



What to do with Rumen Acidosis?!

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Let's Do this Together!



What is Normal in the rumen?

- Cattle
 - pH between 5.5-6.5

A balance in microbes (bacteria & protozoas) to help maintain a safe, functioning Rumen.

- Different microbes digest different nutrients
 - Fermentable Starch
 - Cellulose (fiber)
 - protein

What is Rumen Acidosis?

pH falls below normal and microbe populations are altered

Two Types

- Acute ruminal Acidosis
 - pH below 5.2
- Sub acute ruminal acidosis
 - pH between 5.5-5.2

So What Happens in Rumen Acidosis?

- Excessive fermentable carbohydrates enter the rumen
 - Bacteria which digest fermentable carbohydrates release excessive amounts of Volatile Fatty Acids (VFA), and Lactic Acid.
 - Usually VFA and lactic acid are absorbed through the Ruminal wall, production/introduction of Bicarb (saliva) at rates to maintain normal rumen pH
 - Decrease in pH causes protozoal die off (fiber digestors)
 - Endotoxins are release which further cause lower pH
 - Other bacteria start to thrive at lower pH

Fermentable carbohydrates are grains (processed), fruit, molasses, green/young plants (corn with young ears), any sugar or grain by products (breads, brewery waste)

So what are the Consequences of Rumen Acidosis?

Acute Acidosis

- Rumenitis/ulcer
- Rumen Bloat (gas)
- Liver abscess
- Caudal venal syndrome
- Laminitis
- Polioencephalomalacia (PEM)
- Death

Subacute Ruminal Acidosis (SARA)

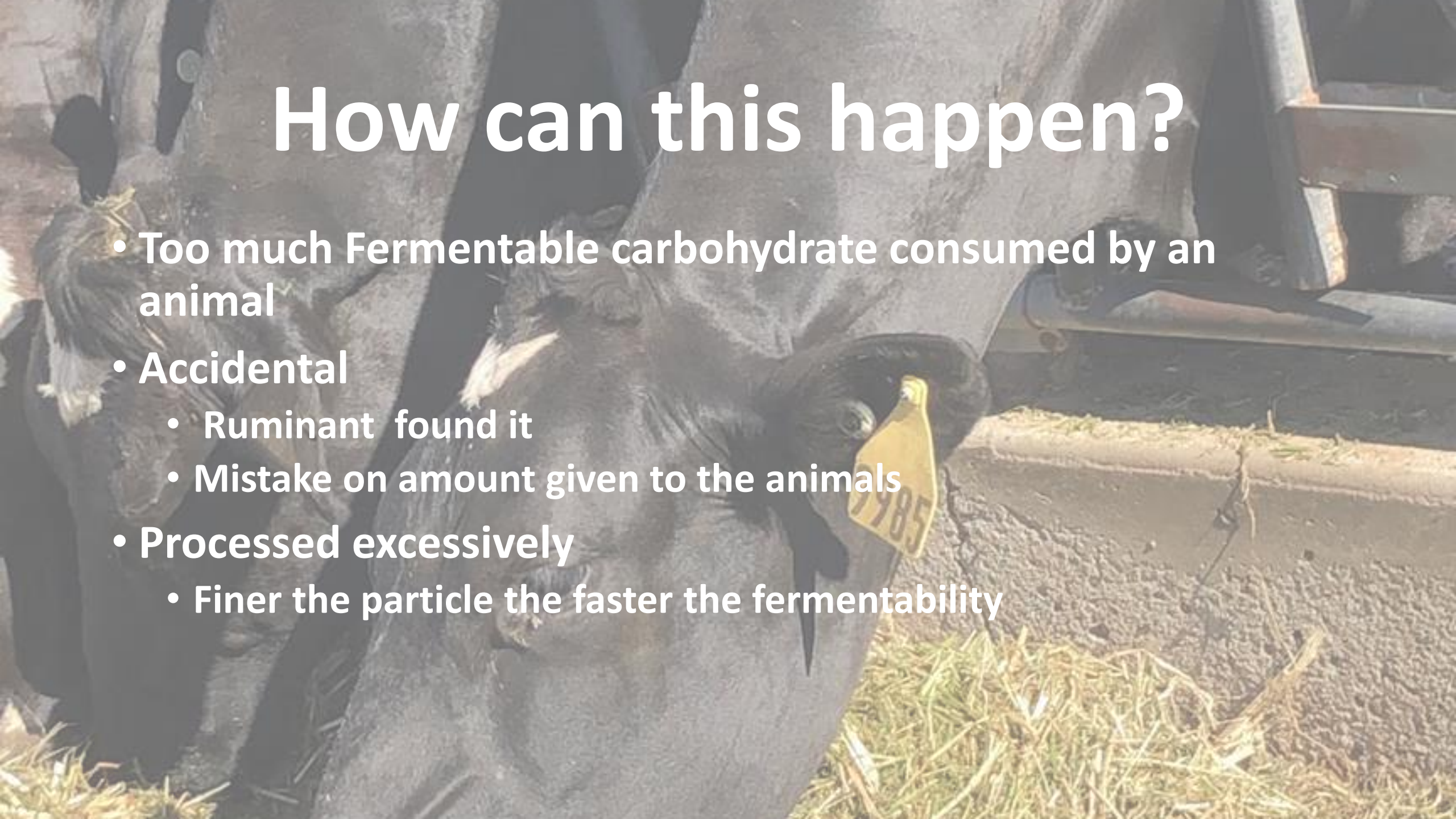
- Variable feed intake (DMI)
 - Off feed /diarrhea
- Decrease milk production
- Decrease butterfat
- Decrease reproduction

