Sustainable equine worming

SMART WORMING
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What are your biggest challenges around horse worming?
• Equine Worms

• Principles of effective parasite control

• SMART Worming

• Putting it into practice
Worm Lifecycles

Pre-patent period (PPP)

- Eggs
- Intermediate host
- L1 larvae
- L2 larvae
- L3 larvae
- L4
- L5
- Adult worms
Which worms?

**Small redworms**  
(strongyles, cyathostomes)

**Roundworms**  
(Ascarids, *Parascaris*)

**Large redworms**  
(strongyles, cyathostomes)

**Tapeworm**
Small Redworms (small strongyles, cyathostomines)

- Most common and significant equine worm\(^1\)

- Adults live in large intestine
  - Rarely cause serious illness\(^1\)

- In autumn larvae “encyst” in wall of intestine
  - Refractory to most wormers
Encysted Redworms significance

• Affect young horses (1-3 years old)
  • Unlikely in horses >6 years old

• Mass emergence of encysted larvae in spring

• May cause severe illness (cyathostominosis)
  • Diarrhoea, weight loss, colic
  • Up to 50% fatal
Large Redworms (Large Strongyles)

- Adults live in large intestine
- Long lifecycle (PPP 6-12 months)
- Larvae migrate through liver or intestinal blood vessels for months before returning to intestine
Large Redworms significance

- Primarily affect young horses (1-3 years old)
- Ill thrift, anaemia
- Damage blood vessels as worms migrate: “verminous arteritis”
  - Worms and clots in intestine’s blood supply causes damage/death of gut wall
  - Can cause colic and death
  - Rare but serious
Tapeworm  
(*Anoplocephala perfoliata*)

- Adults live at junction of small & large intestine

- Intermediate host is forage mite
  - Infection builds over grazing season
  - Highest levels in autumn
Tapeworm significance

- Low/moderate burden (majority of infected horses): minimal effect
- Heavy burdens: may cause obstruction and colic
Roundworms (Ascarids, *Parascaris equorum*)

- Adults live in small intestine
- Large worms
- Produce large number of eggs
  - Persist in the environment – heavy contamination of pasture
- Larvae migrate through liver and lungs
Roundworms significance

- Affect foals and youngstock <18 months of age
- Typically in late summer/early autumn

- Unthriftiness and poor growth
- Intestinal obstruction, colic
- Respiratory signs/nasal discharge (“summer colds”)

BROUGHT TO YOU BY THE MAKERS OF EQVALAN™ EQVALAN DUO
• Equine Worms

• Principles of effective parasite control

• SMART Worming

• Putting it into practice
What are we trying to achieve?

• Prevent adverse effects from worm burdens
  • Ill-thrift, illness, death

• Reduce pasture contamination with eggs
  • Protect the next generation of horses

• Slow the development of resistance
  • Preserve wormer efficacy

• NOT aiming to eliminate worms
What does resistance mean?

- Fewer worms killed at a dose that was previously effective

Dose 1 2 3

Dose 1 2 3 4

95% killed

80% killed

More resistant population
Why does frequent worming increase risk of resistance?

1. Wormer → Untreated population → Next generation
2. Wormer → Next generation

Drug sensitive

Drug resistant

no untreated population
Worming strategies

• **Targeted treatment**
  - Treat only those with a demonstrated need based on testing
  - Preferred approach

• **Strategic dosing**
  - Treat at specific times based on risk assessment
  - May be appropriate in some cases

• **Interval dosing**
  - Treat at regular intervals
  - Traditional approach – not recommended
Why target treatment?

• Reduces pasture contamination while minimising wormer administration

• Leaves a population of untreated (susceptible) worms (“refugia”)

• Cost effective – shown to be cheaper than interval treatment\(^3\)
What is needed for sustainable worm control?

