



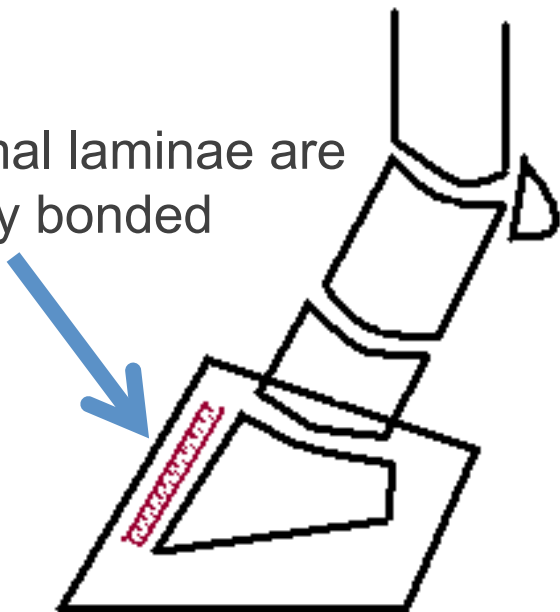
# The Laminitis Revolution

An update on our understanding of the causes of laminitis and recommendations for management

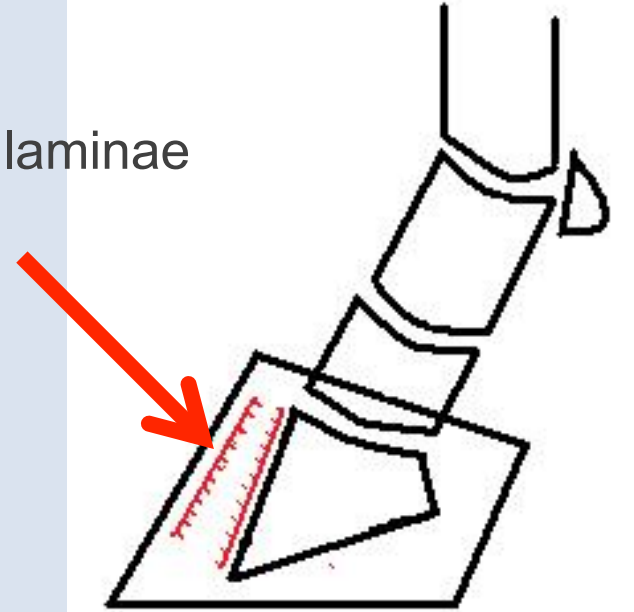
# What is Laminitis?

- Inflammation (-itis) of the laminae
- When inflamed, the laminae become painful and swollen and lose their function

