

## Pyoderma: Diagnosis and Management

### Terminology: Pyoderma

- Pyogenic (pus-producing) bacterial infection of the skin
- Common clinical presentation in small animal practice
- Greater frequency of pyoderma in dogs than in other species such as humans, cats, and horses

Why might dogs have the highest frequency of pyoderma?

- Canine stratum corneum is a less effective barrier at preventing bacterial invasion
- Lack of ostial plug in entrance of canine hair follicle
- Superficial bacterial folliculitis is the most common cause of pyoderma in dogs

### Cutaneous microenvironment

In healthy skin there is a stable relationship between a myriad of commensal organisms living on the skin (microbiome)

Disease predisposes the patient to changes in the skin microbiome, which alters the microenvironment. Changes in pH, humidity, temperature, lipids and antimicrobial peptides increase the risk of pyoderma. Inflammation is often the cause of these changes

### Canine Skin Pathogens

- *Staphylococcus pseudintermedius*
  - Most common skin pathogen
- *Staphylococcus schleiferi*
  - Uncommon in dogs but still more common in dogs than cats
- *Staphylococcus aureus*
  - Uncommon in dogs and cats, common in humans and horses
- All *Staph* sp. can develop methicillin resistance
- Common secondary gram-negative invaders include *Proteus* sp. *Pseudomonas*, and *E. coli*

### *Staphylococcus pseudintermedius*

- Dogs can harbor multiple strains at once
- Depending on the location it may be transient, part of the resident flora, or colonize and potentially cause infection
- Nares and perianal region are often colonized, when the dog is licking, the *Staph* can seed to other area of the skin

What is the most common canine pyoderma pathogen?

- *Staphylococcus pseudintermedius*

### Primary vs Secondary Infections

- The skin is innately resistant to infection so a **primary infection is rare**
- Canine pyoderma is typically associated with underlying diseases or other predisposing factors that alter the skin microenvironment, leading to infection
  - Pruritus
  - Inflammatory skin disease
  - Endocrinopathy (Cushing's, Hypothyroidism)
  - Ectoparasites
  - Other infectious diseases
  - Decreased immune function due to drugs or an altered barrier function
  - Cornification disorders
  - Hair follicle disease
  - Environmental management – humidity, poor grooming, trauma

### Diagnosing Pyoderma

- Inflammatory skin disease – need compatible clinical lesions
- Evidence of bacterial invasion/proliferation
  - Cytology of skin surface of pustule
  - Histology: patterns and organisms
- Response to antimicrobial therapy
  - Systemic or topical

### Classifying Pyoderma

- Classified based on the depth of involvement
  - This is important clinically because it influences the treatment
  - Surface, superficial, deep
- Deep pyoderma
  - More likely to have an underlying cause
  - Requires more diagnostics and longer treatment
  - Failure to ID the underlying cause makes it harder to treat

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I trust everyone I just don't always believe what they are saying

