Sustainable equine worming

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What are your biggest challenges around horse worming?

smaRT WORMING
SIMPLY MONITOR, ASSESS THE RISK AND TREAT ACCORDINGLY

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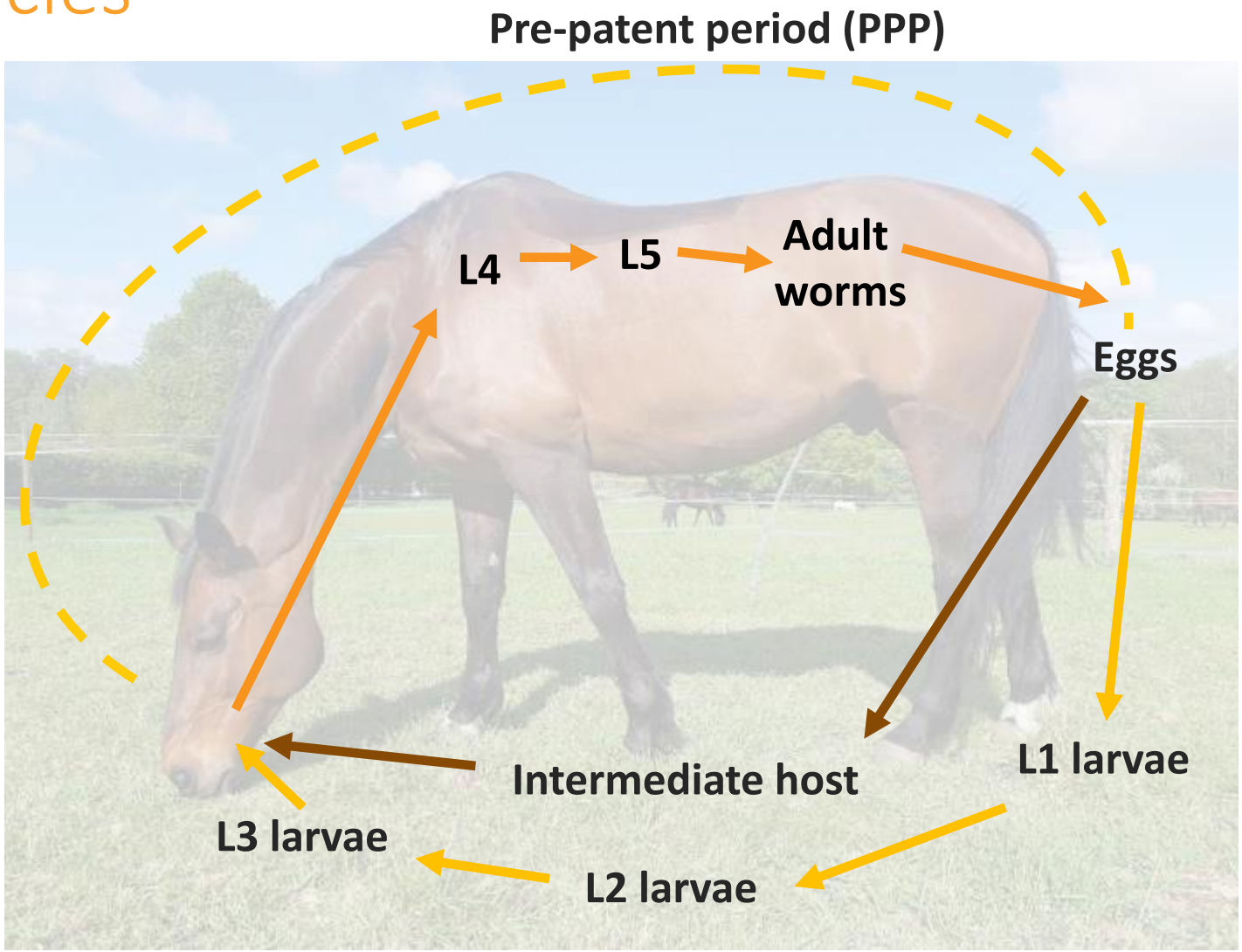
- Equine Worms
- Principles of effective parasite control
- SMART Worming
- Putting it into practice

Worm Lifecycles



Which worms?