• Non-wormer control strategies
  • Pasture management
  • Stock management

• Optimised administration of wormer
  • Risk based
  • Targeted
Give examples of non-wormer control strategies
Pasture management

• Poo picking
  • minimum twice weekly
• Cross grazing with sheep/cattle
• Resting/rotating fields
• Harrowing?
• Muck spreading?
Stock Management

• Group by risk
  • Age cohorts
  • High vs low egg shedders
• Quarantine for new arrivals
• Low stocking density
• Equine Worms

• Principles of effective parasite control

• SMART Worming

• Putting it into practice
Smart Worming

Simply **Monitor**

**Assess Risk**

Treat accordingly

Right Horse  Right Time  Right Wormer
Smart Worming

Simply Monitor
Assess Risk
Treat accordingly

Right Horse  Right Time  Right Wormer
Target high egg shedders

- 80% of worm eggs are passed by 20% of horses\(^4\)
- Faecal egg counts (FEC) to identify high shedders

![Diagram showing high and low egg shedders]

Moderate to high FEC
‘high egg shedders’

Zero - low FEC
‘low egg shedders’
Faecal Egg Count (FEC)

• Every 8-12 weeks in grazing season
  • Droppings <4 hours old
  • Multiple samples from various areas
  • Seal in bag with minimal air, test as soon as possible

• Detects redworm and roundworm eggs

• Only worm horses with high FEC
Tapeworm testing

• Tapeworm antibody test
  • Blood or saliva
  • Saliva sampling can be done by owners

• Annual (autumn/winter) all horses
  • High risk horses test spring & autumn

• Negative = horse is unlikely to have significant tapeworm burden
• Positive = horse either currently has or has recently had tapeworms
Smart Worming

Simply Monitor
Assess Risk
Treat accordingly

Right Horse  Right Time  Right Wormer
Age-related risk$^{3,5}$

- Natural immunity to worms develops with age$^{1,4}$
  - Lower worm burdens
  - Less egg shedding
  - Lower risk of clinical disease

- Higher risk of disease and high egg shedding if:
  - < 4 years old
  - Grazing with young horses

- Some horses remain high egg shedders all their lives
Age-related risk\(^4,6\)

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<tr>
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<th>3m</th>
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<th>9m</th>
<th>1yr</th>
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Age-related risk$^{4,6}$

**Foals/yearlings**
- Roundworms
- Small redworms
- Tapeworm

**Older horses**
- Small redworms
- Tapeworm
- Large redworms
Risk Assessment\textsuperscript{4,8}

**HIGH**
- Young horse
- High egg shedder
- Minimal poo picking
- Regular new arrivals
- Grazing with youngstock
- High stocking density

**LOW**
- Adult horse
- Low egg shedder
- Poo picking at least twice a week
- Closed herd
- No youngstock
- Low stocking density
Risk Assessment\textsuperscript{4,8}

Will insert chart based on Canter risk assessment

Canterforhorses.org.uk
Encysted redworm risk

• Larvae encyst in autumn and emerge in spring, causing cyathostominosis
  • Encysted treatment in winter for horses at risk
  • Young horses <6 years old

• Critical to maintain ability to treat cyathostominosis
  • Resistance is a big concern
  • Only treat for encysted if necessary
Smart Worming

**Simply Monitor**

**Assess Risk**

**Treat accordingly**

Right Horse  Right Time  Right Wormer
Wormers available

• Benzimidazoles
  • Fenbendazole

• Tetrahydropyrimidines
  • Pyrantel

• Macrocyclic lactones
  • Ivermectin
  • Moxidectin

• Praziquantel (tapeworms)

• Combinations
  • Ivermectin + Praziquantel
  • Moxidectin + praziquantel
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Worms may be resistant to more than one class of wormer.

Is there much resistance\(^2,4,6\)?
How is resistance detected?

- Faecal Egg Count Reduction Test (FECRT) / “drench test”
  - FEC before (ideally) and 14 days after de-worming
  - Can do only post-treatment FEC
  - Should be >90% reduction in eggs at 14 days

- FECRT should be done at least once a year
- Confirms efficacy of chosen wormer
Optimal wormer choice\textsuperscript{4,6}

- Roundworms – fenbendazole or pyrantel
- Redworms– ivermectin or pyrantel

- Keep moxidectin in reserve
  - Encysted redworm
  - Clinical cyathostominosis

- Check efficacy annually (FECRT)
• Equine Worms

• Principles of effective parasite control

• SMART Worming

• Putting it into practice
Case 1

A customer has 2 horses, age 12 and 16. They have plenty of land, the horses are rotated across the paddocks and they poo pick twice a week.

It's September and she has come in to buy a wormer but isn't sure what she needs.

Follow up Information:

She does 2 FEC a year and results have been low for the last few years.
The horses have no health issues.

