

Equine Parasites 2015

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Agenda – Intro into Strategic Worming

- A review of the major equine worms
- Parasite drug groups
- Strategic Vs Traditional worming
- New data from a 2014 Australian university study
- Why Equest is a vet's first choice wormer
- Factors to consider when using wormers
- Resistance Vs Refugia



WHY DO WE WORM HORSES ANYWAY?

Why do we worm horses anyway?



- Increased performance
- Improved health
- Increased breeding efficiency
- Reduced pasture contamination

TO PREVENT DISEASE, ILLNESS & DEATH



WHAT ARE SOME TYPES OF EQUINE WORMS ?



















	How common?	How severe?	
Large roundworms (Parascaris equorum)	Common in foals	Potentially fatal	
Pin worm (Oxyuris equi)	Occasional	Mild	
Tape worm (Anoplocephala perfoliata)	Common	Potentially fatal	
Bots (Gasterophilus spp.)	Extremely common	Mild	
Large strongyle (Strongylus vulgaris)	Rare	Potentially fatal	
Small strongyles (Cyathostomes)	Extremely common	Potentially fatal	

Small strongyles infections are extremely common and potentially fatal^{3,4}

"Small strongyles are the most important parasites in the modern adult horse" – AAEP Guidelines⁵



Which worms are we worried about?







Ascarids: High risk for horses under 2 years



Image courtesy of Dr. Laura Hardefeldt - Tarwin Vet Group Victoria



Parascaris equorum (Ascarids or Large Roundworms)

Common in foals, causing intestinal blockages and lung damage





Which worm is this?





Here's a hint...



Image courtesy of Dr. Laura Hardefeldt - Tarwin Vet Group Victoria



Oxyuris equi (Pinworm)

Occasional problem. Causes itchiness under tail area.





Horse swallows eggs with feed or drink Eggs fall into water or feed

Which worm is this?



Image courtesy of Dr. Laura Hardefeldt - Tarwin Vet Group Victoria



Anoplocephala perfoliata (Tapeworm)

Affects all horses. Thought to be common cause of colic, unthriftiness and diarrhoea.





Which worm is this?





Here's a hint...











Gasterophilus spp. (Bots)

Affects all horses. Cause of colic, weight loss, mouth ulcers and bad temper.



Which worm is this?





Strongylus vulgaris (Large strongyle)

Rare nowadays. Cause of colic, anaemia and fatal haemorrhage





Which worm is this?



Doesn't look that important does it?



Hint: These worms 'encyst' in the gut wall



Image courtesy of Dr. Laura Hardefeldt - Tarwin Vet Group Victoria



Small strongyles (Cyathostomins)

-the most important parasites in the modern horse

Extremely common. Cause of potentially fatal colic and ill-thrift



Larvae

 $(\mathbf{3})$

I arvae break out from gut wall cysts and develop into adults in intestine •"En masse" is termed "Larval cyathostominosis"

- Eggs pass in manure •Following a Pre-patent period of 6-10 weeks
 - Hatch into larvae & develop on pasture

Small strongyles - encysted stages



ALL larvae go through encysted stage SOME larvae go through the inhibited stage

Early Larval 3 stage invade the large intestinal wall and become surrounded by a fibrous capsule (Encysted) Encysted Late Larval 3 stage progresses to Larval 4 stage

EL3's may remain dormant (inhibited) for up to $2^{1/2}$ years

Larval 4 Stage breaks out into the lumen

May be fatal colic and diarrhoea if emergence is "en masse" (thought to occur when adults in lumen are killed)





How do we kill these encysted larvae?





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OR Double dose (at least 100ml) of Fenbendazole stomach tubed for 5 days

Small strongyles - Larval stages



What do the experts say?

• "Larval cyathostominosis occurs in horses of all ages..... The case fatality rate is reported to be around 50%"

- Handbook of Equine Parasite Control (2013) Reinemeyer and Neilsen p31

AAEP Parasite Control Guidelin

welcoed by the AAEP Parasile Control Subcommittee

of the AAEP Infectious Disease Committee

Subcommittee members: Martin K. Neben, UVM, Ph.D., Dal, EVPC; (zhai), Mitte, MSPH, DMM, Any Grov, WMD, Mothael Ensim, DVM, Dipl. AdVPC, Fully, Graves, WMD, Dipl. ACVM, Wendy Vaala, VMD, Dipl. ACVM, Richard C. Taly, DMM, Dennis D. French, DVM, Ph.D., Dipl. ABVP, Richard Bewman, DVM, Ray M. Kaplan, DVM, Ph.D., Dipl. ACVM, Dipl. EVPC.