Normal laminae are tightly bonded

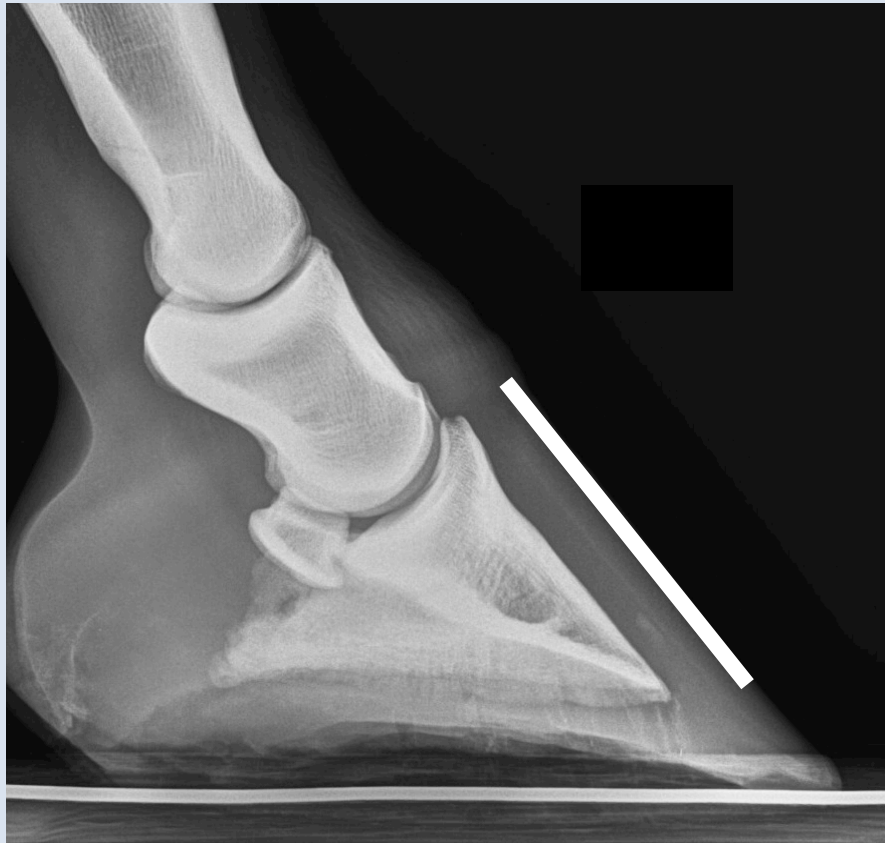


Inflamed laminae separate

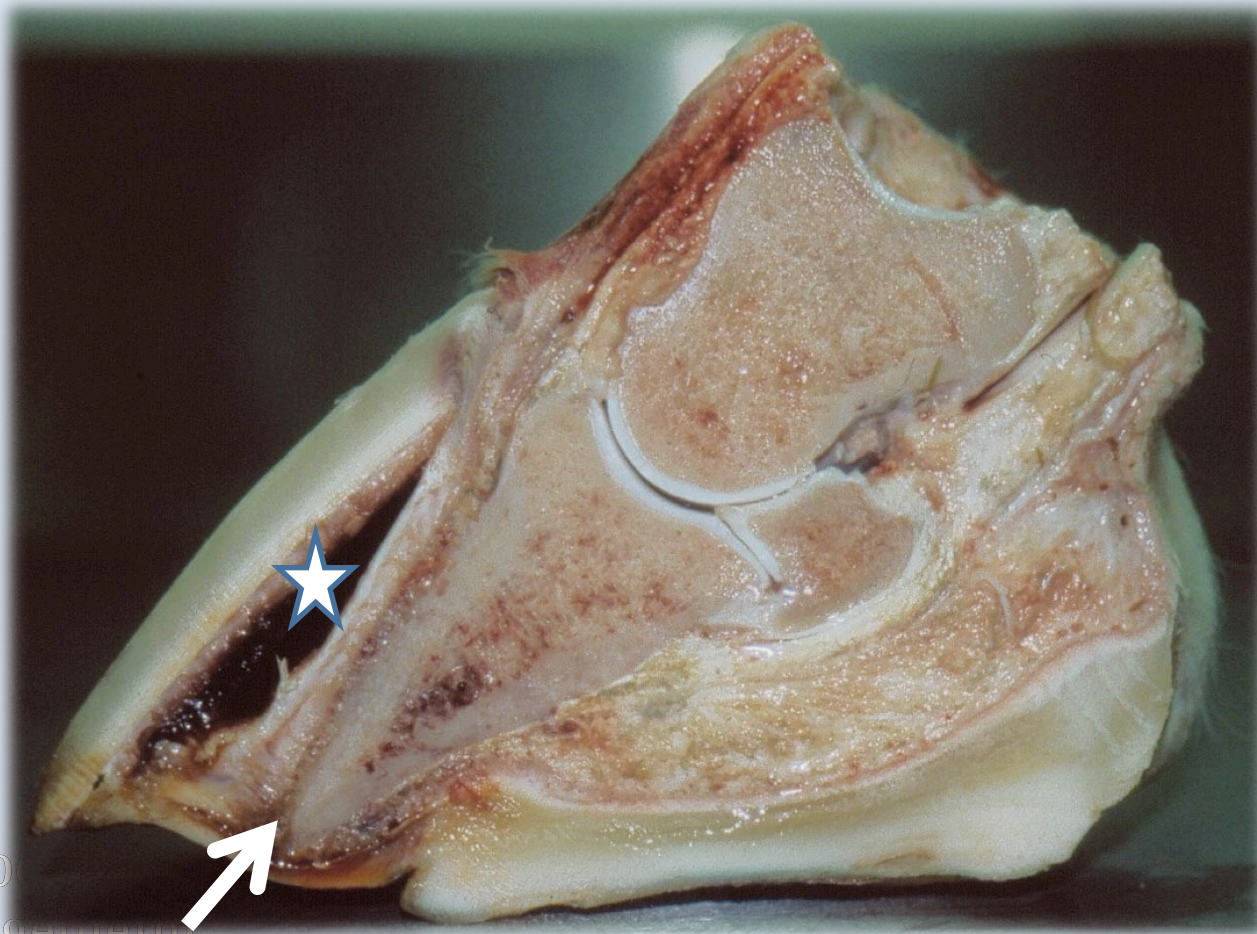




# What is laminitis?



# What is laminitis?





# Laminitis is painful!





# What should owners do if they suspect laminitis?



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# Laminitis is an emergency

- Laminae support the horse's entire weight
- Damage may be irreversible
- Chronic lameness and disfigurement





# Laminitis is an emergency

- Prompt treatment reduces the damage
- Ongoing “mild” disease is also serious
- Veterinary advice must be sought



# Laminitis is an emergency

- Remove from pasture
- Stable on a deep bed
- Place feed/water in easy reach
- DO NOT WALK OUT
- CALL YOUR VET





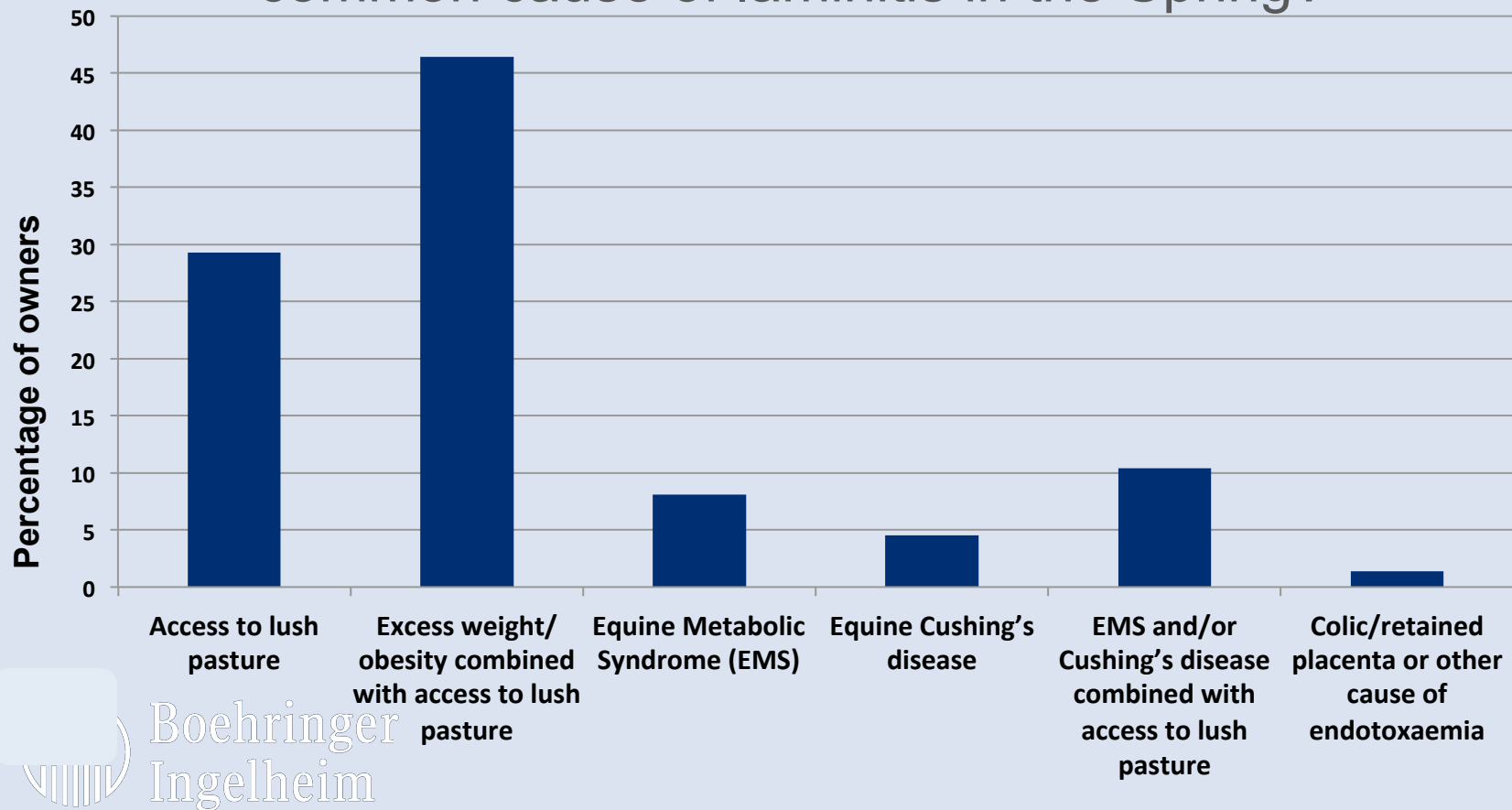
## JIMMY'S ASSESSMENT



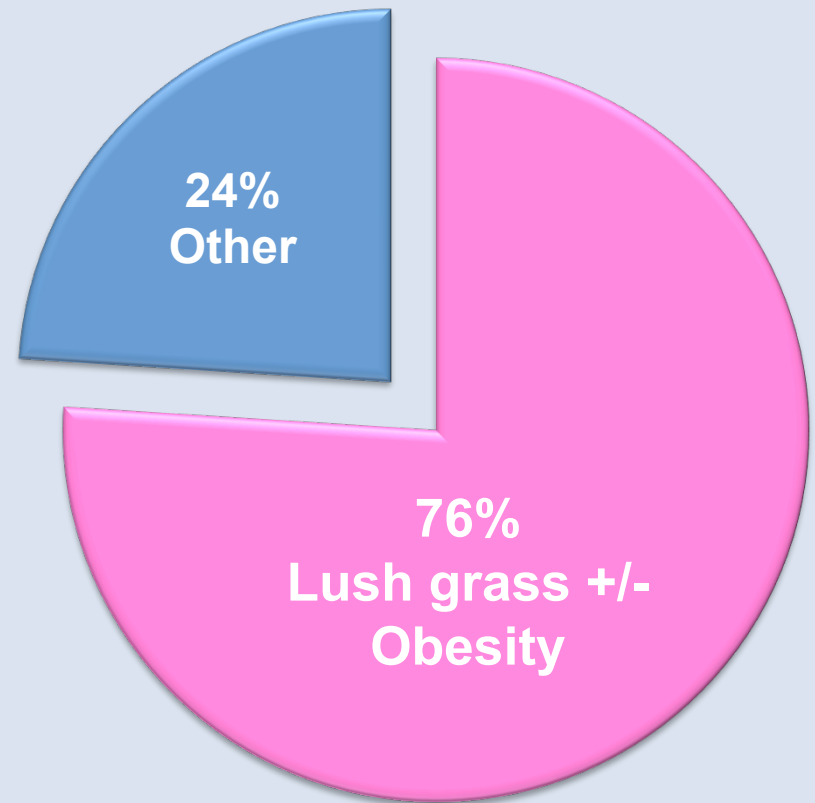
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# What do horse owners think causes laminitis?