Small redworms

(strongyles, cyathostomes)

Large redworms

(strongyles,cyathostomes)

Roundworms

(Ascarids, *Parascaris)*

Tapeworm

Small Redworms
(small strongyles, cyathostomes)

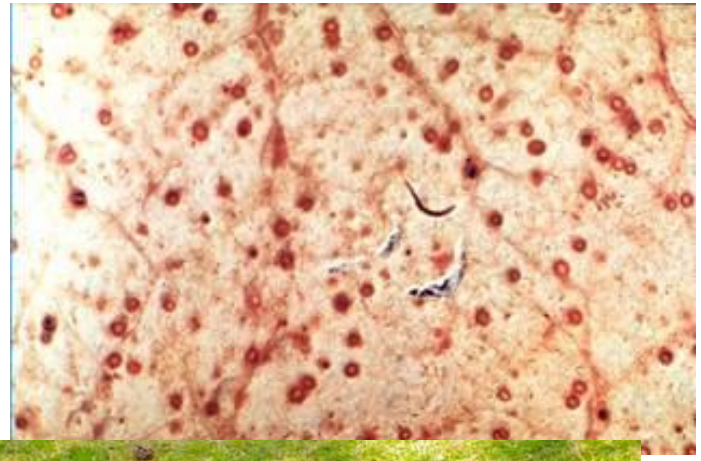
- Most common and significant equine worm[1]

- 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[1,5]

- 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[2]

- 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”)

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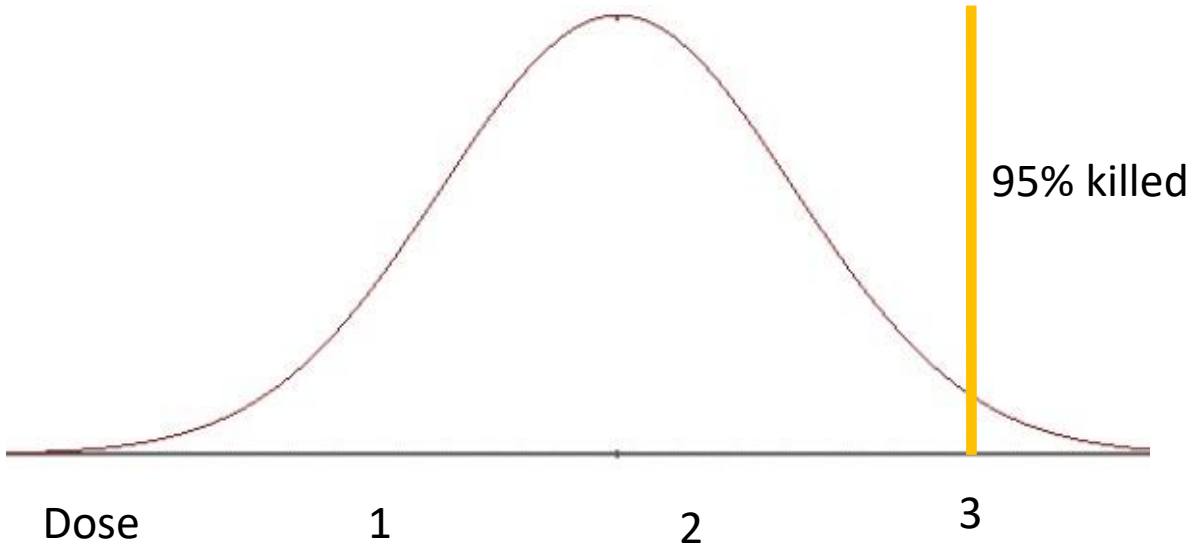
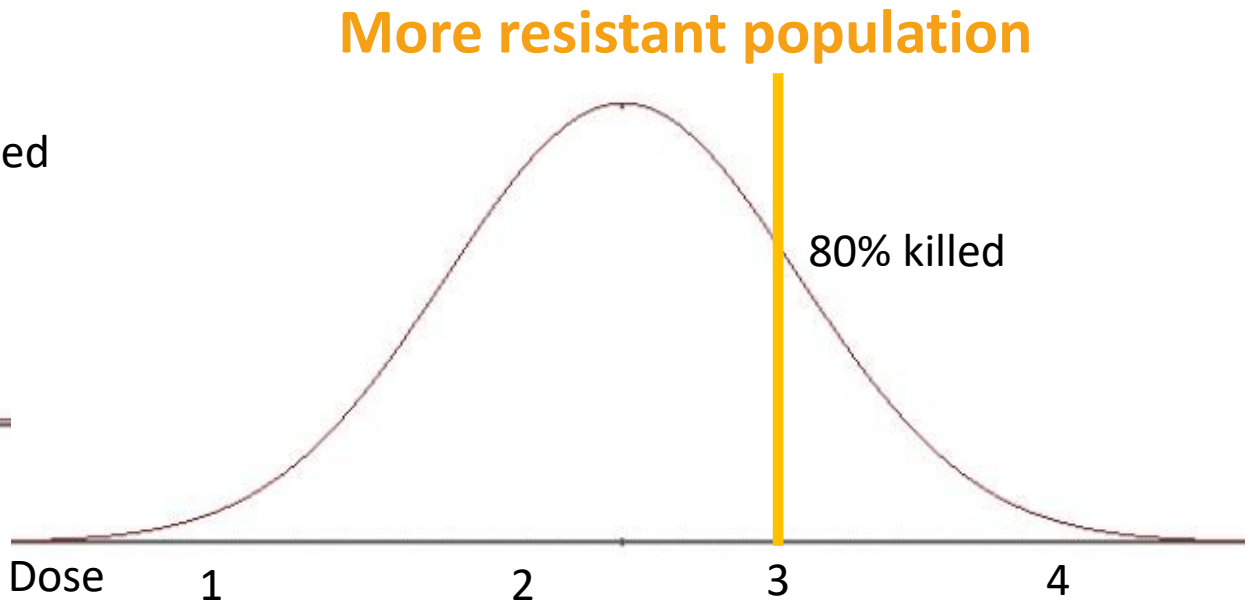
What are we trying to achieve?

