

What the Research Says:

New Health Insights for Alpaca & Llama Owners

A summary of 6 peer-reviewed scientific publications



Today's Topics

1 Dental Disease

Prevalence & risk factors in alpacas

2 Gastric Ulcers

Stomach ulcers: who gets them & why

3 GI Blockages

Intestinal obstructions & surgery

4 Sick Crias

Neonatal disorders & survival

5 Eye Disease

Ocular disorders in camelids

6 Key Takeaways

What this means for your herd

SECTION 1

Dental Disease

How common is it — and why most owners never know



The Hidden Epidemic: Dental Disease in Alpacas

82%

of alpacas had at least
one dental disorder



Source: Cebra, 2013

Only 6.6%

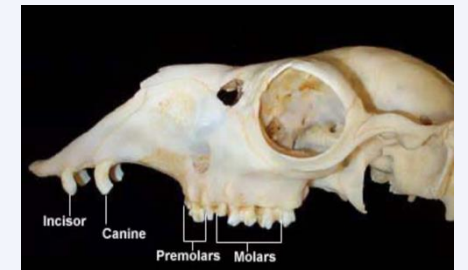
of owners were aware
their animal had dental problems

228 alpacas

from 25 farms examined under sedation
in Belgium & the Netherlands

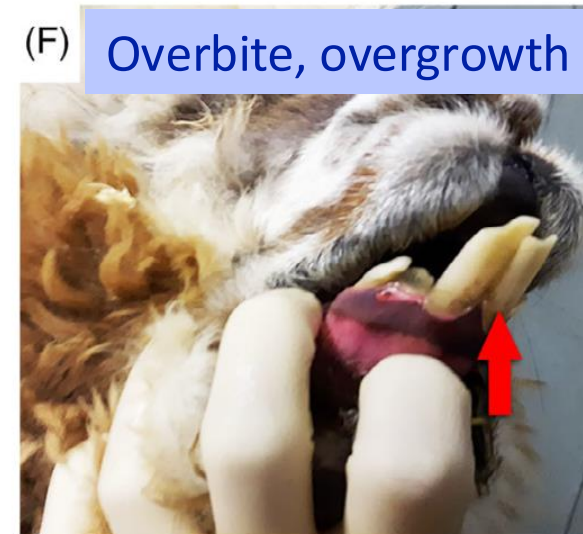
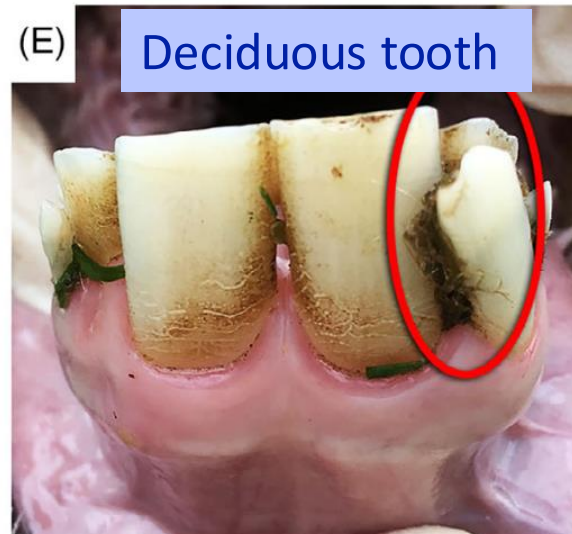
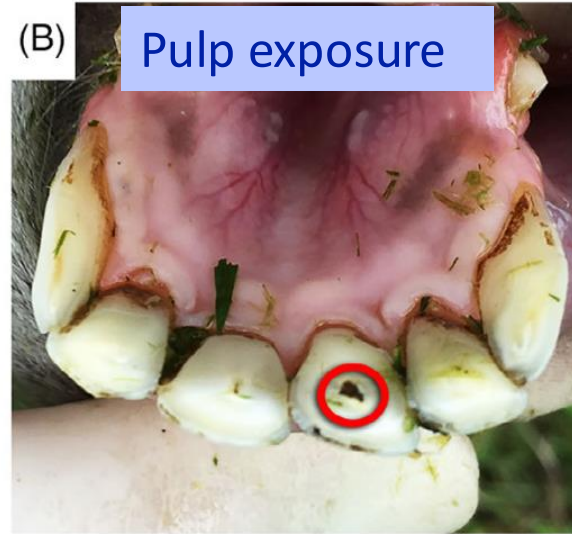
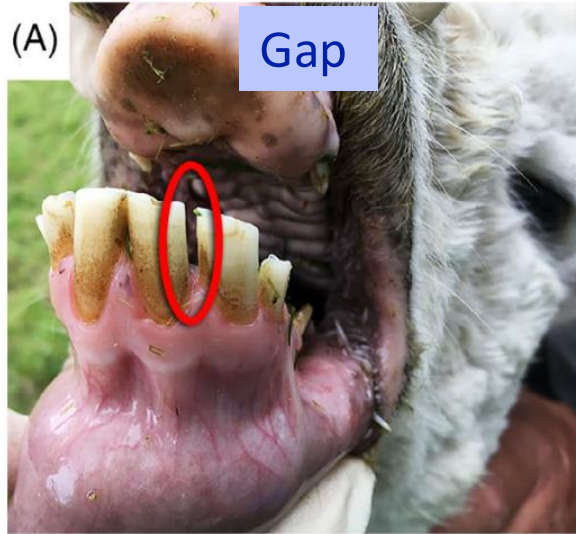
74.6%