222 horse owners asked what they believed to be the most common cause of laminitis in the Spring?<sup>1</sup>



# 222 horse owners asked what they believed to be the most common cause of laminitis in the Spring





# Grass may be the trigger but not the cause?

- ▶ 40 laminitis cases (*Donaldson et al 2004*)
- ▶ 36 laminitis cases (*Karikoski et al 2011*)



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  - 70% had Cushing's disease
- ▶ 36 laminitis cases (*Karikoski et al 2011*)
  - 31% had Cushing's disease



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  - 70% had Cushing's disease
  - 23% had equine metabolic syndrome
- ▶ 36 laminitis cases (*Karikoski et al 2011*)
  - 31% had Cushing's disease
  - 58% had equine metabolic syndrome





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  - 7% not tested
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# Grass may be the trigger but not the cause?

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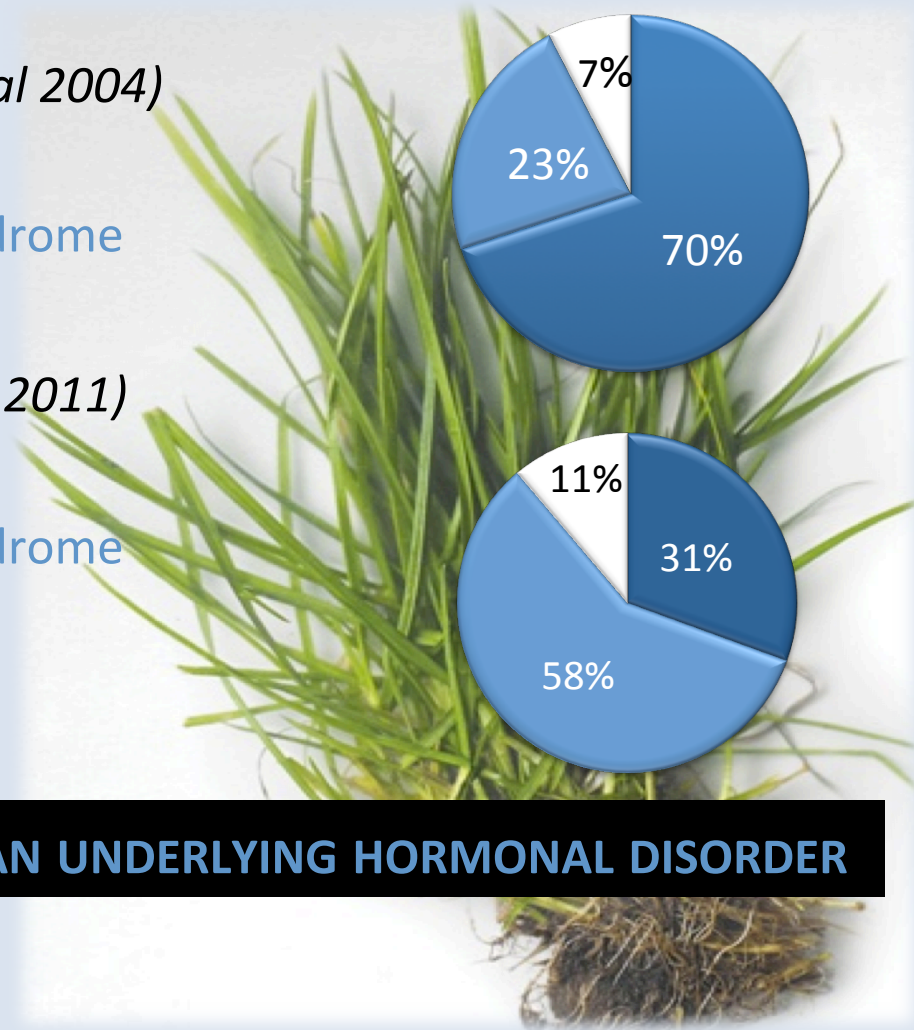
**93%**

- 70% had Cushing's disease
- 23% had equine metabolic syndrome
- 7% not tested

► 36 laminitis cases (*Karikoski et al 2011*)

**89%**

- 31% had Cushing's disease
- 58% had equine metabolic syndrome
- 11% no hormonal abnormality