- 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

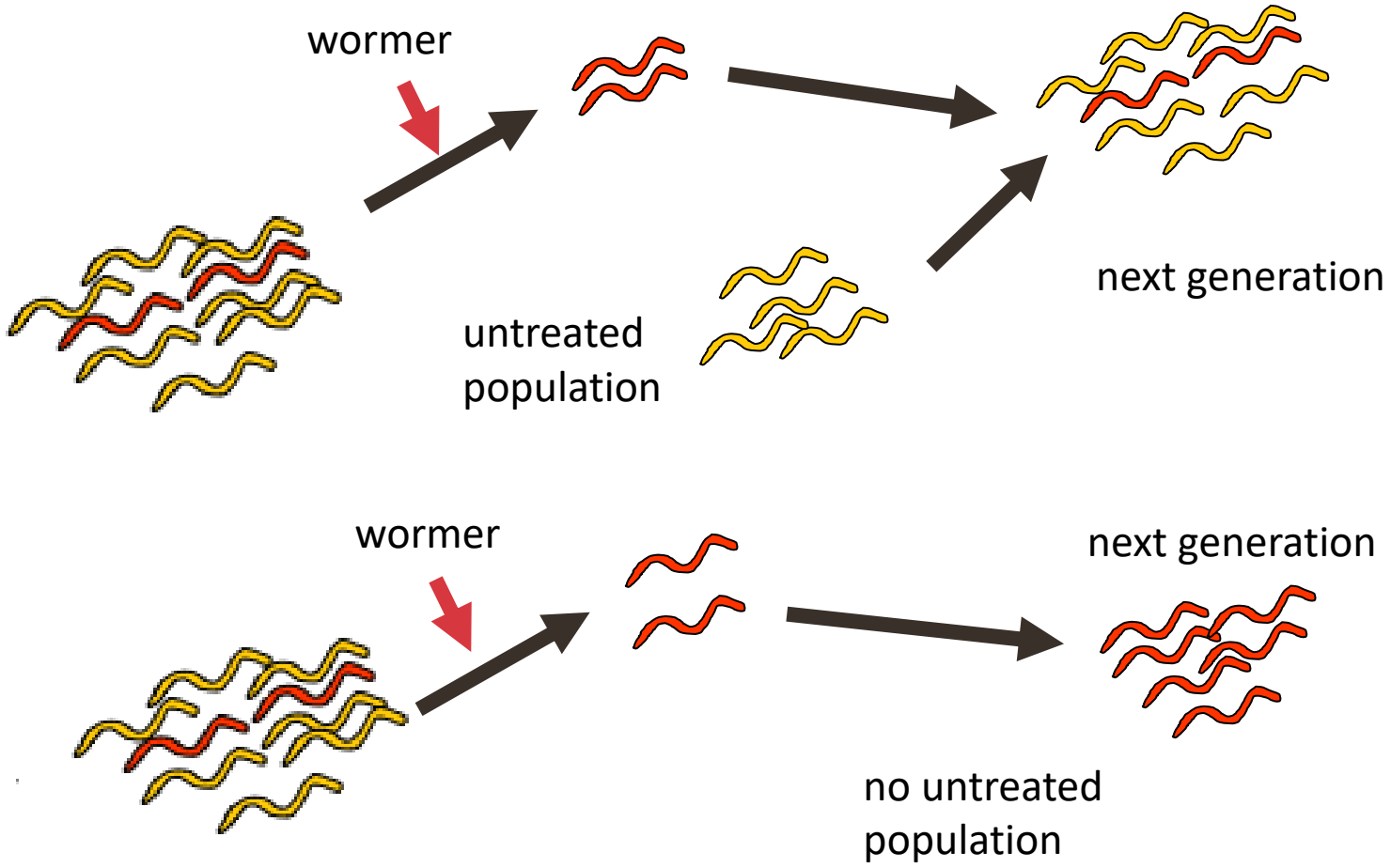
What does resistance mean?

- Fewer worms killed at a dose that was previously effective





Why does frequent worming increase risk of resistance?

