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Herd- and sow level risk factors for shoulder ulcers in lactating SOWS



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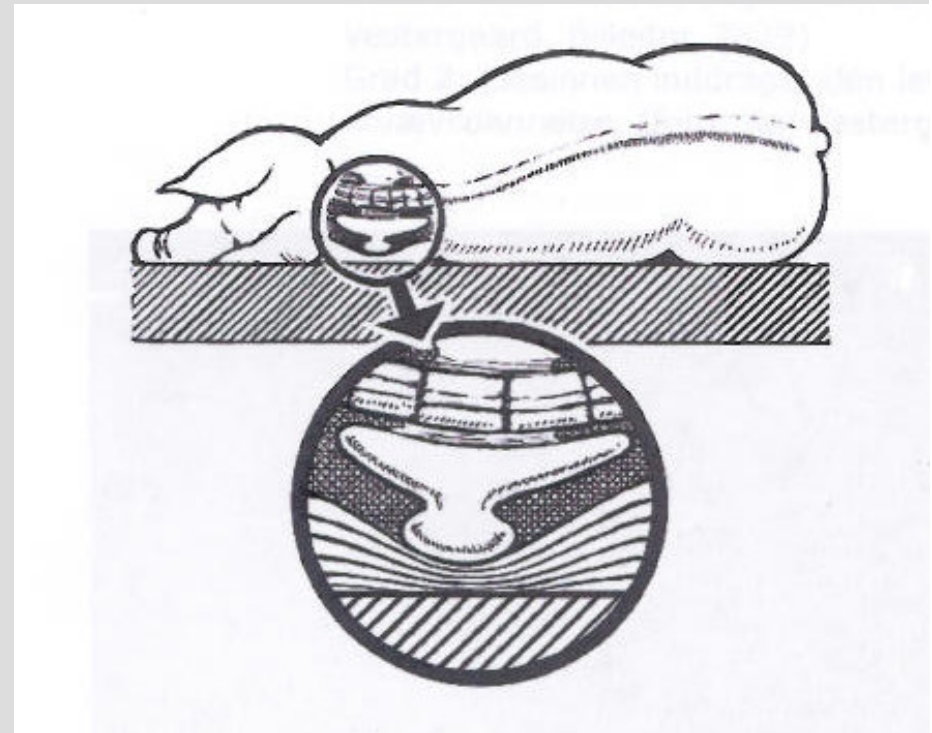


Aim of epidemiological survey

- **Prevalence of shoulder ulcers on-farm**
- **Identification of herd level risk factors**
- **Identification of sow level risk factors**

Shoulder ulcers

- Interaction between the sow and her environment (especially the floor) – pressure injury
- Sow susceptibility depending on e.g. breed, age, body condition, other diseases
- Ulcer develops during lactation
 - Sow lying behaviour
 - Sow physiology
 - Environment: flooring, restrictions in movement...



Vestergaard et al., 2005

Shoulder ulcer – a welfare indicator?

- **Multi-factorial disease complex**
 - Suitability of environment
 - Flooring
 - Freedom of movement
 - Sow general health and condition
- **Quality of on-farm health monitoring – management routines**

Data collection

- **98 participating sow herds**
 - Average 517 sows (range 110-1545 sows)
- **2 visits per herd with a 3-months interval**
 - 1st visit February-May 2008
 - 2nd visit May-August 2008
- **Data sources**
 - Description of production system and management
 - Clinical examination of lactating sows, avg 18 days p.p. (2x20) – in total 3831 sows
 - Clinical examination of pregnant sows – 1525 sows were examined during pregnancy (visit 1) and in the following lactation (visit 2)

Scoring of shoulder ulcers

- **Shoulder ulcers**
 - no signs of pressure lesions
 - scar from previous shoulder ulcer
 - red spot (hyperaemia) in skin of shoulder
 - superficial ulcer
 - ulcer penetrating all skin layers
 - deep ulcer including skin and underlying tissue



