



A COMPARISON OF DIGITAL DERMATITIS LESIONS IN SASKATCHEWAN DAIRY HERDS

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Topics covered in Valdivia, Chile

- Major causes of lameness in South America, New Zealand, Europe, and North America
- Benchmarking to improve lameness outcomes
- Causes and progression of claw horn lesions
- Digital Dermatitis (DD), insights and outcomes
- Chronic pain associated with lameness
- DD bacteria and “non-healing” claw lesions

New information on infection source

- Dr. Paul Plummer et al. collected many environmental samples and analyzed them for DD associated *Treponemes*
- Greatest amount of DD *Treponemes* found on:
 - Animals
 - Foot trimming equipment
 - Human worker areas

What the experts have to say on lameness:

- “If you don’t measure it, you can’t manage it”
- On footbaths: “if you don’t do it right, don’t do it”
- “Don’t do anything to the cow’s foot that you wouldn’t do to yours”
- “The only thing worse than mattresses is rubber mats with no bedding”
- “Reducing risk of DD before calving reduces risk after calving”

What was the take-home message?

- Develop a protocol with your herd veterinarian AND foot trimmer
 1. Identify problems
 2. Develop solutions collectively
 3. Change your practice
- Benchmark so you can see a goal

My Research



Research has changed

- Too many species of bacteria are associated with DD
 - Vaccine development cannot proceed at this time
- New information indicates *Treponema* are opportunistic, but may not initiate DD (Krull et al. 2014)

What I want to know:

- What bacteria are responsible for initiating DD?
- If not a difference in bacteria, what management factors make the difference?

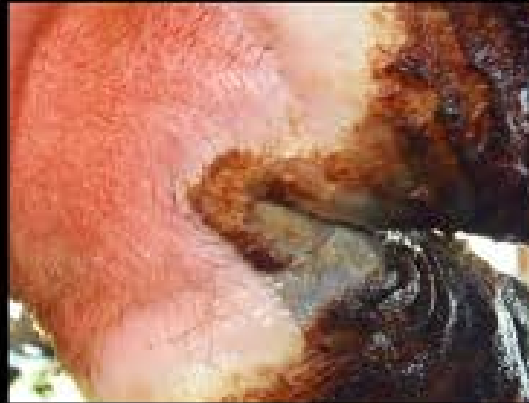
Spotting clinical DD is easy



But DD also looks like this:

Stage A1

Non-proliferative dermatitis,
+/- dermal pitting, within the
interdigital fold



Stage A2

Advanced erosion and
proliferation within the
interdigital fold



But DD also looks like this:

Stage B1

Focal or multifocal
proliferative scabs on heel



Stage B2

Diffuse proliferative scabs
across the heel



Early DD is not as easy to spot



Can you tell the difference?



What I want to know

- Not all of these lesions will progress into clinical DD, why not?
 - Is it management factors?
 - Or, are DD associated bacteria missing in the environment?

Objective

- To identify the dominant bacteria present in irregular heel skin of dairy cows from a closed herd and compare it to pathogens of visually similar early lesions on cows from endemic herds in Saskatchewan

Novel opportunity:

- 38 herds have responded to our herd lameness and management survey
 - 25 volunteered to allow sample collection
 - 7 were sampled in fall of 2015
 - **1 of these herds has cows with irregular heel skin which does not progress to clinical DD (“low prevalence herd”)**

Where the project is at:

- Dairy herds have been surveyed
- Samples have been collected
- DNA has been extracted

Next step:

- Dr. Paul Plummer of Iowa State University will assist with:
 - Sequencing bacterial DNA from samples
 - Interpreting results

Expected Results

- Differences in early staged DD lesion bacteria populations of animals in low and high prevalence herds
- Reported DD management practices in SK dairy herds (survey results)
- Relatedness of oral, rectal, hair-coat, and DD lesion bacteria populations across SK herds
- Relatedness of bacterial species in irregular bovine heel skin

Importance of research

- If we know more about how the disease progresses, we know more about how to prevent it
- Prevention is key with DD
- Treatment is not always successful

How you can help

- Complete the lameness management survey
- Volunteer to provide samples
- **Let me know if you think your herd is DD-free!**
- Work together with your foot trimmer and veterinarian to develop a prevention and treatment plan
 - There is no easy cure



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Thank you for your attention!

Questions?