**ABOUT 90% OF LAMINITIS CASES HAVE AN UNDERLYING HORMONAL DISORDER**

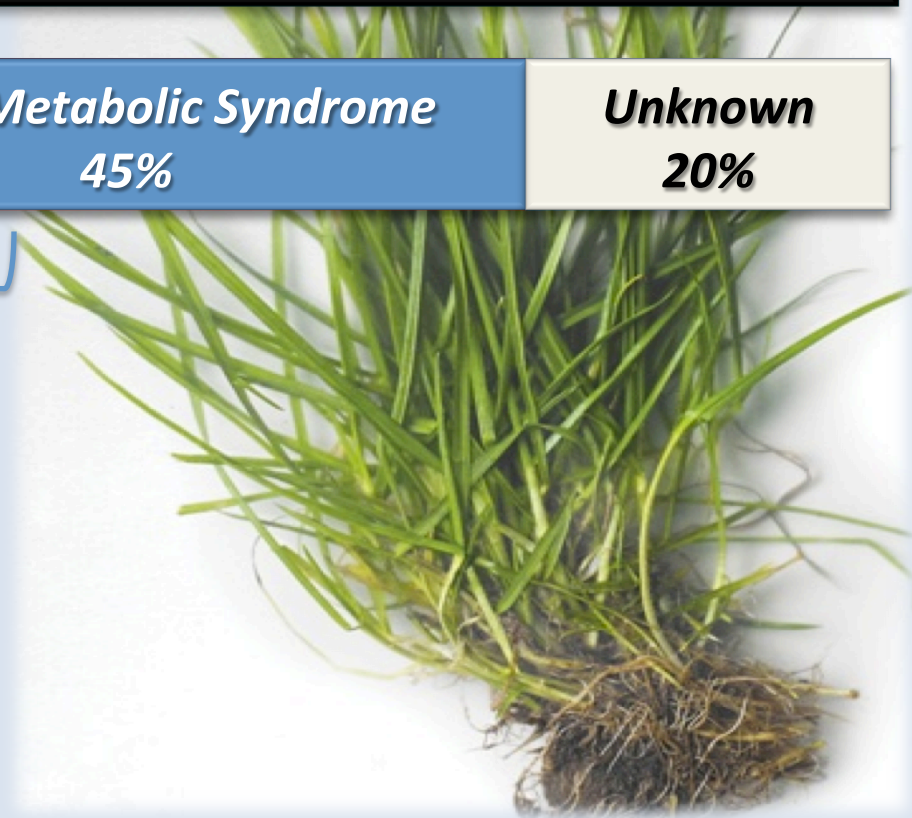


# Grass may be the trigger but not the cause?

## 118 laminitis cases tested at The Liphook Equine Hospital, UK



80%





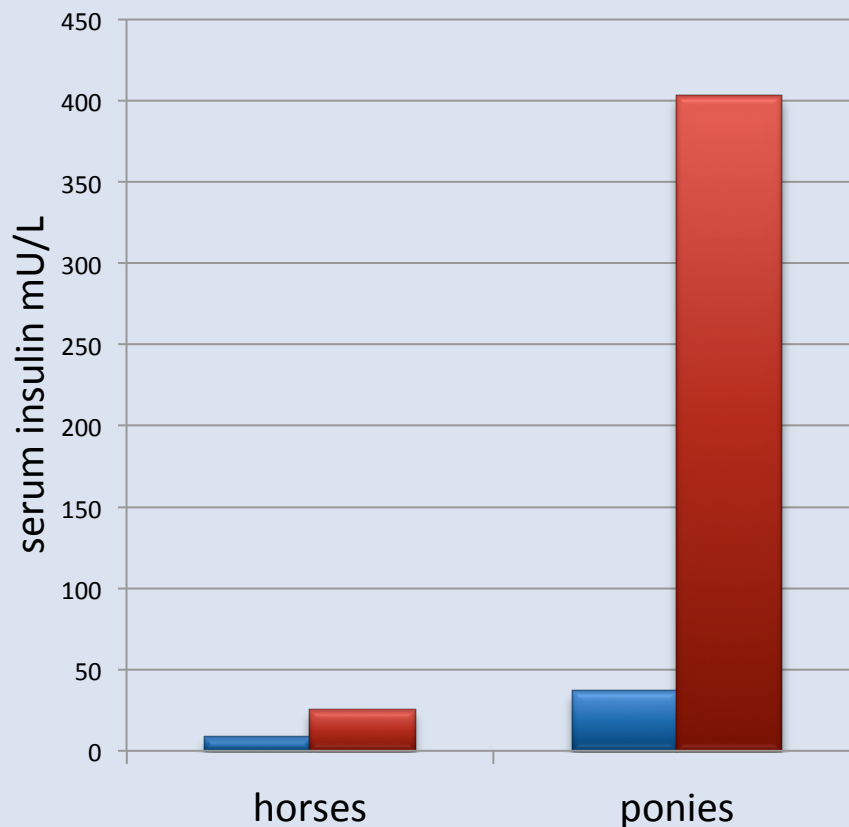
## **Prof. Andy Durham** **Liphook Equine Hospital**

BSc BVSc CertEP DECEIM MRCVS  
RCVS and ECEIM Specialist in  
Equine Internal Medicine



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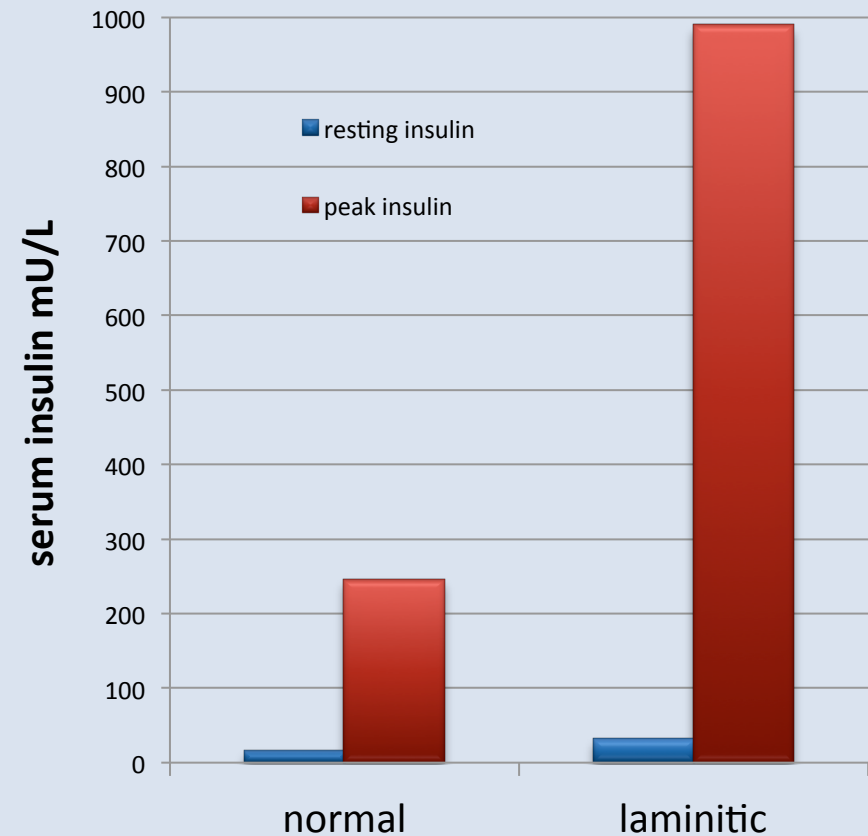
# Insulin and laminitis



Tinworth et al. (2011):  
Fed hay (blue) or hay and glucose 0.75 g/kg (red)



# Insulin and laminitis



Borer et al. (2012):  
Insulin levels in ponies before and after chaff and glucose

# Insulin and laminitis



- Injection of insulin causes laminitis
- Insulin affects blood supply to the hoof
- Insulin controls cell division in the hoof





# Insulin and Cushing's



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# Insulin, EMS and Cushing's

**118 cases tested at The Liphook Equine Hospital, UK**

*Cushing's*  
**36%**

*Equine Metabolic Syndrome*  
**44%**

*Unknown*  
**20%**

*Normal  
Insulin*

**HIGH INSULIN 70%**

*Normal Insulin*



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## Cushing's Disease (PPID)

## Equine Metabolic Syndrome (EMS)



Cushing's Disease  
(PPID)

**Insulin**

Equine  
Metabolic  
Syndrome  
EMS





# Insulin and Cushing's

- Horses with Cushing's have high insulin levels:
  - Cushing's cases with high insulin levels are less likely to survive
  - Higher insulin, more severe laminitis
  - Improving insulin, less severe laminitis  
(McGowan et al. 2004, Walsh et al. 2009)



