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The 4Rs of Responsible Prescribing of Pet Parasiticides

In UK Small Animal Practice

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There is growing awareness within the veterinary community and the mainstream media about the environmental concerns related to pet parasiticide use. Veterinary organisations like BVA, BSAVA, and BVZS have strongly encouraged a shift from indiscriminate prophylactic use to individualised risk assessments. These assessments consider factors like a pet's lifestyle, seasonality, and the prevalence of specific parasites in the local area.

This risk-based approach developed by Vet Sustain aims to balance the need for parasite control with minimising the potential negative impacts of parasiticides in line with the 6Ws of Veterinary Sustainability, particularly water, wildlife and welfare (Figure 1).

Figure 1: The 6Ws of Veterinary Sustainability (Vet Sustain 2025)

Overview of Concerns Associated with Pet Parasiticide Use:

- Recent studies have shown high concentrations of the active ingredients found in parasiticides, such as imidacloprid and fipronil, in UK waterways (Perkins *et al.,* 2021). These substances pose a significant threat to aquatic ecosystems, particularly affecting invertebrate species.
- Wastewater effluent is likely a major route for contamination, mainly originating from household activities like bathing treated pets, washing contaminated items, and owner handwashing. Research also indicates that residues from spot-on parasiticides are still detectable on patients, pet owners' hands and in-contact bedding for at least four weeks after application (Perkins *et al.,* 2024). Direct transfer into the environment via dogs swimming in bodies of water is also possible (Yoder *et al.,* 2024; Perkins *et al.*, 2025).
- Concerns also potentially extend to human health, with studies correlating chronic exposure to fipronil metabolites with hypertension and diabetes. The potential link

between these compounds and negative human health impacts is being explored (Peng *et al.,* 2024).

- While the amount of parasiticide used on individual pets might seem small, the cumulative effect from treatments applied to the reported 22-26 million pets (PDSA 2024; UK Pet Food, 2025) within the UK annually has the potential to negatively impact the environment.
- Animal welfare must be considered in accordance with the veterinary oath, and therefore, when considering parasite management, a balance must be struck between upholding the highest possible standards of animal welfare, protecting the public, and also mitigating the environmental impacts associated with pet parasiticides. This emphasises the need for a risk-based approach to parasiticide prescribing protocols and practices.
- Given the extent and trajectory of the biodiversity crisis (IPBES, 2019), and the duty and influence of veterinary professionals to support One Health, responsible and sustainable parasiticide use is a vital component of the veterinary sustainability agenda. Every member of the veterinary team has a key role to play in facilitating and enacting responsible parasiticide use.

Discussing a Risk-Based Approach to Prescription of Parasiticides in your Practice:

Environmental contamination with pet parasiticides, and their subsequent impacts on non-target organisms within ecosystems, has prompted many veterinary professionals, practices, practice groups and organisations to rethink how we use these products. However, it can be challenging to address the problems associated with parasiticide prescription in practice when evidence is still emerging and treatment norms are firmly established. However, whilst there are still many gaps in evidence, individual risk assessment is considered a viable approach (BVA, BSAVA & BVZS, 2021) to responsible parasiticide use, and deciding as a team how to implement this will facilitate clear and consistent communication with clients.

Utilising a '4Rs' framework of **Review, Replace, Reduce and Refine** (a modified version of the 3Rs, inspired by Russel and Birch, 1959; previously modified for antimicrobial stewardship by FAI, 2014), the following key steps can help practices to implement responsible parasiticide use, taking a risk-based and 'precautionary principle' approach:

GOAL 1: REVIEW your current approach to parasiticide prescription.

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In order to reconsider your approach, you might review what you and your practice is currently doing and why. Do these current norms and protocols incorporate an element of individual or geographical risk assessment?

Questions to discuss in your team include:

1. What products do you currently stock, and how much do you collectively prescribe?
2. Is the veterinary team informed about parasiticide active ingredients, metabolism and excretion, potential environmental impacts, and any data sheet recommendations to mitigate these impacts?
3. Are you engaging in discussions with owners regarding the risks and benefits of parasiticide use that enable your clients to make informed decisions?
4. What questions do you routinely ask clients regarding parasite risk?
5. Do you have different protocols for different species, ages and lifestyles? 6. What parasites are you most concerned about in your geographical area?

Goal 2: REPLACE indiscriminate prophylactic prescribing with an individualised risk assessed approach.

We aim to replace the routine use of parasiticides with a more strategic and risk-based assessment of each individual patient and their environment. In some low- and medium-risk cases, routine parasiticide treatments might be unnecessary or replaced with testing.

You might consider the following questions:

1. **What parasites are your patients actually at risk of?** Be aware of parasite life cycles and routes of transmission and local prevalence where this information is available. It can be helpful to review or audit the number of observations and clinical cases of endo and ecto-parasites you have seen in your practice, and the local risk of different parasites, which is likely to change over time (i.e. due to disease incursions, pet population dynamics, changing weather patterns, and climate change).