had cheek teeth disorders
(the back grinding teeth)

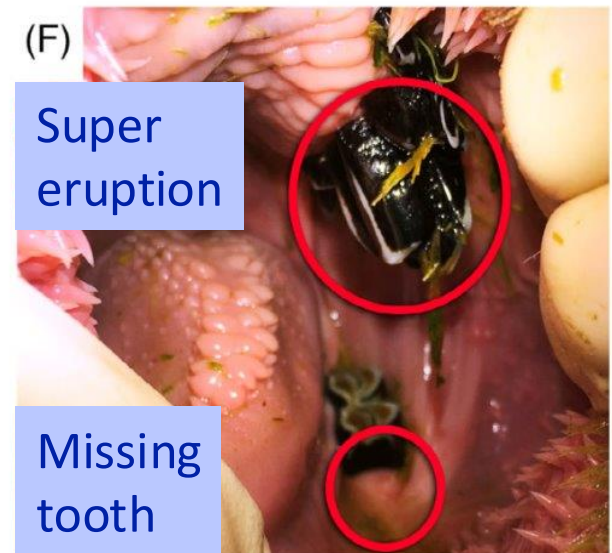
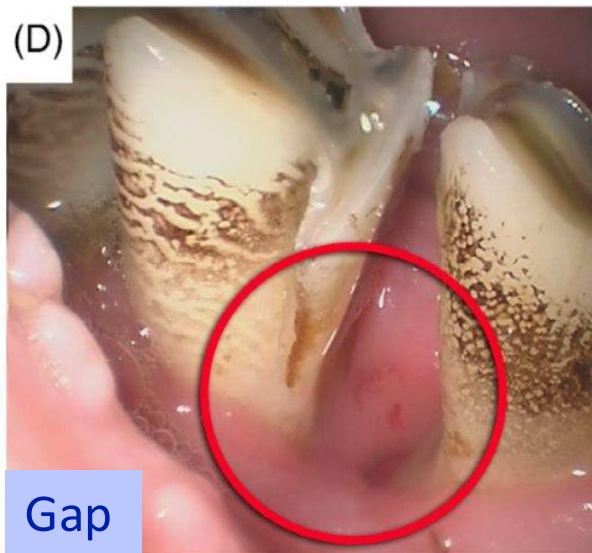
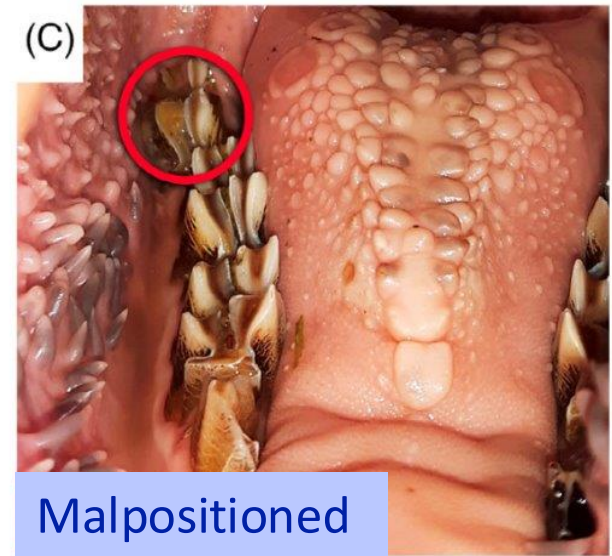
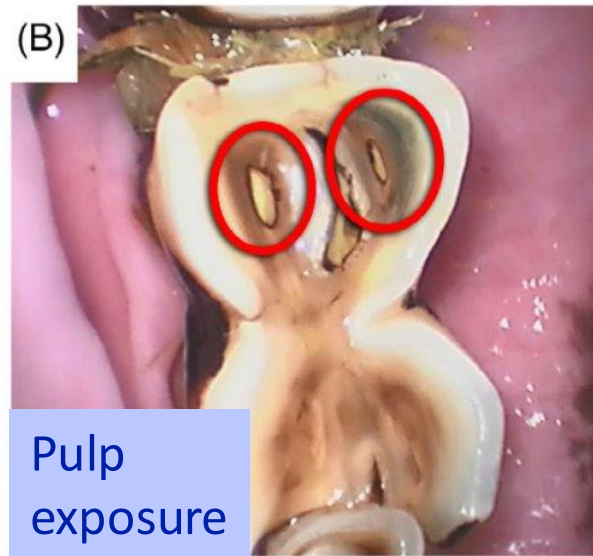


