



Clinical nutrition

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Learning Outcomes

By the end of this section you should be able to:

- Discuss rations for horses with specific nutrition-related disorders



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Content

- Nutritional management of:
 - Horses/ponies susceptible to laminitis
 - Obesity
 - Horses/ponies with weight loss
 - Older horses/ponies



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Laminitis

- “Barley disease” – starch overload
- Pasture-associated laminitis
 - ↑ WSC
- Survey 1990s of cases of laminitis in UK:
 - 61 % at grass
 - 30 % combined
 - 9 % stabled
- US survey: 46 % of cases linked with pasture



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Laminitis – pasture associated

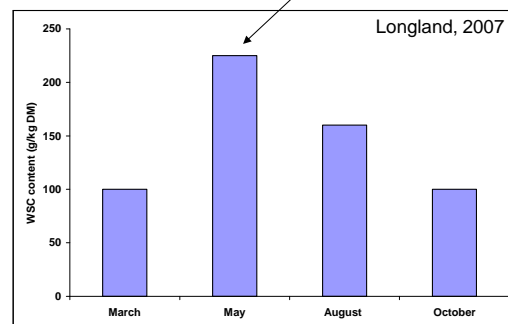
- Turning out certain horses/ponies on to
 - “lush pasture” (actively photosynthetic)
 - “stressed” pasture (↓ environmental conditions for growth)
 - Especially spring/summer
- Seems to trigger laminitis
 - Ingest ↑ WSC
- Recurrent in certain individuals



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Laminitis – pasture associated

- Trigger = ↑ WSC containing pastures
- Spring/summer

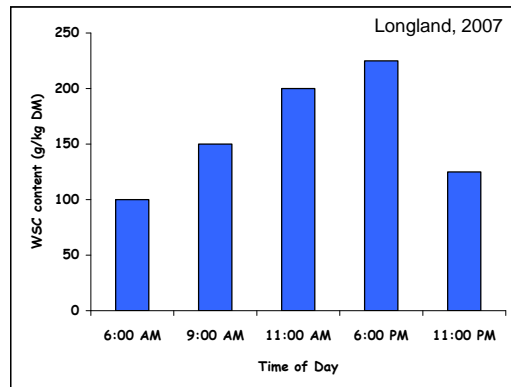


Studies reported highest incidence of laminitis in May

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Laminitis – pasture associated

- WSC levels = ↑ variable
- Varies throughout day



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Laminitis – pasture associated

- Grass species = ↑ variable
 - Ryegrass > fescue > cocksfoot > timothy
- Plant part = important
 - Stems > leaves



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Laminitis – pasture associated

- ↑ WSC pastures may influence laminitis in other ways
 - May promote insulin resistance
 - Insulin peaks similar to ↑ starch diets
 - ↓ threshold for laminitis to be triggered
- Other threshold lowering factors may be involved
 - Obesity
 - Genetic predisposition

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Obesity and insulin resistance

- Man
 - Regional adiposity (visceral) = linked to diabetes and heart disease
- Horses/ponies
 - Regional adiposity (crest) linked with laminitis
- Laminitis also linked to:
 - Generalised obesity
 - Hyperinsulinemia
 - Hyperleptinemia



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Obesity in horses

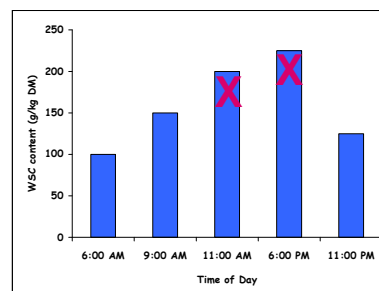
- No universally accepted definition of obesity in horses/ponies
 - Henneke BCS = 8 & 9
 - 7 = overweight
- BCS doesn't account for regional adiposity
 - May signify ↑ risk of disease
- But:
 - Not all horses/ponies that are obese develop laminitis
 - Not all obese animals are IR
 - Some “acceptable conditioned” animals are IR
 - Other possible risk factors may exist

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Laminitis – avoidance

- Consider zero grazing
 - Use suitable forage alternative
- Turnout when fructan/WSC likely at lowest
 - Late at night to early morning
 - Remove from pasture by mid-morning