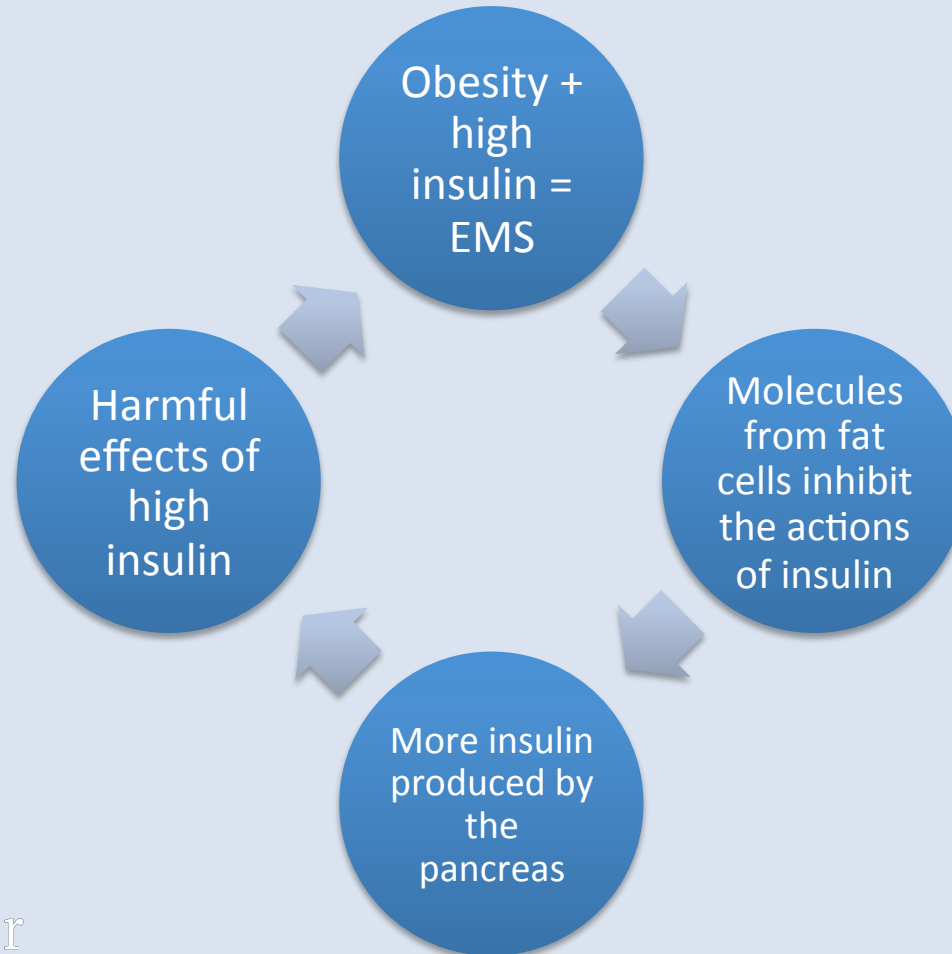


# Focus on EMS

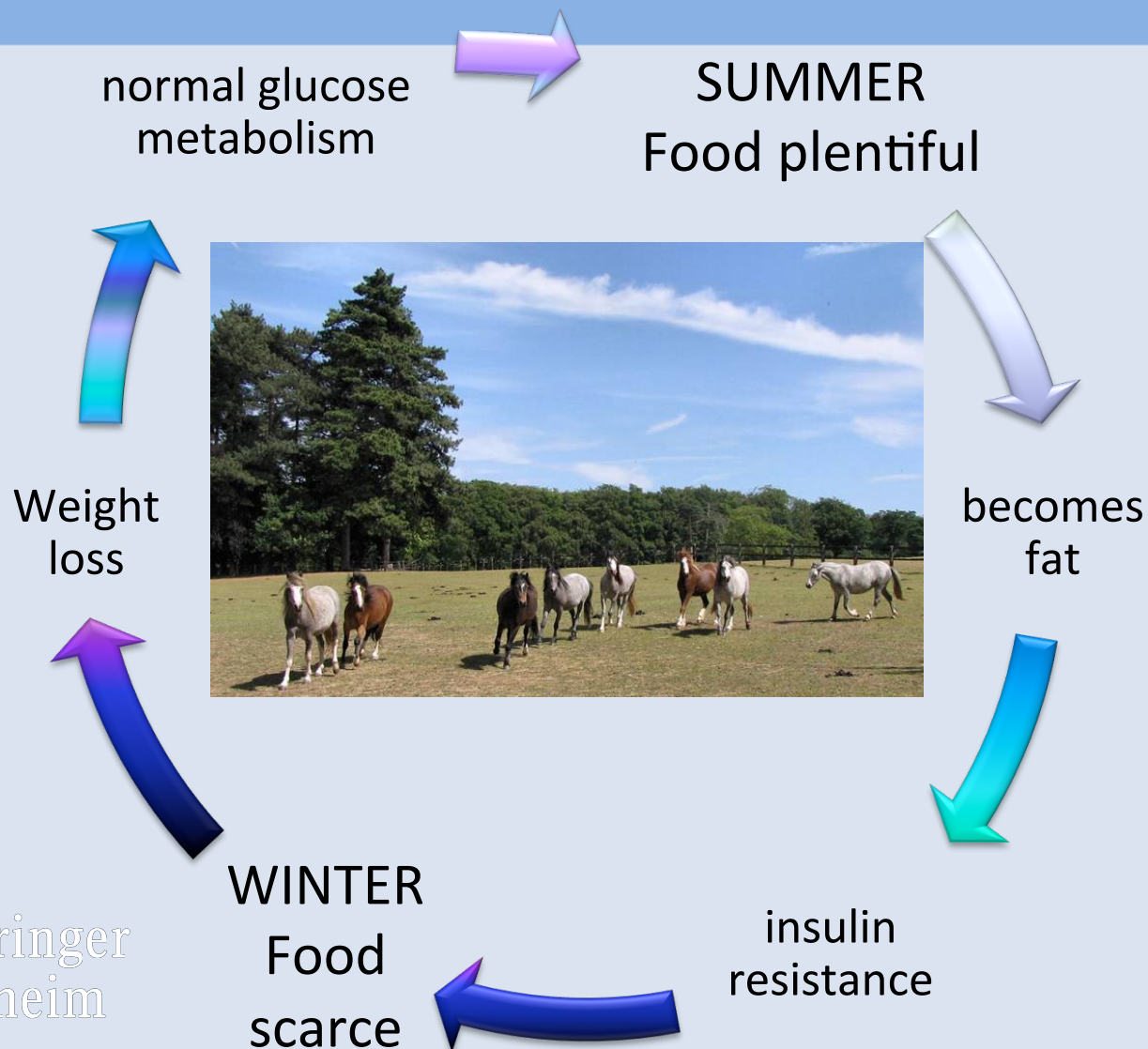


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# Obesity and high insulin levels

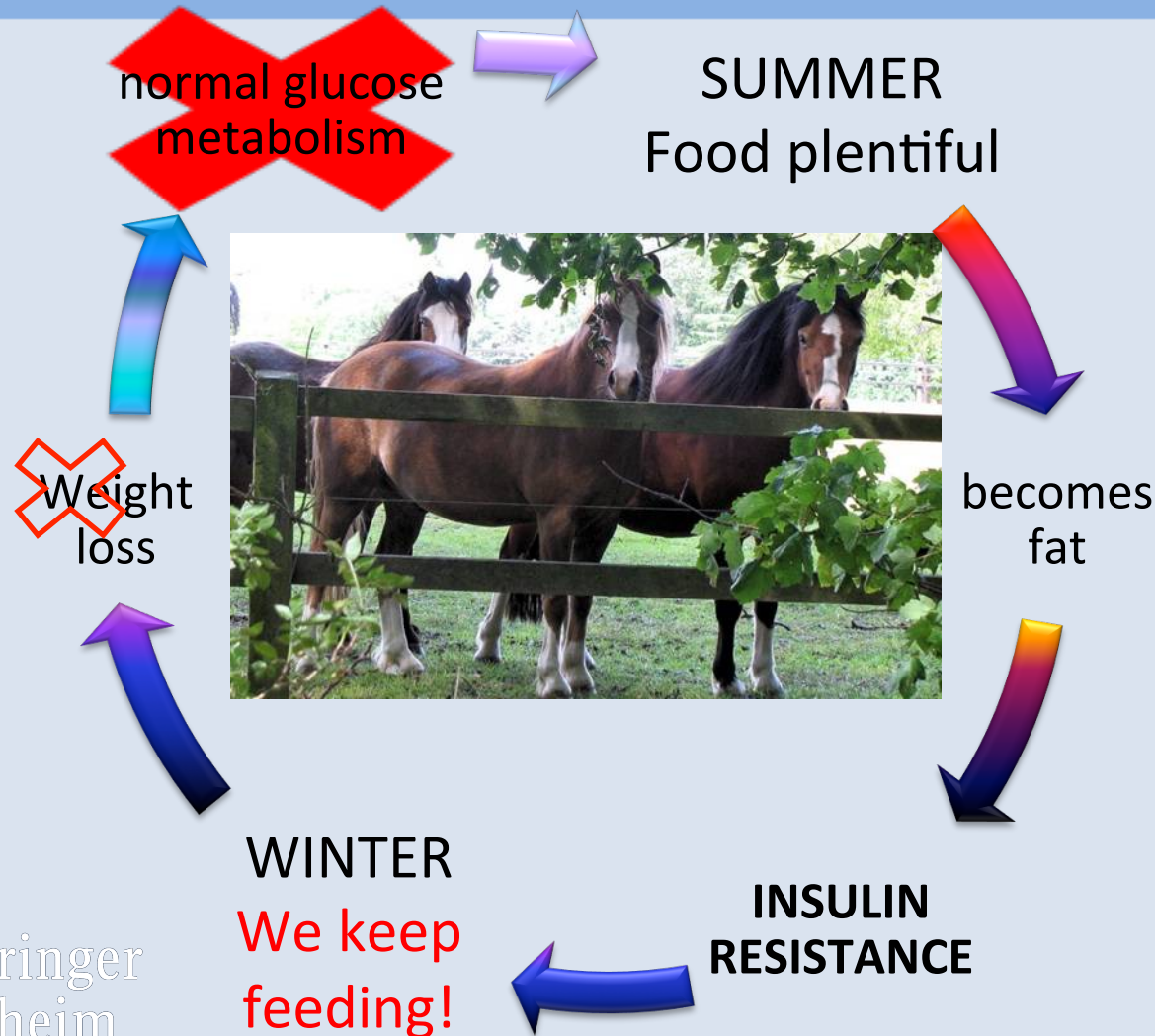


# Insulin Resistance in Horses and Ponies





# Insulin Resistance in Horses and Ponies



# Is it our fault?

- 160 horse owners body condition scoring sheet:
  - 54% classified by researchers as “*overweight*”
  - 21% owners considered their animal “*overweight*”