Mission Stateme

Commonly used situatingles for paravelle control in shaft homes are tassed targing on homologic and compets that are non-than 40 years of l. Network, much has handing over this time increasibilities of the second strategies of the second strategies and the commonlishing in the targing estimations are paravelle control. In response to this commonlishing the targing estimations are used to a second strategies and programs for paravels control in homes of all spice. Catabilities will be specified separately for adult and young nones (tests that years).

- commendations developed in this document are based on the following:
- Important changes in the parasitic fauna of homes have occurred such that Strongylus vulgaris and other large strongyles are now rare, and cyathostomins (small strongyles) are now the major parasite of concern in adult homes, while Parascaris equorum meaning the most imported neurable indexing homes and support of the strong strong the strong to t
- Anthelmints are index important parameter intercent to and interacting out and interacting of the anti- Anthelmints resistance is inplying prevalent in cystito-formisms and Parascaris equorum, and this must be factored into treatment decisions (Kaplan and Nelsen, 2010).
 Adult horses vary greatly in their innate susceptibility to infection with cystihostomine and
- there sevel of strongule egg shedding and thus, require individualized attention to their parallelic control needs. 4. Honses less than about 3 years of age require special attention as they are more suscentible to parallelic forcins, and are more at dia for developed mission. This article
- susceptible to parasite infection, and are more at risk for developing disease. This article will detail the separate approach taken for parasite control in this age group.

Download "AAEP Parisitology Guidelines 2013"



Cyathastomins - small strongyles

- Part of life-cycle involves encysting in large intestine
- For various reasons, all tend to emerge simultaneously
- This can rip the gut wall causing infection or cause compaction colic for a large burden
- Common in early autumn to mid winter
- Hard to detect when encysted
- Moxidectin is the only drug that kills encysted larvae with a single dose
- 50 different varieties world wide
- Sometimes called red worms see pic





WORMING ACTIVES

DRUG TYPES

Chemical Families of Horse Wormers (plus Praziquantel)

Benzimidazoles (BZS) (Established 1960's)

Fenbendazole oxfendazole

Tetra-hydro-pyrimidines (THPs) (Established 1970's)

Pyrantel Morantel

Macrocyclic lactones (MLs) (Established 1980's)

Ivermectin Abamectin Moxidectin (1997)



Macrocyclic lactones – has 2 families

Avermectins:

Ivermectin -1981 Abamectin Eprinomectin Doramectin Selamectin

Milbemycins:

Moxidectin -1997 Milbemycin







Moxidectin

Second generation macrocyclic lactone – 1997 Debut

The molecular structure of the milbemycins is different to that of the avermectins: no recorded resistance in Australia

EQUEST

More lipophilic molecule: Fat storage acts as depot Prolonged activity

Persists at higher levels in gut mucosal and other tissues – Is able to penetrate gut wall lining to KILL the encysted cyathastomins

Only 1 brand of Moxidectin on the market in Australia = EQUEST



Equest Kills Encysted zoetis

STOP PRESS!

A NEW AUSTRALIAN 2014 EQUINE WORM STUDY





AUSTRALIA

Prevalence of cyathostomins, *Strongylus vulgaris*, *Parascaris equorum* and *Anoplocephala perfoliata* on Australian horse properties.

Authors: Anne Beasley

Sponsor: Zoetis Australia Pty Ltd

Study Site: The School of Veterinary Science, The University of Queensland Gatton, Qld, 4343 Australia



Where did they look?



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102 horse farms from FNQ to Tasmania

What did they find?