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Laminitis – avoidance

- Do not graze pastures not well managed
 - Maintain young leafy swards – not mature stemmy pastures
- Avoid/restrict turnout in spring and autumn
- Do not turnout on pastures exposed to ↓ temperatures
 - e.g. frosts followed by warm, bright sunny days
- Do not graze pastures during/following drought

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Laminitis – avoidance

- Grazing muzzles
 - Ensure water intakes
 - Behavioural issues
- Strip grazing
- Mowing and removing cuttings
- Turnout in an arena (provide alternative forage)
- Rotate paddocks
 - Other species (cattle/sheep) - keeps grass at appropriate height

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Laminitis – avoidance

- Forage – base the diet on forage
- For horses with history of laminitis
 - Analyse forage – feed forage with < 10 % WSC
 - Many hays in UK ↑ than 10 % WSC
 - Soak in water for > 3 hrs to ↓ help WSC content
 - Soaking variable – best to feed ↓ WSC forage
- Broad-spectrum vit/min supplement (if no or ↓ conc)
- No evidence to suggest magnesium ↓ laminitis

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Laminitis – avoidance

- Supplementary feeding – most won't need this
- Avoid feeds that exacerbate IR
 - cereals & ↑ NSC pasture
- Use oil instead of cereals (unless contraindications)
 - Introduce oil gradually into the diet
 - Add Vit E at 100-150 iu/100 ml oil
 - No more than 100 ml oil/ 100 kg BW

No more than 500 ml oil
for 500 kg horse



Laminitis – avoidance

- If Cereal grains are fed
 - Need to be processed by cooking (e.g. micronisation)
 - Increases SI starch digestibility
 - Restrict meal sizes to <0.25 kg/100kg BW of cereal-based feed

**No more than 1.25 kg cereal-based feed
Per meal for 500 kg horse***

* Ensure overall starch intake is < 1 g starch/kg BW



Laminitis – avoidance

- Other considerations
 - No sudden dietary changes
 - Avoid abruptly starving animals (\uparrow risk hyperlipaemia)
 - Regular exercise wherever possible
 - Avoid development of obesity
 - Aim = BCS between 4 & 5 (moderate) out of 9
 - If overweight - plan weight management programme

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Obesity – weight management

- “Eat less” and “exercise more”
- General principles
 - Total removal of ↑ calorie feedstuffs (cereals & oils)
 - No excessive feeding of treats (carrots, apples etc)
 - Assess workload – be realistic about workload
 - Set realistic goals
 - Gradual dietary changes – avoid prolonged periods of fasting
 - At target weight - develop a weight maintenance programme
 - Long term commitment – 4 to 6 months

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Weight management – horse stabled

- Removal from pasture = only way to control intake
- Studies shown no change in BW with restricted access to pasture
 - 12 hrs restricted access
 - ↑ grass consumption during grazing period
 - Estimated ponies can eat 40 % of daily DMI in 3 hrs at pasture



Weight management – horse stabled

- Advisable to begin at 2 % BW/day for 6-8 weeks
- If weight loss by feed restriction alone = ↓ feed provision
- ↓ to 1.5 % of current BW/day for 8 weeks
 - Divide ration into 3 to 4 feeds per day
 - Use haynets with small holes

2 % = 10 kg/day for a 500 kg horse
1.5 % = 7.5 kg/day for a 500 kg horse



Weight management – horse kept at grass

- Restrict access to small well managed paddocks
- Ensure free from toxic plants (hungry animals ↑ eat them)
- House for significant portions of the day (feed forage)
- Strip graze
- Use grazing muzzle



Weight management – horse kept at grass

- Muzzles
 - Not always easy to use
 - Duration of muzzling needs changed as BW changes
 - Horse/pony needs some time without muzzle (grooming)
- * Note: short-term removal from grazing by housing or muzzle use can = horse compensating when food is returned

Weight management – exercise

- Weight loss ↑ when diet ↓ and exercise ↑
- 10 mins walking in hand x 2 daily for first week
- Gradually increased to 1 hour daily
- As exercise ↑ feed restriction can be ↓

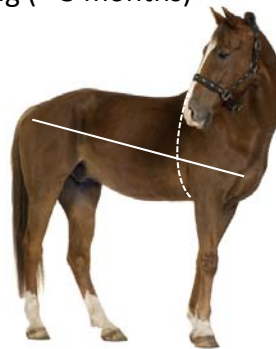


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Weight management – monitoring