# Is it our fault?

- 160 horse owners body condition scoring sheet (Stephenson *et al.* 2011):
  - 54% classified by researchers as “overweight”
  - 21% owners considered their animal “overweight”
- 319 horses/ponies examined on 22 stables (Wyse *et al.* 2008):
  - 45% classified by researchers as “overweight”
  - 29% owners considered their animal “overweight”

# The biggest threat to equine welfare?



- Neglect and malnutrition
- Owner prosecuted
- Ban on keeping horses
- No evidence of pain
- Rehomed and recovered

- ▶ EMS and laminitis
- ▶ Owner wins regularly in the show ring
- ▶ Horses still “battle with the lammy”
- ▶ Months of suffering
- ▶ Put to sleep



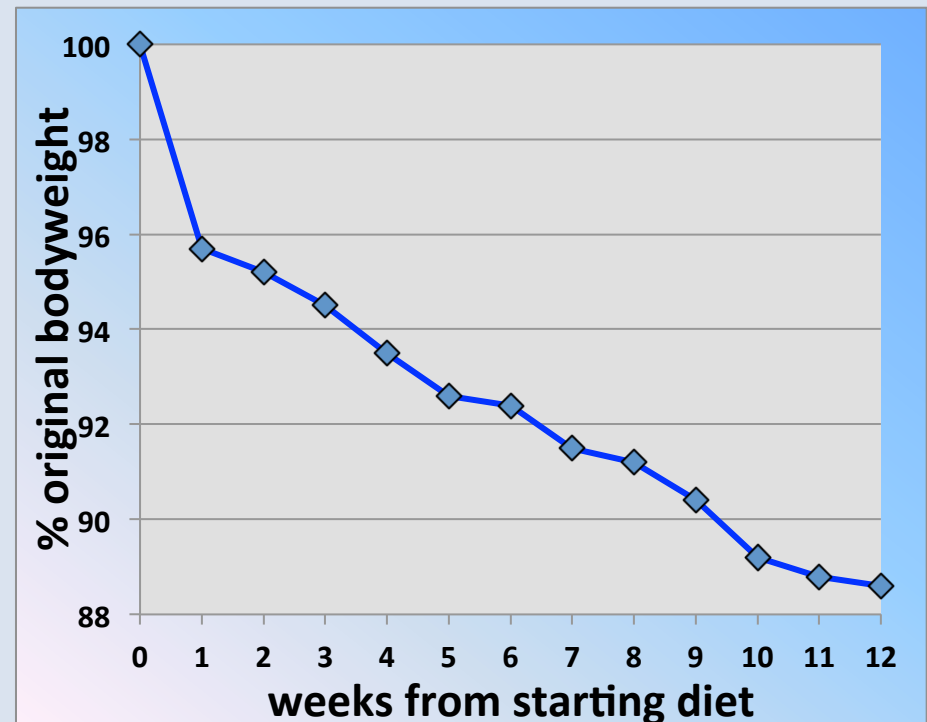
# Managing obesity

Effect of dietary restriction on body condition, composition and welfare of overweight and obese pony mares

A. H. A. DUGDALE, G. C. CURTIS, P. CRIPPS, P. A. HARRIS<sup>†</sup> and C. McG. ARGO<sup>\*</sup>

**Weight loss:**

**2.5 kg (1%)/week**



# Managing obesity

## Effect of dietary restriction on body condition, composition and welfare of overweight and obese pony mares

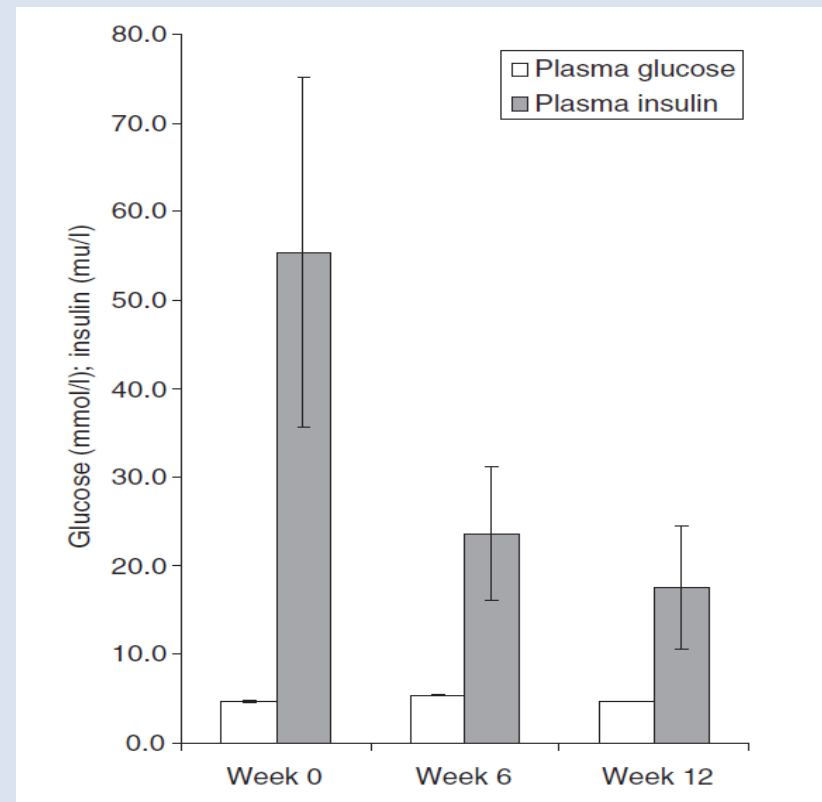
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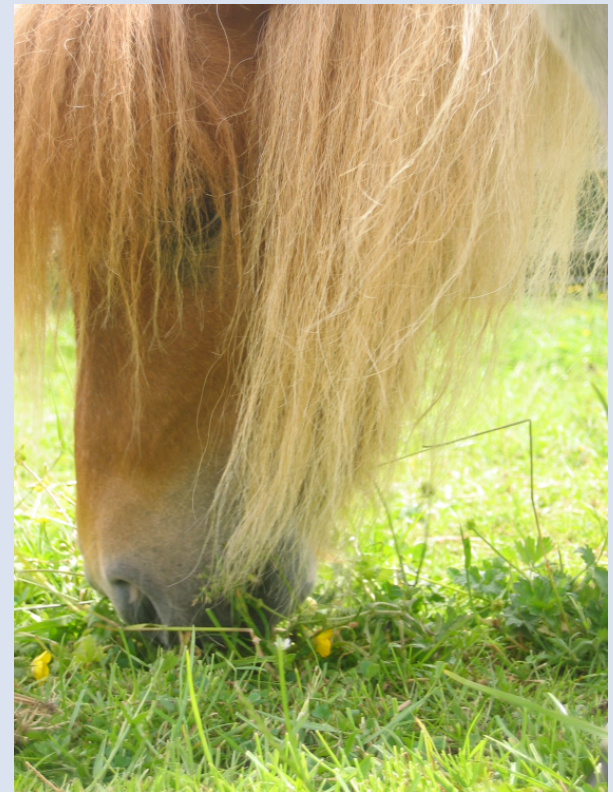


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# Managing obesity – take control

- Hay (soaked): 1- 2% bodyweight
- “Ration balancer”
- No grass!!
  - Impossible to control intake when grazing
  - ponies can eat their daily requirements in 3 hours
- Double –net hay



# Managing obesity:

- Exercise
  - As much as possible
  - Decreases weight and increases insulin responses
- Drugs?
  - Metformin
  - Levothyroxine