Source: Proost et al. (2020) *Journal of Veterinary Internal Medicine* 34:1028–1039

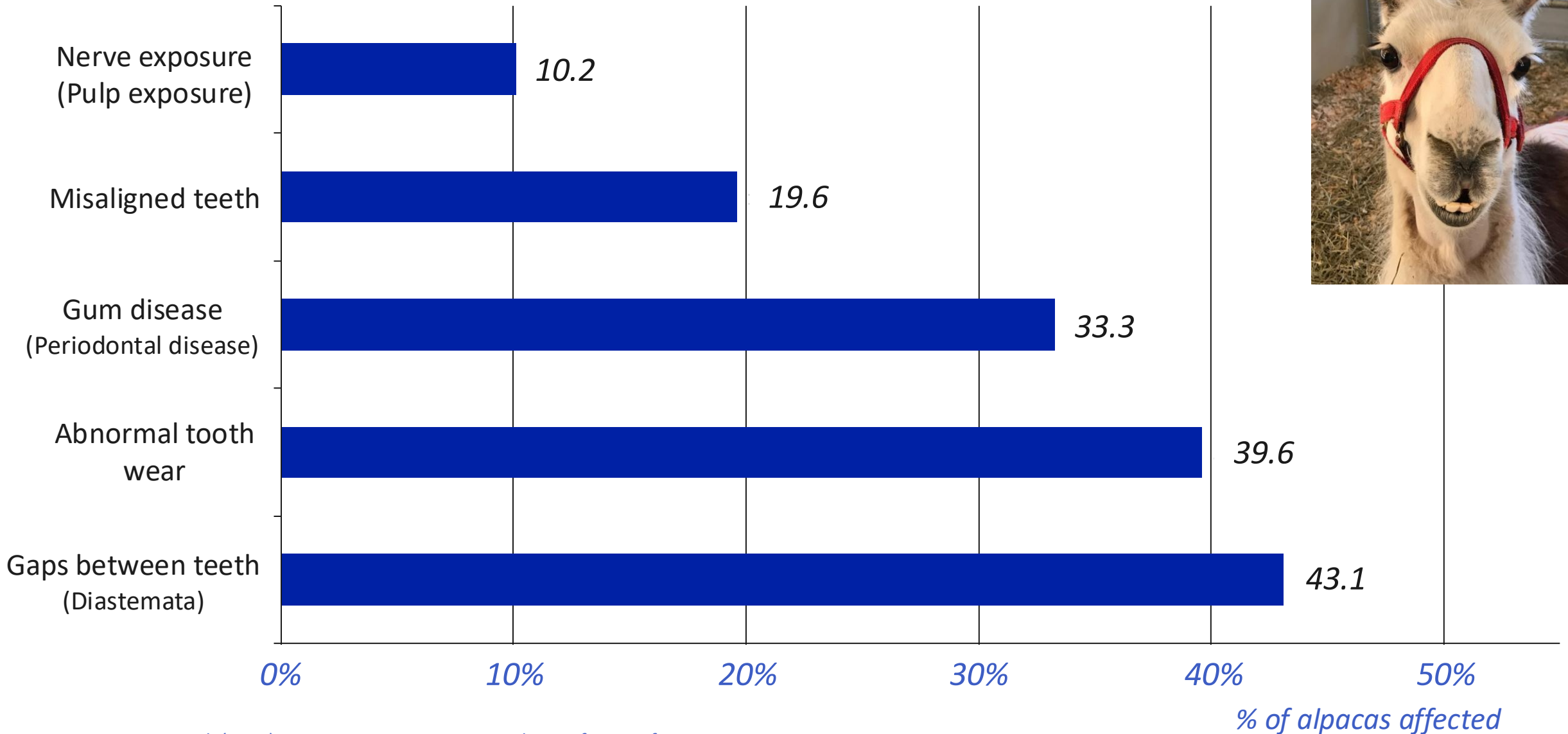
Incisors



Cheek Teeth



What's Found on Oral Exam



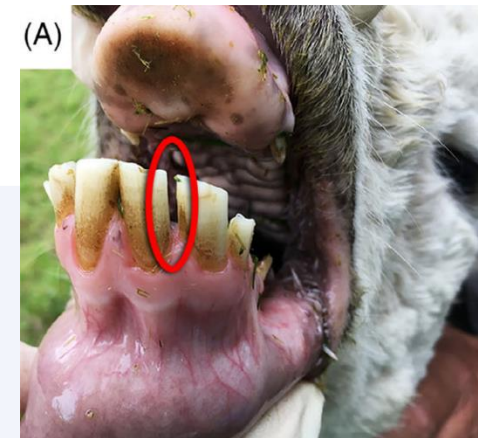
Source: Proost et al. (2020) JVIM 34:1028–1039 • 228 alpacas from 25 farms

How Dental Disease Progresses: The Cascade



Animals with gaps between teeth have 13× higher odds of developing gum disease

If gaps are present, 82% of gum disease cases were directly attributable to those gaps — treating the gaps early may prevent gum disease from ever developing



What Puts Alpacas at Higher Dental Risk?

Age

- Older animals have significantly more dental disorders
- Animals 9–12 years had 10.7× higher odds of gaps vs. those under 3 years

Herd Size

- Larger herds = higher gum disease risk
- Each additional animal increases an individual's risk by 2%

Jaw Swelling

- 82% of animals with jaw swelling had gum disease
- Swelling detectable on palpation in 9.6% of animals — owners noticed only 3.9%

Pasture Hygiene

- Less frequent pasture cleaning linked to nerve exposure
- Longer intervals between cleanings = higher pulp exposure risk

Dental Disease: Warning Signs & What You Can Do

Warning Signs

- Lump or swelling along the jaw
- Unexplained weight loss or poor body condition
- Dropping partially chewed food (quidding)
- Decreased appetite or slow eating
- Excessive salivation
- Visible discharge from nostril or jaw fistula
- BCS declining despite good forage



What You Can Do

- Schedule a sedated dental exam annually — visual checks aren't enough
- Record body condition score (BCS) monthly on a standard scale
- Palpate (feel) the jawbone of every animal during routine handling
- Clean pastures regularly to reduce abrasive debris
- If jaw swelling is found, call your vet promptly
- Don't wait for obvious signs — most affected animals show none