When Can this Happen?

- **Any time there is a Rumen!**
 - **Young or old animals**
- **2-4 hours after feeding an animal**
 - **Less when feeding straight grains (2-3 hours)**
 - **More when feeding a mixture of grain and forage (3-4 hours)**

How can this happen?

- Too much Fermentable carbohydrate consumed by an animal
- Accidental
 - Ruminant found it
 - Mistake on amount given to the animals
- Processed excessively
 - Finer the particle the faster the fermentability



How can this Happen?

- Sorting out of fiber by the animal
- Not enough bunk space for the herd
 - Aggressiveness over eating
- Large feeding of grain
 - Feeding once or twice a day increase the amount consumed at a time.
 - Feeding more often and less amount will help prevent



How Do You Diagnosis Rumen Acidosis?

History

- How long has the animal been sick?
- Or the herd has been having problems?
- Any new feeds?
- When did the ruminant last eat?
- Where did it eat?
- Did the ruminant get out lately?

How Do You Diagnosis Rumen Acidosis?

- Clinical signs --Common symptoms with other diseases
- Diarrhea
- Bloat
- Fever
- Off feed
- Dehydration
- Increase heartbeat
- Increase respiration
- Death





How Do You Diagnosis Rumen Acidosis?

- Clinical signs -- symptoms less common to other disease
- Blindness ---PEM
- Ataxia
- Head pressing
- Lamness

How Do You Diagnosis Rumen Acidosis?

- The absolute best test

Rumen Fluid Analysis

- pH meter
- Collection
 - Rumenocentesis
 - Ororumen tube

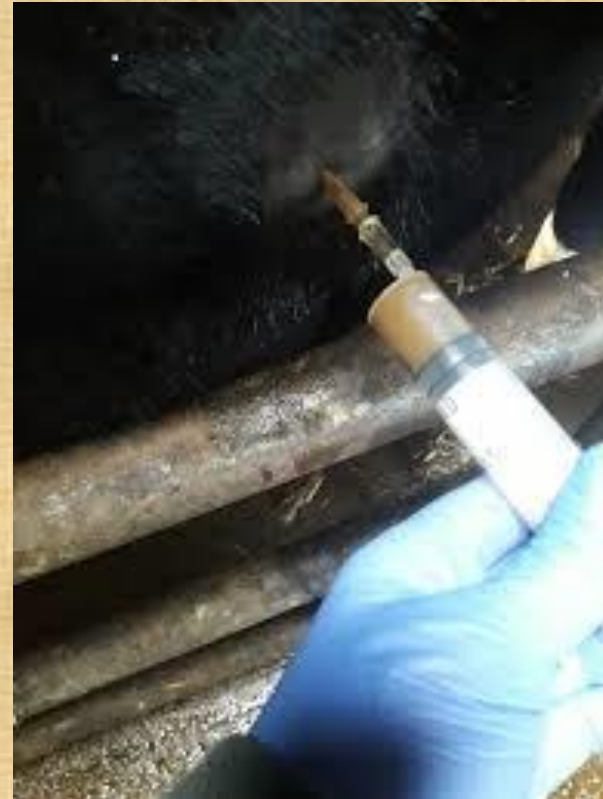
Rumenocentesis

- My preferred way
- 2-4 hours after feeding of the herd or animal
- Equipment
 - Ability to restrain the animals and access to left side
 - 12-14 gauge needle 5-7cm long
 - Clippers or razor
 - Syringe 15-30 ml
 - Cup for depositing sample
 - Should be large enough to put your pH meter into the cup but not big enough to be able to get a reading on your sample

Rumenocentesis Procedure

- Restrain the animal while having access to the left side
- Shave a 3cm x 3cm square 5-10cm posterior to the last rib and 5-10cm ventral to the costochondral junction on the left side
- Clean like a surgery site
- Push the needle into the rumen all the way to the hub
 - Do not use lidocaine
- Place syringe on hub
- Have half the syringe filled with air
- Push half the air into the rumen to clear needle of blood and debris
- Pull back on syringe plunger to pull fluid into the syringe
- You may need to push the rest of the air into the rumen to clear the needle from rumen fiber