# ADVICE FOR JIMMY



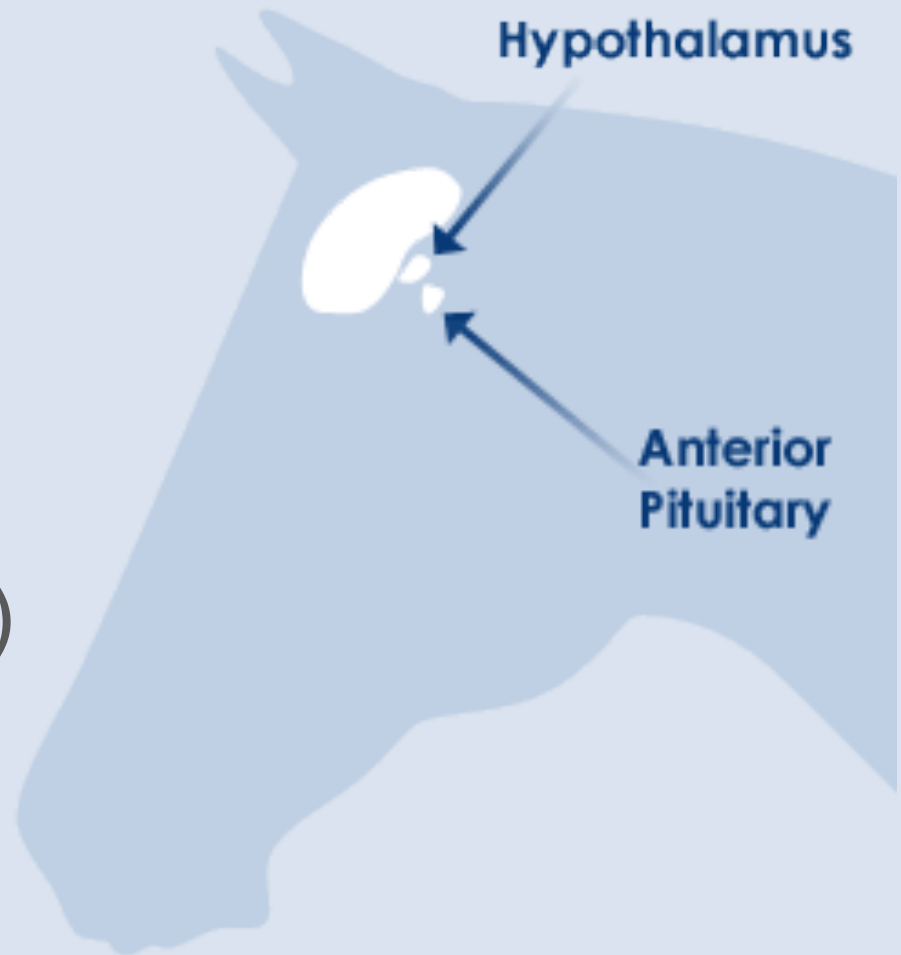


# Equine Cushing's Disease (PPID)

# What is Equine Cushing's Disease?

Also known as:

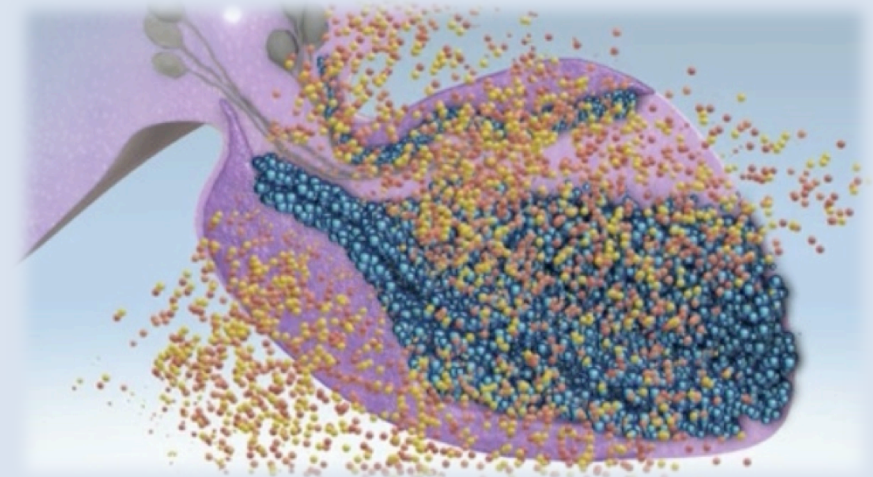
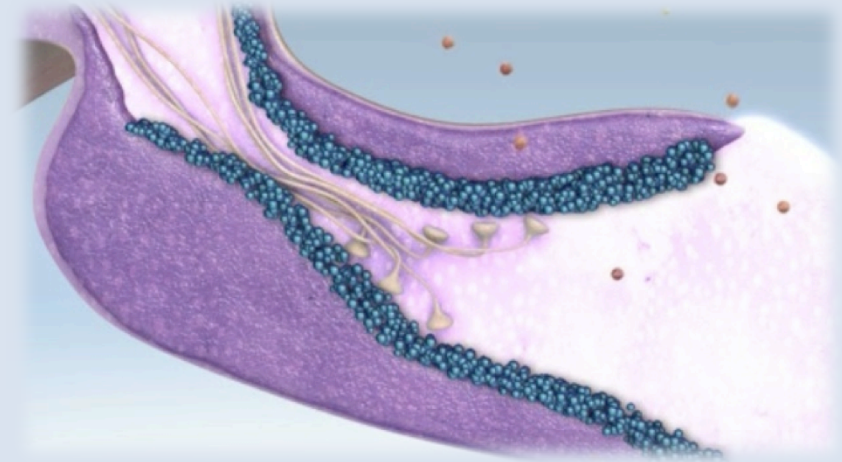
- Equine Cushing's Syndrome
- Pituitary pars intermedia dysfunction (PPID)



# What is Equine Cushing's Disease?

Also known as:

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- Pituitary pars intermedia dysfunction (PPID)





