The duration of prophylaxis provided by isometamidium chloride and homidium bromide, each at a dose rate of 1 mg kg\(^{-1}\) bodyweight, was compared in a 12-month field trial involving groups of 30 zebu cattle in south-west Kenya. The trial took place between February 1990 and February 1991 and included several months of high trypanosome challenge. Cattle in the prophylaxis groups were retreated on a group basis when 10% of the group had become infected since the previous group treatment. On this basis the mean intervals between retreatment were 7.5 +/- 1.9 and 4.6 +/- 2.1 weeks for the isometamidium and homidium groups, respectively. Weight gains in the two groups were similar. In spite of the need for more frequent treatment in the homidium group as compared to the isometamidium group, total drug costs were lower in the former. There was evidence of Trypanosoma congolense resistant to homidium and some evidence of T. vivax resistant to isometamidium.