- Not all animals lose weight at same rate
- BCS not useful for short-term monitoring (< 3 months)
- Horses should be checked weekly
- Using weighbridge or weightape



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Horses/ponies with weight loss

- Reasons
 - Disease – needs investigation
 - Poor nutrition (neglect or ignorance) – inadequate energy provision
 - Horses that are mismanaged – likely eat food when offered
 - Diseased horses – not eating when feed is available
- Some diseased horses eat and still lose weight
 - Poor absorption
 - Excessive loss or metabolism of nutrients

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Horses/ponies with weight loss

- A number of contributing factors may be present
 - e.g. marginal diet and poor dentition
- Considerations
 - teeth
 - Anthelmintic programme
 - Evaluate the diet



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Horses/ponies with weight loss

- Absence of disease
 - ↑ intake of digestible nutrients
 - Diet depends on extent of weight loss & age (growing)
- Severe cases (<3.5 on the Henneke BCS scale)
 - Gradual changes essential (re-feeding syndrome)
 - Usually occurs 3 to 5 days post change in diet
 - Electrolyte imbalances – associated with ↑ NSC feeding

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Horses/ponies with weight loss

- Re-feeding
 - ↑ fat ↓ NSC
 - Lucerne - ↑ protein & ↓ NSC
 - Grass hay – soak for 3 hours
 - Small (0.5 kg) frequent meals (6 x daily) of forage
 - Gradual ↑ in amount over 10 days
 - Then gradually add ↑ energy dense feeds
 - Maintain weight mid-point b/w current & desired BW
 - Then ↑ feed gradually to reach desired weight
 - Oil is good – needs to be added gradually
 - Check electrolyte intake

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Older horses

- Some studies shown ↓ digestibility
 - CP, phosphorus & fibre digestibility
- Others shown no difference
- Attributed to:
 - Damage to large colon (chronic parasitism)
 - Poor dentition
- Thus – can assume older, healthy horses can be fed as per normal adult horse guidelines

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Older horses - problems

- Weight loss is most common nutritional problem
- Can be several causes
 - Dental abnormalities
 - Renal and hepatic disease
 - Cushing's disease



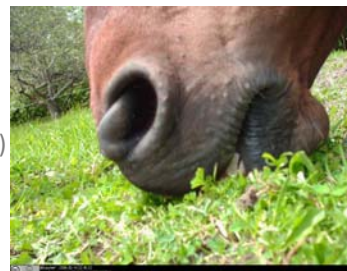
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Older horses - problems

- Incidence or periodontal disease
 - One study: 60 % in horses over 15 years
 - Second study: similar incidence in horses over 20 years
- Dietary management
 - Grass – easier to chew than long-stem hay
 - Turnout is desirable
 - Feed ↑ quality forage (↑ leaf-to-stem ratio)
 - Chop if required



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Older horses - problems

- Severe cases
 - Commercial senior feed
 - Mixed with ↑ fibre cube (alfalfa pellets)
 - Soak before feeding (warm water - ↑ palatability)
 - ↑ volume of feed – might ↓ daily DM intake
 - Oil can be added (if not in commercial feed)
 - Add Vit E if oil used (100 IU/ 100 ml oil)
 - Small, frequent feeds

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Older horses – other considerations

- Often ↑ quality and/or quantity of feed – can ↑ intake and BCS
- Some horses ↑ intake if fed with companion horses
- Soak feed and warm
- Add molasses or pureed apple
- Flavourings – crushed ginger cookies
- Older horses ↓ pecking order in field
 - Feed separately to ↑ intake
- Older horses may have OA
 - Feed from raised container to ↑ intake – OA of forelimbs
 - Raised container for hay (no haynet) – OA of neck

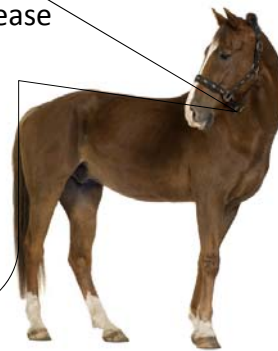
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Clinical nutrition - conclusion

- Diet can impact on development of disease
- Good dietary management can prevent disease
- Dietary management can improve health
- Diet is integral to health
- Prevention is better than a cure!



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Thank you for listening