Transfaunation: Supportive Care and Adjunct Therapy
Importance of Rumen Microbes

- Rumen bacteria consist of anaerobes and facultative anaerobic bacteria
  - The population of rumen microbes digest the feed to produce volatile fatty acids (VFA)
    - Acetic acid – utilized to generate ATP and source of acetyl CoA for lipid synthesis
    - Propionic acid – serves as primary substrate for gluconeogenesis in the liver and is the ruminants primary source of glucose
    - Butyric acid – forms ketone beta-hydroxybutyric acid that is utilized in tissues for energy production
  - Healthy microbial fermentation is necessary to generate the nutrients responsible for growth, production, and/or reproductive health
  - The microbial population is determined by what the animal ingests
The population is controlled by many environmental factors including diet, salivation, mixing, rumination, absorption, outflow, and eructation.

The proportion of bacteria vary with diet roughage versus starches:

1. A diet consisting of fiber (18% dry matter) with concentrate supplement at about 20 percent will result in a rumen pH of 5.5 – 7
   - This pH supports a healthy microbial population that can produce adequate volatile fatty acids (VFAs) necessary to sustain growth, production, and/or reproductive health.

2. A diet consisting of poor quality forage yields a rumen pH of 6.5 – 7
   - Lack of concentrates alters the rumen flora such that fewer VFAs are produced.

3. A diet consisting of primary concentrates with decreased forage or forage of decreased fiber length yields a rumen pH of 5 – 6.5
   - Volatile fatty acid production is increased but at levels that are detrimental to rumen function (low grade chronic rumen acidosis).

4. Over consumption of pure concentrates yields a rumen pH of 4.5 – 5
   - Excessive VFAs and acidosis.
Changes in the Rumen Flora

• Feed type can alter microbial population and affect the health of the animal
  • High fiber low concentrate diets can result in malnourishment
    • Malnourished animals are immunosuppressed and more susceptible to infectious diseases
  • Try to establish the optimal rumen conditions for flora

• Disease conditions can impact rumen flora directly or indirectly
  • Acute rumen acidosis (grain overload)
  • Anorexia from infectious, metabolic, gastrointestinal, respiratory, reproductive, and/or other diseases
  • Lack of substrate can cause the population to change resulting in reduced production of VFAs

How can we improve the microbial population of these cattle?
Transfaunation

- Process of transferring rumen contents from one ruminant to another
  - Reintroduces a healthy microbe population

- The microbial population is critical to maintain rumen function
  - Anorexia, dietary changes, and alterations in rumen pH disrupt the balance of the microbial population

- Rager et. al. found that cows that were transfaunated after correction of a left displaced abomasum (LDA) had fewer complications, greater feed intake, and required less treatment for ketosis than those that were not transfaunated.
  - This is a useful adjunct to treating diseases (infectious) that cause reduced feed intake
Impact of Transfaunation

- Improved rumen motility
- Increased appetite
- Production of VFAs
- Increased growth and production
- Decreased recovery time
The Process of Transfaunation

• Most veterinary colleges have a fistulated steer or cow that is used as a rumen fluid donor
  • Establishing a fistula and animal maintenance can be expensive
  • Cost effective in a teaching environment or in a high volume practice

• Collection of fluid from a slaughter facility
  • Abattoir
  • Local butcher

• It is extremely challenging to siphon enough fluid from an adult animal to generate significant volume
Administration of Rumen Fluid

• Collect the rumen contents from a health donor that was recently slaughtered
  • Try to collect as much fluid as possible
  • Make sure the donor did not have *Haemonchus*

• Place the rumen contents into a bucket or pan
  • Add warm water to the rumen contents
  • Filter the fiber from the fluid
  • Administer about one gallon to an adult cow

• Administer via orogastric intubation (stomach tube)
  • Ensure that the tube has been properly placed and is in the rumen

• Many times cattle will begin eating shortly after administration of rumen fluid