SECTION 2

Gastric Ulcers

Stomach trouble — a silent but serious condition

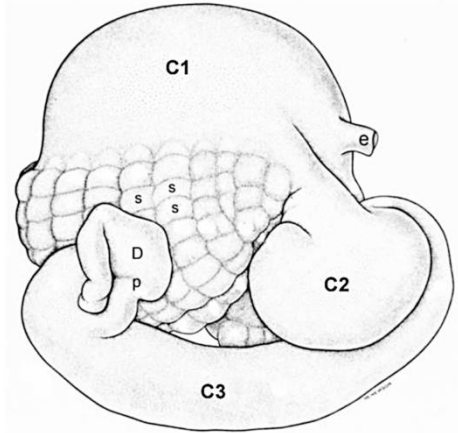


Figure 5-19. (Left) Llama stomach, right side. **e**, esophagus; **C1**, **C2**, **C3**, stomach compartments; **s**, glandular saccules of **C1**; **p**, pylorus; **D**, duodenal ampulla.

Nearly 1 in 4 Necropsied Alpacas Had Stomach Ulcers

23.5%

of necropsied alpacas
had gastric ulcers
(44 of 187 animals)

Where ulcers were found:

61.4%

Compartment 3 (C3)
— the digestive compartment

13.6%

Multiple compartments

⚠️ 9 alpacas had perforated ulcers — all developed fatal peritonitis (infection of the abdominal cavity)

- Perforation is a medical emergency.
- If an animal with abdominal pain deteriorates rapidly, call your vet immediately.

Source: Cebra, 2013



Adults Are 3× More Likely to Have Ulcers

30%

of adult alpacas
had gastric ulcers

11%

of juvenile alpacas
had gastric ulcers

3.4×

higher odds in adults
(statistically significant, $p < 0.01$)

