

Assumptions:

1. The model was simplified by assuming that trypanosomiasis infection rate remains uniform throughout the year, and is unaffected by environmental factors such as rainfall and temperature (Moore *et al.*, 2012).
2. Smallholder farmers use trypanocides to treat a wide range of perceived symptoms; and we assume that treated cattle were infected by trypanosomes.
3. Smallholder farmers with affected cattle have access to high quality therapeutic drugs at affordable costs, and administered the trypanocides correctly during treatment.
4. We consider transmission between tsetse flies (vector) and cattle (host) only, and assume a constant bite rate and similitude between tsetse fly species.
5. For simplicity, a single parameter combines migration into the population, and reproduction rate for both the host and vector population. of perceived symptoms; and we assume that treated infectious cattle had trypanosome infection.
6. Currently the three main trypanocides in use were introduced at different times (homidium - 1952, diminazene - 1955 and isometamidium - 1960) (Giordani *et al.*, 2016). However, information of when and in what order they were introduced in disease endemic locales is unavailable. Our model therefore assumes that trypanosomes are most resistant to drug 1, least resistant to drug 3, and that drug 2 is intermediate between them, for these drug classes.
7. We assumed that we have a single drug from each of the three different, widely-used trypanocides classes (isometamidium, homidium, and diminazene).
8. The rate at which the trypanosomiasis induced death rate increases due to drugs 1, 2, and 3 resistance was also determined based on the assumption that drug 1 is the least effective while drug 3 is the most effective, and drug 2 is intermediate between them. Thus, we also established from analysis of the collected questionnaire data that the highest death rate after treatment was 30%, and the lowest was 10%. Hence, drug 1 failure is associated with 30% of the deaths and drug 3 with 10% of the deaths.
9. It was also assumed that initially there was no treatment occurring with approximately 5% of the cattle population being exposed and approximately 29% infected.