Equine Parasites Found	Incidence on Australian farms
Small Strongyles (Cyathostomins)	100%
Parascaris equorum (Ascarids) (on all farms)	14.7%
<i>Parascaris equorum</i> (on farms with horses aged <2yr)	34.1%
Strongylus vulgaris (Large Strongyles)	7.8%
Tapeworm	3.9%



Summary of discovery

- Zoetis commissioned UQ to do a worm prevalence study
- 102 farms from FNQ to Tasmania
- Minimum time since last worming was 8 weeks
- ALL farms had small strongyles
- 34% of farms with young horses had ascarids
- 4% of farms had tapeworm
- 8% of farms had large strongyles
- Therefore ALL horses will need a wormer that targets small strongyles
- The best wormer for small strongyles is.....
- Equest also covers ALL other worms found







Historical comparisons studies for Aussies

Author/s	Year	State	No. horses surveyed	Methods	Prevalence CYATHOSTOMINS	Prevalence P. EQUORUM	Prevalence S. VULGARIS	Prevalence A. PERFOLIATA			
Beasley / Zoetis	2014	AUST	102	Coprology	100%	34.1%/14.7%*	7.8%	3.9%			
Anazi et al.	2007	NSW	35	Necropsy	46%	8.3%	17%	17%			
Boxell et al.	2004	WA	29	Necropsy	96.6%	13.8%	0%	10.3%			
Bucknell et al.	1995	VIC	150	Necropsy	95%	5%	23%	29%			
Mfitilodze, Hutchinson	1989	Nth QLD	57	Necropsy	89%	33%/15%*	28%	32%			
Dunsmore, Sue Jue	1985	WA	140	Necropsy	49.3%	9.9%	22.5%	4.9%			
English	1979	Sth QLD	138	Necropsy			93%	62%			

Table 2 Comparison of Australian studies reporting on the prevalence of various equine helminths.

* Prevalence in horses or on farms with horses < 2 years of age.



What are our key learns from this study?

100% of properties surveyed had small strongyles

34% of properties with horses under 2yo had ascarids

Tapeworm and large strongyles were less prevalent

Equest Plus Tape is the most effective wormer to control the small strongyle

Only Equest Plus Tape kills the 'encysted' small strongyle in a single dose





WHAT DO WE DO NOW?

PROTECT THE FUTURE: RESPONSIBLE USE OF DEWORMING DRUGS IN HORSES

How resistance occurs





effective.

Traditional Worming Strategy

- Deworming every 8-12 weeks (interval treatment)
- Rotational deworming
 - Different drug every time
 - All 3 drugs at once!?
- What the experts say: AAEP Parasitology Guidelines 2013

"Commonly used strategies for parasite control in adult horses are based largely on knowledge and concepts that are more than 40 years old.

However, much has changed over this time necessitating a re-examination of recommendations for parasite control."



Rotational Worming Made Easy

Year

eXpe

eXnel

Year

use Equino

use Equinox

use eXpel aYnal

use eXpel

use eXpe

Year A - Expel Use Expel Yellow Tube

All Wormer (morantel tartrate + abamectin) all year round.

Year B - The "mectin" year

Use either ValuMAX® Red Tube All Wormer (abamectin + praziquantel) or Valumec" Green Tube Broad Spectrum Wormer (abamectin) as your regular wormer. Ensure ValuMAX® is used at least twice a year to control Tapeworm, if using Valumec" as the regular wormer (refer to chart).

Year C - The "BZ" year

Use Equinox Orange Tube Wormer (oxfendazole) as your regular wormer. Use ValuMAX® in late May and late August to control Tapeworm and Bots (refer to chart).

Oct

use Equinor

When to worm:

lorseSupplies Direct

Heavily stocked paddocks - Every 6 v/ks Pasture controlled properties - Every 8-12 v/ks Stabled Horses - Every 12 v/ks Foals - Every 6-8 v/ks New additions to the property -Worn immediately and keep off common pasture for 3-10 days

*Alternatively, check with your local veterinarian for recommendations for your individual requirements

If you have been using "mectin" wormers as your regular wormer, then it is recommended that you start the program on Year A or C.

For further information contact Value Plus on 1300 787 041



Rotation selects for multi-drug resistant parasites



zoetis

Here's a Fact:

20 percent of the horses on pasture shed 80 percent of the parasite eggs. So why would you deworm every horse the same?

Image courtesy of Dr. Laura Hardefeldt - Tarwin Vet Group Victoria



So how should we tackle responsibly deworming our horses?