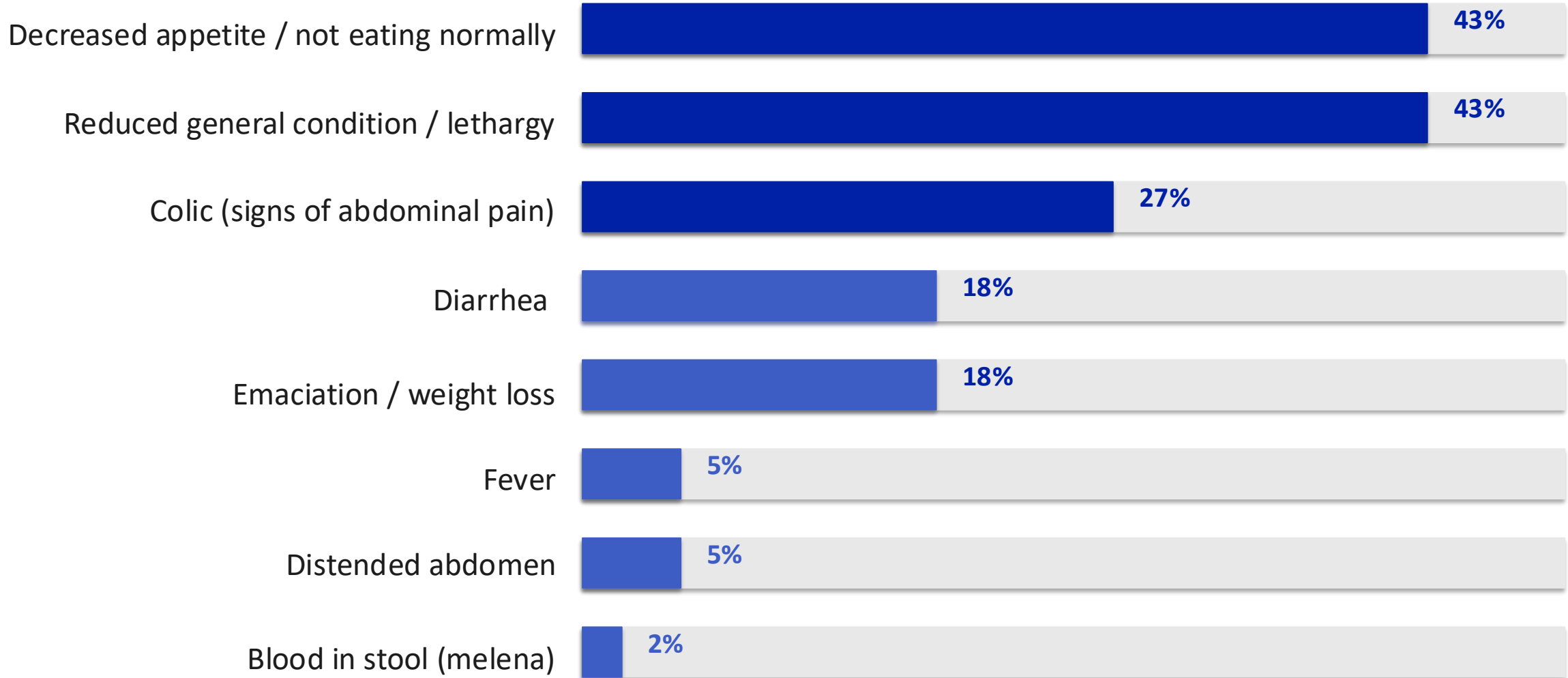
No sex difference

Males and females were equally likely to develop gastric ulcers
— no predisposition based on sex was detected

47.7% had poor nutritional status

Of those with ulcers, almost half were in poor condition — suggesting ulcers may contribute to weight loss, or that debilitated animals are more vulnerable

The Challenge: Symptoms Are Vague and Non-Specific



⚠ Important: These same symptoms occur in many other conditions. Gastric ulcers cannot be reliably diagnosed by symptoms alone — definitive diagnosis requires necropsy.

What Causes Stomach Ulcers — and What You Can Do

Suspected Causes

- Stress — physical or psychological stress raises cortisol and stomach acid
- NSAIDs (e.g., Banamine/flunixin, meloxicam) — these drugs reduce the stomach's protective mucus
- Reduced feed intake or irregular feeding — an empty stomach has more acid damage
- Forestomach acidosis — fermentation imbalances in C1
- Diet changes — especially abrupt shifts in forage type
- Alpacas outside South America appear more susceptible than those in their native habitat

What You Can Do

- Minimize unnecessary stress: avoid overcrowding, sudden changes, or prolonged transport without breaks
- Use NSAIDs only when prescribed by a vet — never long-term without monitoring
- Maintain consistent feeding schedules — avoid long gaps without access to forage
- Ensure animals always have access to hay, especially when dry lot managed
- If an animal is given NSAIDs long-term, ask about stomach-protecting medications

SECTION 3