- What else would you like to know?
- What is/are the horses risk level?
- Which worms are most important?
- What will you recommend and why?
A livery yard owner is looking for advice on a worming plan for her yard. There are 10 adult horses, stocking density is reasonable and they poo pick at least once a week. There is no history of worm related disease

• What is/are the horses risk level?
• Which worms are most important?
• What will you recommend and why?
• What should they do with new arrivals?
Case 3

One of your regular customers has a small Welsh cob stud. He is expecting 5 foals this year and also has 5 yearlings. You know he comes in about 4 times a year to buy moxidectin or moxidectin/praziquantel wormers for his foals & youngsters. Its March and he has come in to buy wormers again.

• Which worms are most important?
• What would be an ideal worming plan for the youngstock?
• How would you approach the conversation with this customer?
One of your customers is a producer of sports horses. He usually buys about 5 young horses (4-6 year olds) annually and sells about a year later. He has 10-15 horses at any time. Money is tight so he usually worms once in spring and for encysted redworm in autumn

- What is the horses’ risk level?
- Which worms are most important?
- What will you recommend and why?
- What should they do with new arrivals?
Summary: foals

• **Main concerns: Roundworms & Small redworms**
• Focus on pasture management
  • Avoid using same paddocks every year

*Spring/Summer*
• **Strategic treatment**
  • Roundworms every 2 months (FBZ or PYR)
  • FECRT to check efficacy

*Autumn/Winter*
• **Strategic treatment**
  • Encysted redworm & tapeworms (MOX/PRZ)

FBZ= fenbendazole, PYR = pyrantel, IVM = ivermectin, MOX = moxidectin, PRZ = praziquantel, dd = double dose
Summary: youngstock

• **Main concerns: Roundworms & Small redworms**

*Spring/Summer*

• **Targeted treatment:** FEC every 8 weeks
  • Roundworms (FBZ or PYR)
  • Redworms (IVM or PYR)
  • FECRT at least once

*Autumn/Winter*

• **Strategic treatment** for encysted redworm (MOX)
• Test for tapeworms, **targeted treatment** (PRZ)

FBZ= fenbendazole, PYR = pyrantel, IVM = ivermectin, MOX = moxidectin, PRZ = praziquantel, dd = double dose
Summary: new arrivals

- **Main concern: small and large redworms, tapeworms**

- **Quarantine**
  - Resistant worms can be spread by horse movement
  - Consider “sacrifice” paddock

- **Strategic treatment** for redworms & tapeworm (IVM/PRZ or PYRdd)

- **Test (FECRT)** 2 weeks after treatment - before turnout
  - If not effective, repeat with a different product

FBZ = fenbendazole, PYR = pyrantel, IVM = ivermectin, MOX = moxidectin, PRZ = praziquantel, dd = double dose
Summary: adult horses

• **Main concern:** redworms, tapeworm

*Spring to autumn*

• **Targeted treatment:** FEC every 12 weeks
  • Treat if needed (IVM or PYR)
  • FECRT once (if wormed)

*Autumn/winter*

• **Strategic treatment** for large strongyles (IVM) – if not wormed this year

• Test for tapeworms, **targeted treatment** (PRZ)

FBZ = fenbendazole, PYR = pyrantel, IVM = ivermectin, MOX = moxidectin, PRZ = praziquantel, dd = double dose
Summary

• Use risk assessment to guide management

• Targeted treatment on basis of risk assessment and testing (FEC)

• Check efficacy annually (FECRT)
### Summary

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<th>Summer</th>
<th>Autumn</th>
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Other products are licensed, these recommendations are based on common resistance patterns.
References


6. AAEP Internal Parasite Control Guidelines . aaep.org/guidelines/internal-parasite-control-guidelines [accessed Dec 2022]


8. Canterforhorses.org.uk
Accreditation

AMTRA
12 CPD Points (Ref A3329)
Event Name: Boehringer Wormstock Sustainable Equine Worming

Vetpol
90 minutes
Pinworms

- Nuisance - irritation and tail rubbing
- Difficult to treat
  - Eggs sticky and resilient
  - Persist in the environment (stables, fencing)
- Hygiene is key to control:
  - Physical cleaning of anal area
  - Strict stable hygiene
- Grazing season – FEC every 8-12 weeks (treat if needed)
- Encysted redworm treatment (if needed)
- Tapeworm testing (treat if needed)
- Consider treatment for large strongyles