2. **What is the individual patient's risk status?** Assess the patient's lifestyle (e.g. outdoor vs. indoor cats), household/housing factors (e.g., multi-pet households; rehoming shelters with shared facilities), history of infestations, and concurrent disease (e.g., flea allergy dermatitis or immunocompromised). This can then be compared with known risk factors for each parasite of concern.

3. **Does the patient share a household or social group with high-risk people or animals?** Assess if the patient is in regular contact with people or other animals with relevant considerations (e.g., immune compromise, very young children, or elderly adults), which need to be factored into the risk assessment for any parasite with zoonotic potential.

   To then guide treatment, assign a risk band of low, medium, or high to the patient, reflecting these local conditions, individual animal factors, and status of people and other animals in their household/social group. The Vet Sustain feline and canine risk assessment tools give more information and a suggested framework for this. Decide as practice how you may approach a patient of each particular category.

Goal 3: REDUCE environmental exposure to parasiticides whilst preserving animal health and welfare by reducing unnecessary treatments where exposure to parasites or patent infections are not suspected or likely.

Routine preventative treatment regimes would be reserved for higher risk patients. In lower risk patients, to confirm assumptions made with risk assessments and monitor need for treatment, periodic testing could be considered as an alternative to treatment or in combination with a reduced treatment frequency. Adequate precautions could be adopted to reduce environmental exposure where products are used, eg. avoiding swimming and bathing activities with topical products, and any drug residues disposed of responsibly.

Goal 4: REFINE the use of pet parasiticides where they have been deemed necessary by ensuring the responsible and informed selection and administration of products.

We can refine our overall approach to the use of these products by applying our discussions and actions to key areas:

1. **Treatment planning:** Risk assessment may result in treatment being considered necessary. In such a case, consider what product to use as treatment, and why. Aim to use the narrowest spectrum product to target specific parasites, avoiding the unnecessary use of combination products where possible. This may require a change in stocking practices to facilitate.

   Consider whether testing needs to be applied prior to treatment to confirm infection, or after treatment to confirm efficacy of treatment, and what longer-term follow up may then be useful.

2. **Tailoring existing preventative healthcare plans:** The prescription of routine preventative parasite treatments via pet health plans is common in UK veterinary practice and is linked to historical risk management norms and existing veterinary business models. A transition towards a risk-based approach will likely require a change in such plans to allow the flexibility of individualised protocols. This may require careful change management involving the whole practice team and clients, backed by a clear rationale and protocols.

   Services to support risk-based prescribing goals could be offered. These may concurrently help to meet owner expectations of value which may formerly have been associated with receiving pharmaceutical products. Such services may include preventative health appointments, e.g., within nurse clinics, where lifestyle assessments could be undertaken to support vets' prescribing decisions. Testing options could also be integrated into such plans.

3. **Client communication and Education:** Ensure clients are included in the discussions and that they have an understanding of why they are given any products that are prescribed, what parasites are covered, and why their pet may or may not need treatments.

   Include information on other important parasite risk control factors such as hand hygiene and faecal waste management.

   Where products are prescribed, adequate guidance could be given to minimise negative environmental impacts of the treatment such as avoiding bathing or swimming following treatment and disposal of used packaging.

   Clients could be made aware of follow up advice if using testing methods to monitor their pet.

4. **Knowledge gathering and sharing:** To continually improve our ability to risk assess and evaluate the success of our chosen approaches, practices could implement an auditing strategy to track cases. Selling out different codes or products that can be reported within the practice management system could be one way of doing this. We could aim to consistently review treatment approaches at regular intervals to make sure they still reflect current risk identified.

   Practices can contribute to nationwide information gathering if they are part of SAVSNET or VetCompass networks and accuracy of these surveillance networks improved if parasite diagnosis were routinely recorded in clinical notes.

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Recording and reporting any treatment failures regarding parasite treatments will allow for identification of resistance development.

Summary:

The use of pet parasiticides, while important for protecting pet welfare and public health from parasitic disease, has raised significant concerns regarding environmental contamination and even, potentially, human health risks. Veterinary practices could adopt a risk-based approach, promoting responsible use through the **'4Rs' of responsible pet parasiticide prescribing (review, replace, reduce, refine)**, involving individualised risk assessments, client education, and a more nuanced prescribing strategy. This shift aims to control parasites effectively and support animal welfare, whilst protecting public health and minimising the adverse potential ecological impacts of these products.

For more information, you and your team can explore the following resources:

1. BVA, BSAVA and BVZS joint policy statement (BVA 2021).
2. BVA 5 point plan for responsible prescribing (BVA 2022).
3. Vet Sustain Webinar and parasiticides supporting information documents.
4. SAVSNET - flea activity tool
5. SAVSNET - tick activity tool

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