GI Blockages

When the intestines won't move — a surgical emergency

The Most Common Cause: Fiber Balls (Trichophytobezoars)

110

camelids had
exploratory surgery

58%

survived to
hospital discharge

What is a trichophytobezoar?

- A compacted ball of plant fiber and hair that forms in the digestive tract and causes a physical blockage.
- Similar to a hairball in a cat, but much larger and in different locations.

56 of 88 cases (64%) caused by trichophytobezoars

39 of 56 blocked in the duodenum (just after the stomach)



Source: Cebra, 2013

✓ Good news: camelids treated for trichophytobezoar obstruction had BETTER long-term survival than those with other types of obstruction — if treated, they recover well.

What Predicts Survival After Emergency GI Surgery?

Three laboratory values at admission independently predicted which animals survived:

Blood Protein (Albumin)

For every 1 g/dL increase in albumin, odds of survival increased 15×

Higher is better

Animals with better protein stores handled surgery far more successfully

Inflammation Marker (Fibrinogen)

Higher fibrinogen = significantly lower survival odds
(per 100 mg/dL increase: ~26% decrease in survival odds)

Lower is better

High fibrinogen signals severe infection/inflammation, often peritonitis

Phosphorus level

Each 1 mg/dL increase in phosphorus was associated with ~22% decrease in survival odds

Lower is better

Elevated phosphorus can indicate organ stress, sepsis, or kidney problems

Early referral = better lab values = better survival. Don't wait until the animal collapses.