Rumenocentesis



Ororumen tube

- Personally never have seen it.
- Tube down the esophagus and collect sample
- Disadvantage
 - Potential contamination with saliva which will increase pH

Analysis of Rumen fluid

- Inspect the sample
 - No blood
 - 2-5 ml necessary
 - Normal color should be green with some viscosity
 - Lower pH fluid will be lighter (yellow to grey) and less viscosity
- Calibrate your pH meter
- Place in Rumen content immediately after taking sample
- If you are checking a herd, you should perform rumenocentesis on 7-10 different animals.
 - 40% below 5.5 pH would indicate a herd problem of SARA

So..... How do I treat?

1. Remove the causes of the acidosis
 - a) Too much grain?
 - b) Too much processing grain?
 - c) Too much sorting of the feed?
 - d) Not enough fiber or protein in diet?

So..... How do I treat?

1. Treat the clinical signs

A. Dehydration

- I. Oral fluids
- II. Intravenous fluids
 - I. Lactated Ringers is not the best fluid of choice due to the lactate acid
 - II. 1 liter of .9% Saline Solution (isotonic) with 150ml of 7.2% Sodium Bicarb if acute
 - III. IV electrolytes need large quantities
 - I. 4-6 Liters of isotonic solutions on mature cattle

B. Off feed

- I. Microbes
- II. rumen content
- III. oral bicarb?
 - a. Unless you are within 4 hours of animal consuming feed. The rumen is back to normal.

So... How do I treat?

- Parenteral antibiotics?
 - Used as prophylactic treatment for Liver abscesses, Ruminitis, and Caudal Vena Syndrome
 - Causes of these are due to rumen wall breakdown from the acidosis and allowing bacteria to escape into the blood system.
 - These usually show up weeks later
- Penicillin G
 - 22,000 IU/Kg IM for 3-5 days
- Ruminitis can be fungal.





So... How do I treat?

- Antihistamine???
- We can't use it anymore in US
- May be beneficial
- Severe acidosis will cause some histamine release



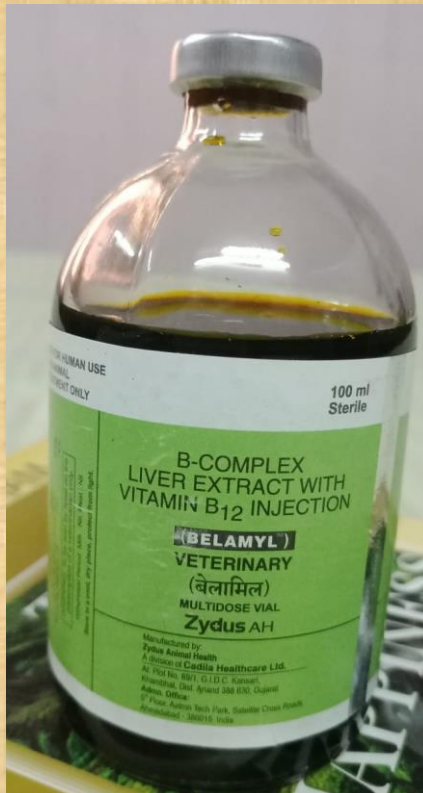
So... How do I treat?

Polioencephalomalacia (PEM)

- Thiamine (B1)
 - 10mg/kg tid or qid
 - Give first dose IV SLOWLY!!!!
 - All other doses IM
- Check how much Thiamine is in your B-complex

Check how much Thiamine in your solution

- B complex- 100mg/ml
 - 200kg animal will need 20 mls
- Thiamine Injection 500mg/ml
 - 200kg animal will need 4mls



A black and white cow is shown in profile, eating from a long metal trough. The trough is filled with a green, fibrous feed, likely silage. The cow has a yellow tag on its ear. In the background, other cows are visible, and a dirt road runs alongside the feeding area. The scene is brightly lit, suggesting a sunny day.

Good Preventions

- More room for all animals to eat
- Increase the number of feeding and feed less amounts
- Add Sodium Bicarbonate to the feed
 - Up to 1.5% of Dry Matter intake
- Free choice Sodium Bicarbonate

A close-up photograph of a man wearing a light-colored cowboy hat, smiling warmly at the camera. He is positioned in the foreground, with his face and hat clearly visible. In the background, a herd of cattle is partially visible, some with green ear tags. The scene is set outdoors, likely in a field or pasture, with natural lighting.

THANK YOU!

Questions or Comments?

Reference:

“Diagnosis and Treatment of Clinical Rumen Acidosis” by Emily Snyder DVM, Mfam
and Brent Credille, DVM,Phd