# Glass Horse



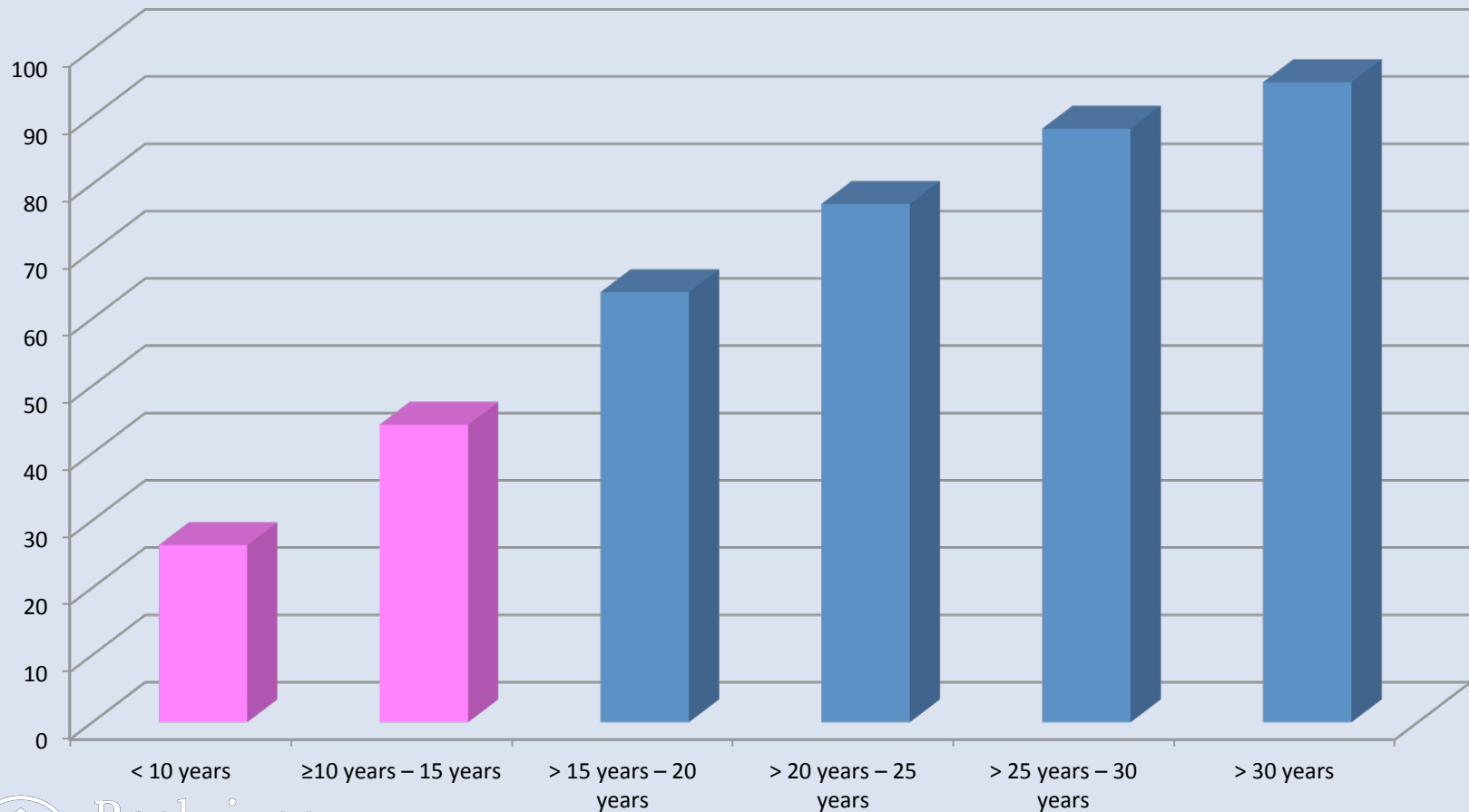
# Cushing's Disease (PPID)

- The disease has a very gradual onset and progression and is associated with ageing.
- Changes in the brain happen long before we notice external symptoms

I think I'm coming down with PPID.... But I felt fine yesterday?



# Age Categories of Laminitic Horses and Ponies and % PPID +ve



# Clinical Signs of PPID





# Owner Perceptions

One study in the UK in horses over 15 years (Ireland *et al.* 2011):

- Owner reported Cushing's = 3.2%
- Hirsutism at vet examination = 22%

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One study in the UK in horses over 15 years (Ireland *et al.* 2011):

- Owner reported Cushing's = 3.2%
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One Study in Australia in horses over 15 years (McGowan *et al.* 2013)

- Owner reported Cushing's = 1.6%
- Blood test +ve = 21%

# Cushing's is common!

- Cushing's horses don't have to be hairy!



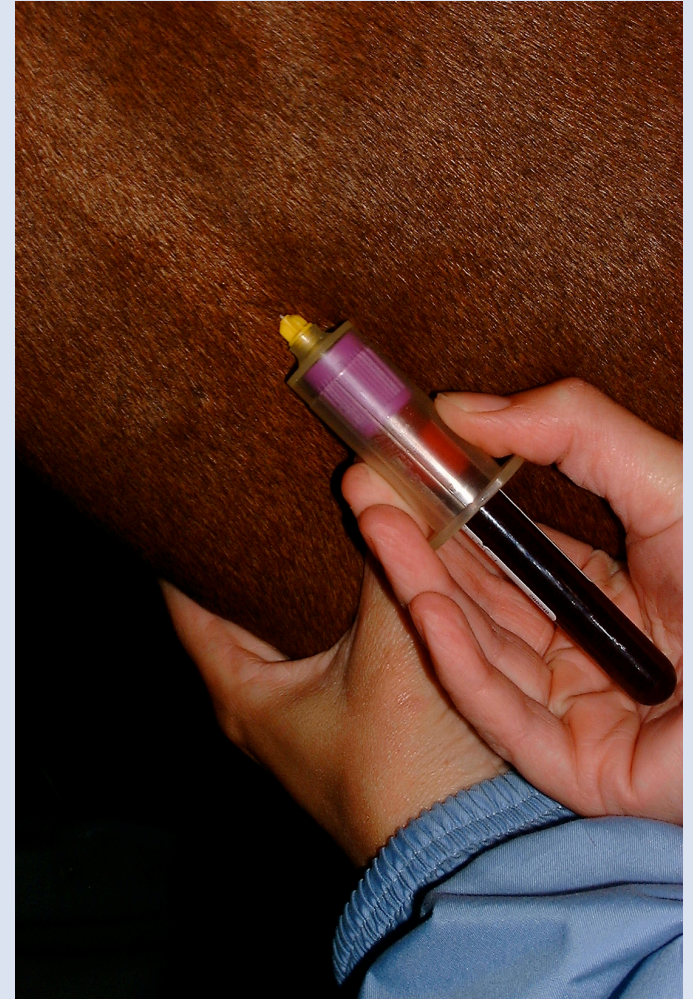
# The only Clinical Sign of PPID may be laminitis<sup>1</sup>





# Diagnosis of Cushing's

- “ACTH”
- **Adrenocorticotrophic hormone** from the pituitary gland
- Cheap, easy, reliable



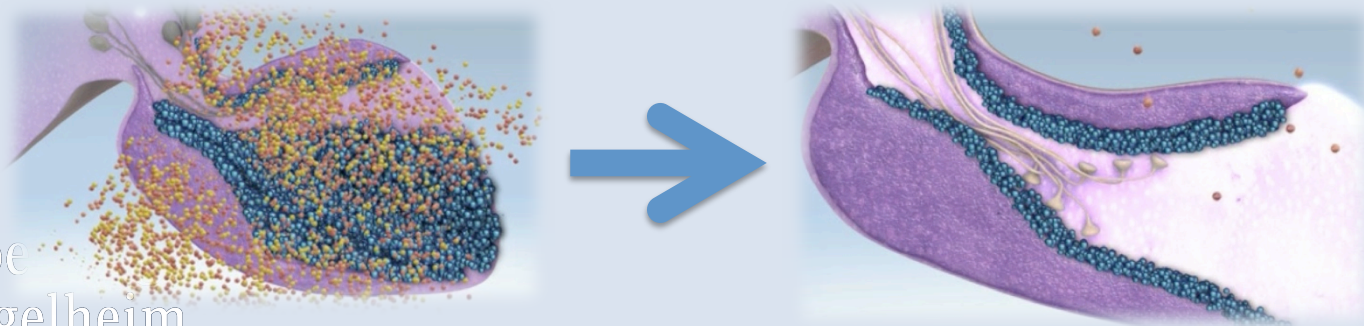


# www.talkaboutlaminitis.co.uk



# Cushing's Treatment

- The only licensed treatment:
  - Pergolide
- Compensates for the nerve damage
- Excellent response in most cases
- X4 risk of laminitis in untreated Cushings



# Cushing's mathematics:

Average £1.00 - £1.50 /day pergolide

or one bout of laminitis:

Vet visits	£100
Examinations	£100
Pain killers	£75
Frog supports	£100
X-rays	<u>£160</u>
<b>£535 = 356 days treatment</b>	



- + Pain and stress to you and your horse
- + Time off work





# Regular Health Care: Ask your Vet for more information



Worming  
Farriery and foot hygiene  
Dentistry  
Clipping



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# Conclusions

- All horses with laminitis should be tested and/or treated
- Laminitis will recur if the initial causes are not controlled
- Grass is only the trigger but should not be ignored
- Most cases have cushing's disease or Equine Metabolic Syndrome as the root cause
- A highly effective treatment for cushing's is available
- Weight can be controlled if you are disciplined