SECTION 3

Eye Disease

Recognizing problems before permanent damage occurs



Eye Disorders in Alpacas & Llamas: A 16-Year Review

68

animals with eye disease
(59 alpacas, 9 llamas)

104

individual eyes
affected

143

distinct diagnoses
made across all cases

2009–2025

16-year study period
Univ. of Vienna

Case numbers were steadily increasing over the study period

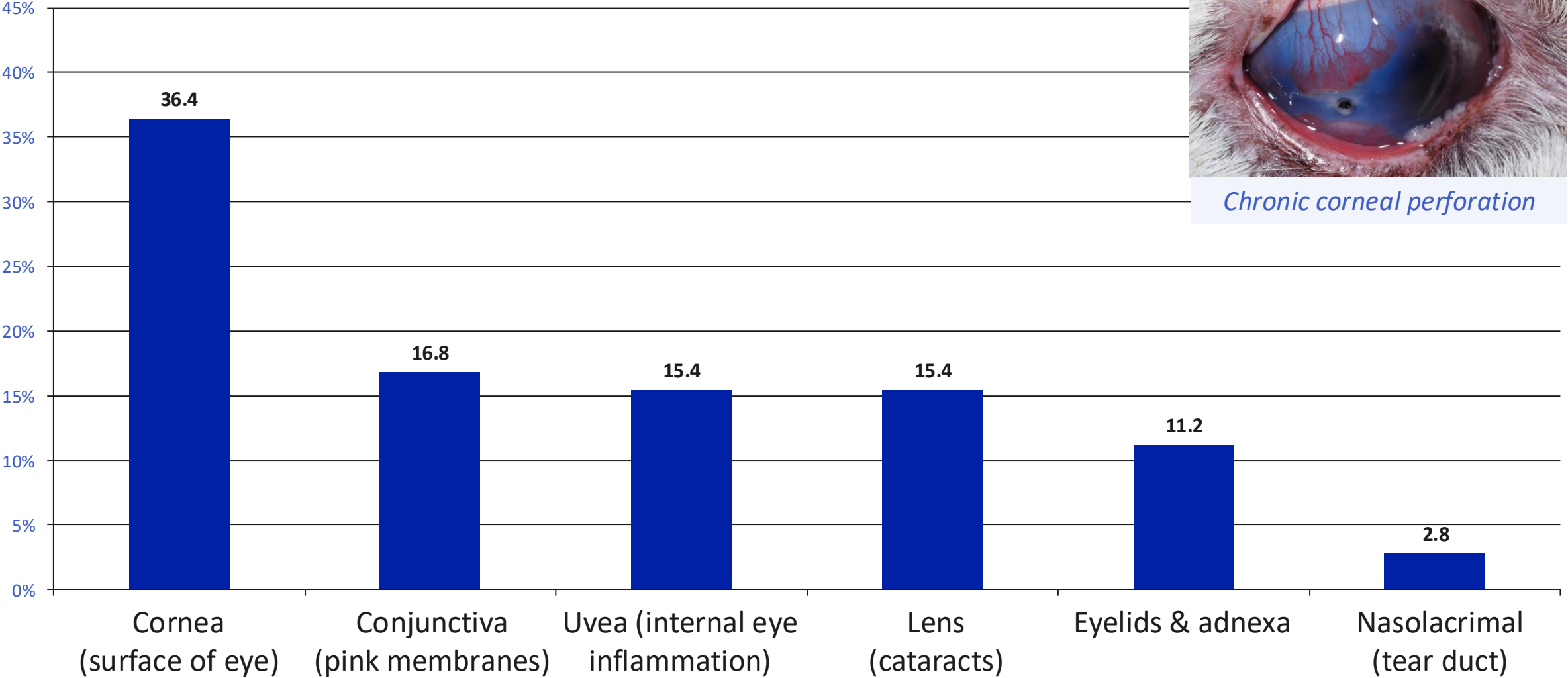
Rising awareness and growing camelid populations in Europe are likely contributing to more eye cases being identified and referred

- One animal can have multiple eye conditions in the same eye, and conditions can progress rapidly without treatment.
- Early recognition and prompt veterinary care are critical to preserving vision.