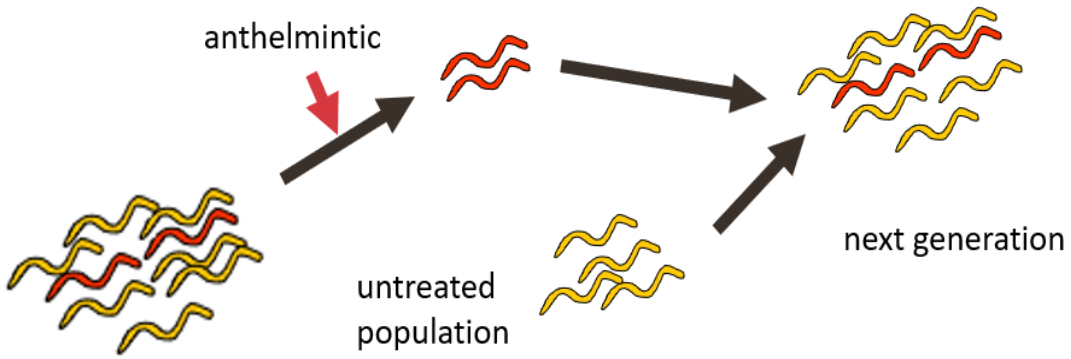


Worming strategies

- 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

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Smart Worming

Simply **M**onitor

Assess **R**isk

Treat accordingly

Right Horse

Right Time

Right Wormer

Smart Worming

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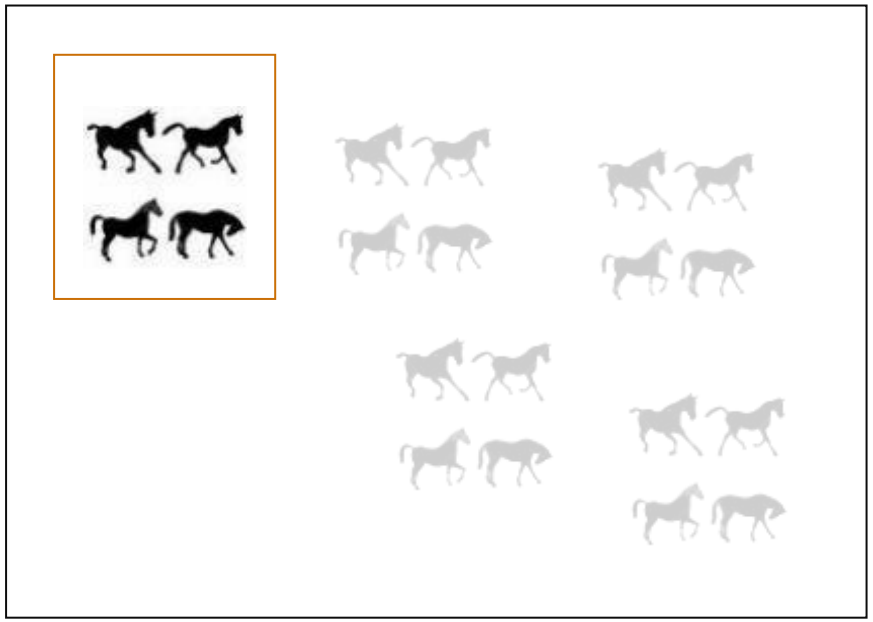
Target high egg shedders

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

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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]

AGE OF HORSE	3m	6m	9m	1yr	2yr	3yr	4yr	5yr +
Roundworms								
Small Redworms								
Large Redworms								
Tapeworms								

Low risk | Medium risk | High risk

Age-related risk[4,6]

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Foals/yearlings

Roundworms

Small redworms

Tapeworm

Older horses

Small redworms

Tapeworm

Large redworms

Risk Assessment[4,8]

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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

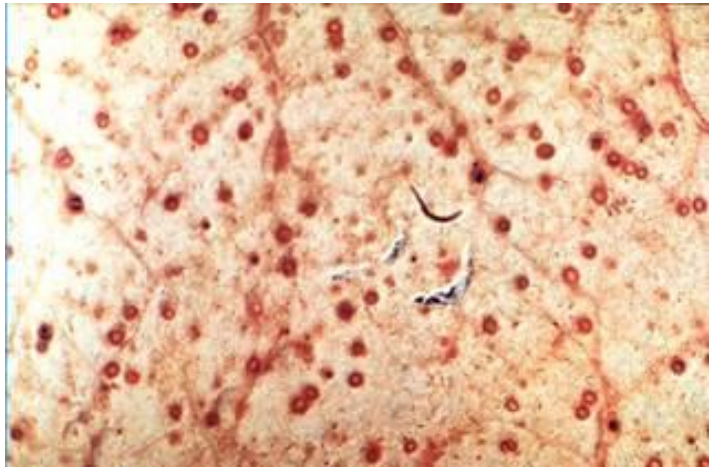
Risk Assessment[4,8]

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

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Wormers available

- Benzimidazoles
  - Fenbendazole
- Tetrahydropyrimidines
  - Pyrantel
- Macrocylic lactones
  - Ivermectin
  - Moxidectin
- Praziquantel (tapeworms)
- Combinations
  - Ivermectin + Praziquantel
  - Moxidectin + praziquantel

Wormer Licensed Indications[7]

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BASED ON GB (UK) SPC	**small redworm** strongyles/cyathostomes adult	imm (L4)	encyst L3	**large redworm** strongyles adult	larval	**roundworms** *Parascaris* adult	larvae	**pinworms** *Oxyuris* adult	imm	**threadworm** *Strongyloides*	**lungworm** *Dictyocaulus*	**hairwoms** *Trichostrongylus*	**stomach worm** *Habronema*	**neck threadworm** *Onchocerca*	**bots** *Gasterophilus*	**tapeworm** *Anaplocephala*
fenbenbdazole			5 day or inc. dose		5 day or inc. dose					Inc. dose						
pyrantel																Inc.dose
ivermectin *(Eqvalan)*																
ivermectin/prazi *(Eqvalan Duo)*																
moxidectin																
moxidectin/prazi																

Is there much resistance[2,4,6]?

