Donkeys are subjected to a wide array of parasitic infections. Due to the lack of commercial vaccines, anthelmintic drugs constitute a fundamental tool in the control and prevention of parasitic infections in donkeys. Currently available anthelmintics include: macrocyclic lactones (eg ivermectin and moxidectin), benzimidazoles (eg fenbendazole and mebendazole) and tetrahydropyrimidines (eg pyrantel). The challenges to curing infections with parasitic helminths or worms, especially small strongyles (also known as cyathostomins), have increased in an era where there are dwindling anthelmintic choices for drug-resistant parasites.

Resistance status of donkey strongyles
The emergence of drug-resistant parasite variants is always a concern because it could compromise the usefulness of current therapeutics. Our understanding of drug resistance in donkey parasites has increased with accumulating evidence of limited efficacies of pyrantel, fenbendazole, ivermectin and moxidectin in curing cyathostomiasis (caused by cyathostomins) in donkeys (Trawford et al., 2005; Peregrine et al., 2014; Lawson et al., 2015; Buono et al., 2018). Some of the factors that lead to the development and spread of anthelmintic resistance (AR) are widely accepted; eg the heavy reliance on anthelmintic treatment and the extra-label use of anthelmintics licensed for horses and ruminants, without optimisation of dosing regimens and determination of pharmacological properties of these drugs in donkeys.

Tackling anthelmintic resistance
To maximise the efficacies of current anthelmintic drugs, careful attention to the appropriate use of drugs is necessary. Veterinarians should balance between choosing anthelmintic treatment for donkeys with suspected strongyle infection and utilising anthelmintics in a judicious fashion. Although providing effective treatment and improving anthelmintic utilisation may seem opposing goals, there are strategies to accomplish both.

Anthelmintic stewardship can provide an efficient mechanism to implement these strategies and support the clinician’s effort in improving treatment outcomes and combating AR in donkeys. Veterinarians need to be sensible in anthelmintic use and should be open-minded to revise treatment dose intervals, because excessive anthelmintic use is a key factor in the development of AR. The Danish model of restricting anthelmintic drugs to prescription-only usage started two decades ago, and was later adopted by other European countries and Quebec in Canada.

Evidence-based and targeted treatment
To effectively manage resistant worms in donkeys and guide treatment choices, veterinarians should have better knowledge of local parasite epidemiology and follow the best possible practice in anthelmintic use. Also, they should monitor the development of AR using an early indicator, such as egg reappearance period (ERP) or faecal egg count reduction test (FECRT). Standardisation of resistance detection methods is essential to avoid discrepancies in the interpretation of the diagnostic results.

The practice of FEC-directed treatment and treating high strongyle egg shedders has been recently promoted as a potential approach for reducing anthelmintic treatment frequency because egg excretion (Figure 1) can be highly dispersed among individual animals. An earlier study suggested that increasing the threshold for treatment to 1,000 eggs per gram of faeces (epg) can minimise the emergence...