Melting corneal ulcer

What Eye Problems Are We Seeing?



% of all diagnoses

Corneal Disease & Who Is Most at Risk

The Corneal Disease Cascade

Keratitis

Inflammation of cornea — 12.6% of diagnoses



Corneal Ulcer

Surface erosion through corneal layers — 9.8%



Melting Ulcer

Rapid enzymatic destruction
Can progress in days — 6.3%



Perforation

Hole through cornea
Vision loss or loss of eye — 4.9%



Young Animals (≤ 3 years)

- Significantly more likely to be affected ($p < 0.001$)
- Congenital conditions (entropion, cataracts) appear early
- Immature immune system, exploratory behavior

♂ Males More Frequently Affected

- Significantly more presentations ($p = 0.026$)
- Territorial behavior and fighting cause ocular trauma
- Valuable males may also receive closer monitoring

*Note: Fungal infections are more common in camelids than most species.
Peak risk: summer & fall.*

SECTION 5

Sick Crias

The first 30 days — what puts newborns at risk



267 Sick Crias: What They Taught Us

267

sick crias studied
(255 alpacas, 12 llamas)

77.9%

survived to
hospital discharge

3 days

median age
at admission

Primary causes of in-hospital death (from necropsy reports):

Sepsis (bloodstream infection): 41%

Upper airway obstruction (choanal atresia): 15%

Respiratory distress syndrome: 10%

GI perforation: 5%



The Biggest Threats to a Sick Cria's Life

Factors that **INCREASED** odds of death in hospital:

79×

Needing Surgery

higher odds of death

Any cria requiring surgery had dramatically higher odds of not surviving

36×

Sepsis

higher odds of death

Bloodstream infection was the leading cause of death

26×

Premature / Immature at Birth

higher odds of death

Prematurity or dysmaturity (born too early or underdeveloped)

9×

Toxic Neutrophil Changes

higher odds of death

Abnormal white blood cells on blood panel

5×

Hypothermia

higher odds of death

Body temperature below 37.8°C (100°F) on admission

Colostrum: Possibly the Single Most Impactful Factor

With adequate
passive transfer

89%

survived to discharge

Without adequate
passive transfer

72%

survived to discharge

What is passive transfer?

- Newborns are born without antibodies.
- They get their immune protection from colostrum (first milk) in the first 6–12 hours of life.
- After that, the gut closes and antibodies can no longer be absorbed.
- Test at 24 hrs: serum IgG should be ≥ 800 mg/dL.



Good News: Most Survivors Do Well Long-Term

83.4%

of survivors were
still alive at follow-up

93%

of living animals reached
their expected potential

~8 yrs

median follow-up time
after hospital discharge

Long-term outcomes in animals that survived hospitalization:

Rare lasting issues: small stature (2.4%), neurologic deficits (1.6%), heart murmur (1.6%), gait problem (0.8%), blindness (0.8%)

The bottom line: aggressive, early veterinary treatment of sick neonates pays off.
The vast majority of crias that make it through hospital care go on to lead normal, productive lives.
Don't delay — a cria that is sick can deteriorate rapidly.

5 Things to Take Home Today

1

Get annual sedated dental exams

82% of alpacas have dental disorders — most are invisible without proper examination

2

Watch for vague illness in adults

1 in 4 necropsied alpacas had stomach ulcers. Minimize stress and use NSAIDs cautiously

3

GI blockage = call your vet immediately

Surgical survival is 58% — better lab values from early referral improve those odds significantly

4

Ensure colostrum in the first hours

Adequate passive transfer raised neonatal survival from 72% to 89%. Test at 24 hours, supplement if needed

5

Check eyes early and act fast

Corneal disease can progress from inflammation to perforation in days. Males & young animals need extra attention



Thank You!

Questions & Discussion

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To make an appointment

Call (352) 392-2229

24/7 Emergency service (in hospital)

Call ahead (352) 392-2229

Thank You!

References

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