	Small Redworms	Roundworms
Benzimidazoles	Common	Some reports
Pyrimidines (Pyrantel)	Common	Some reports
Macrocylic lactones	Some reports	Common

Worms may be resistant to more than one class of wormer

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[4,6]

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

- Keep moxidectin in reserve
  - Encysted redworm
  - Clinical cyathostominosis

- Check efficacy annually (FECRT)

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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.

Its 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?

Case 2

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?

Case 4

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

	Spring	Summer	Autumn	Winter
FEC for redworms (every 8-12 weeks)	FEC	FEC	FEC	
Treatment options (if high redworm FEC)*	ivermectin (e.g. Eqvalan®) pyrantel			
FECRT (once a year)	2 weeks after worming			
Strategic treatment*	*if at risk from encysted redworm*			moxidectin
	if not wormed at all during the year (to cover large strongyles, bots, etc)			ivermectin (e.g. Eqvalan®)
Tapeworm test (saliva or blood)	Tapeworm test (if high risk)		Tapeworm test	
Treatment options (if high tapeworm)*	ivermectin & praziquantel (e.g. Eqvalan® Duo) pyrantel - double dose		ivermectin & praziquantel (e.g. Eqvalan® Duo) pyrantel -double dose	

Other products are licensed, these recommendations are based on common resistance patterns

References

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Accreditation

AMTRA

12 CPD Points (Ref A3329)

Event Name: Boehringer Wormstock Sustainable Equine Worming

Vetpol

90 minutes

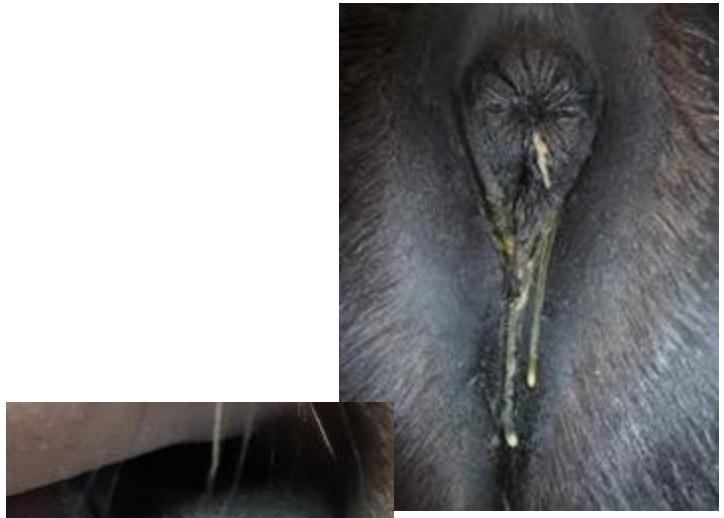
BACKUP SLIDES

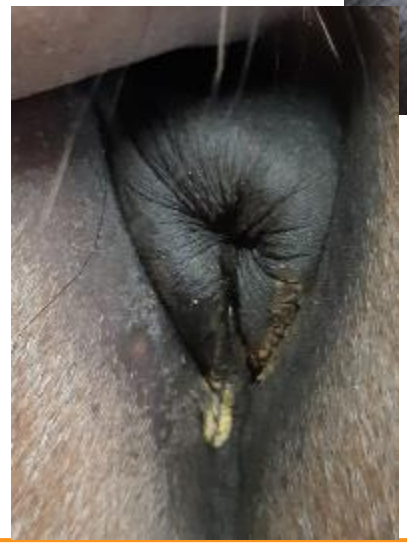
Pinworms

- 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





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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