sublocations (5-68%); 48% of dogs reportedly vaccinated had detectable antibodies, 31 % at or above levels considered to indicate seroconversion. The proportion of dogs with detectable antibodies declined according to the time since last vaccination (55% if vaccinated < 1 year, 47% 1-2 years and 36% > 2 years); 20% of dogs reported not to have been vaccinated had detectable rabies antibody. Compared to other dog populations in rural eastern and southern Africa, Machakos District has a high density of dogs. The Machakos dog population is growing, highly dynamic, poorly supervised and inadequately vaccinated against rabies. The main implication for rabies control is that adequate vaccination coverage is unlikely to be achieved, even under optimal delivery, using the current strategy of annual vaccination of dogs older than 3 months.