- Use FEC's to determine worm types and high shedding horses.
- Use the most effective worming drug as least often as possible.
- You can not eradicate all worms from a horse.
- Twice yearly dewormer with Equest® in early autumn and in spring
- Faecal egg counts at change of season, and deworming only if necessary
- Rotational/Interval strategy designed to eliminate Large Stronglyes.
- Only Moxidectin and Panacur (5X double doses) are effective against <u>encysted</u> stages of small strongyles.
- Worm only when you NEED! Talk to your vet > 200 EPG
- o Based on 2013 American Association of Equine Practitioners Guidelines 2013



Refugia – What the?

Treat "high shedders" to prevent disease in those animals

"Low shedders" continue to pass small numbers of sensitive worms into environment



Use FEC to pick up the "high-shedders"

Efficacy Comparison Chart

HORSE WORMING PASTES	ACTIVE INGREDIENTS	RETREATMENT PERIOD	ENCYSTED SMALL STRONGYLES IN ONE DOSE	LOW DOSAGE	PALATABLE APPLE FLAVOUR	GEL FORMULATION	TAPEWORMS	SMALL	LARGE STRONGYLES	PINWORMS	BOTS	ASCARIDS	THREADWORMS	HAIRWORMS	LARGE MOUTHED STOMACH WORM	SUMMER SORES
Equest Plus Tape	Moxidectin & Praziquantel	14 wks	۲	۲	۲	۲		۲	۲	۲	۲	۲	۲	۲	۲	۲
Equimax	Abamectin & Praziquantel	6-8 wks	0	0	0	C		۲	۲	۲		۲	۲	۲	۲	۲
Equimec Plus Tape	Ivermectin & Praziquantel	6-8 wks	0	0	0	0	۲	۲	•	۲	۲	۲	۲		۲	0
Value Plus - Value Max Red	Abamectin & Praziquantel	6-8 wks	C	0	0	0	۲	۲	۲	۲	۲	۲	۲	۲		۲
Equimax Elevation	Abamectin & Praziquantel & Pyrantel	6-8 wks	0	0	0	0		۲	۲	۲	۲	۲	۲	۲	۲	۲
Ammo	Abamectin & Morantel	6-8 wks	0		0	0		۲	۲	۲	۲		۲	۲	۲	۲
Value Plus - Expel	Abamectin & Morantel Tartrate		C	C	1	C	۲	۲	۲	۲	۲		۲	۲	۲	۲
Equimec Paste	Ivermectin	6-8 wks	0	0	0	0	0	۲	۲	۲		۲	۲	۲	0	۲
Value Plus - ValueMec Green	Abamectin	6-8 wks	0		0	0	0	۲		۲	•	۲	۲	۲	۲	۲
Strategy T	Oxfendazole & Pyrantel Embonate	6-8 wks	0	0	0	0		۲		0	•	0	0	C	C	C
Value Plus - Equinox Orange	Oxfendazole	6-8 wks	0	r	0	0	0		۲	0		C	0	۲		C
Razor	Ivermectin & Praziquantela	6-8 wks	0	C	0	C		۲	۲			۲	۲	۲		۲

What else do we need to think about...?

•Age and sex of the horse

•Foals

•Pregnant mares

Geography and climate

•Dry or swampy ground

Seasonal climate or not

Stocking density

Correct dosing

Quarantine new arrivals and do FECRT

Resistance prevention

• There is no documented resistance to moxidectin in Australia

Pasture management

•Cross grazing with cattle or sheep

Resting pastures

•Harrowing??

Sanitation

•Removal of manure twice a week

Equine Vets recommend Equest because...

1. Longest re-treatment interval

- a. Only wormer to provide up to 16 weeks protection
- **b**. Twice the period of pasture protection
- c. Less labour intensive on large farms
- d. Fewer treatments required
- e. Very cost effective when compared to other wormers

2. Encysted small strongyles

- a. Only wormer with a 'single dose' treatment claim
 - Encysted small strongyles can lead to colic

3. Gel formulation

- a. Easy to use low volume
- b. Liquefies on the tongue improved compliance
- c. Narrow barrel syringe easy use with head shy horses

4. Safe

- a. Safe to use in pregnant mares & breeding stallions
- b. Safe to use in foals from 4 weeks

HOORAY! STRATEGIC WORMING SAVES US MONEY & IS BETTER FOR OUR HORSES