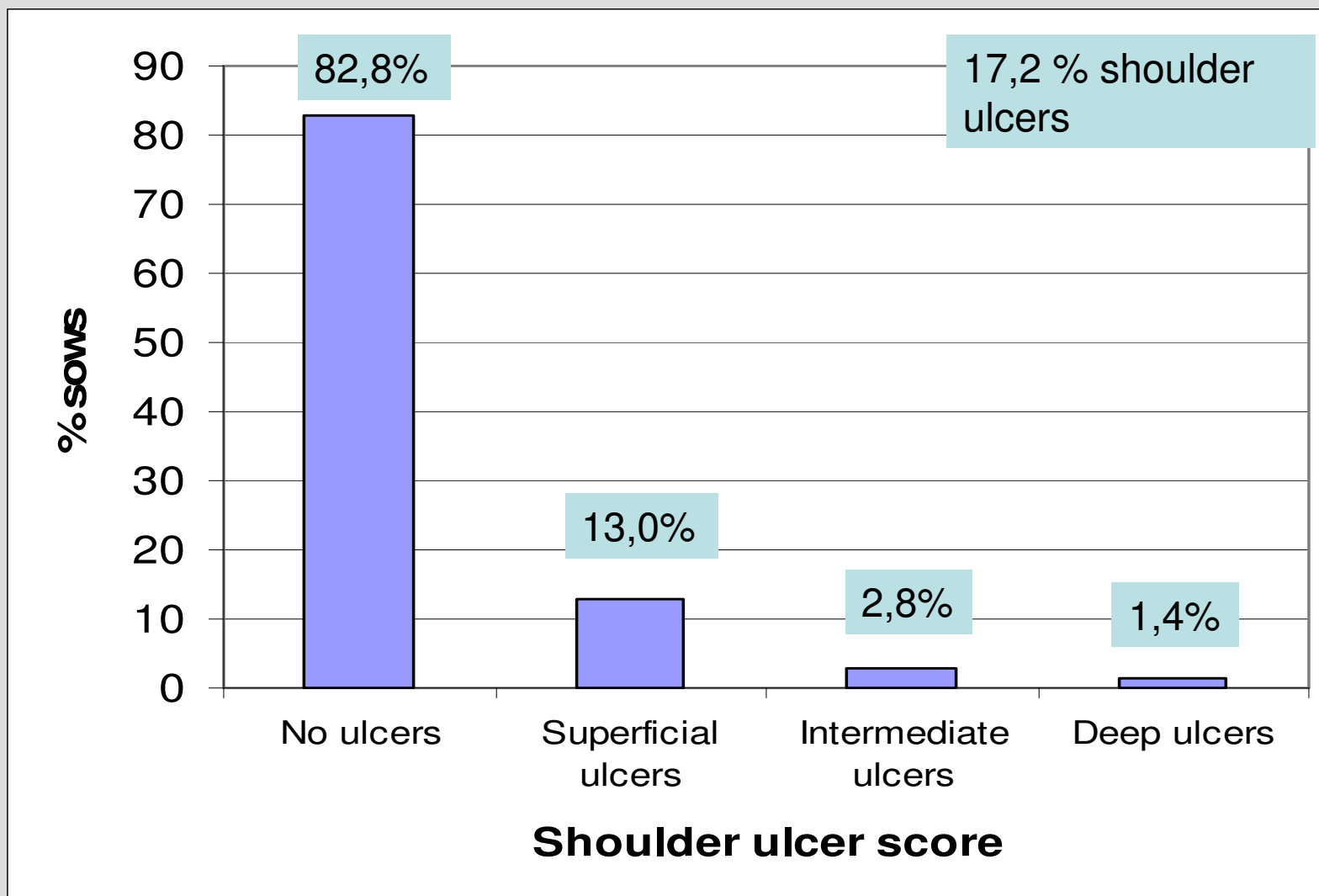
Potential herd level risk factors

- **Housing and management during lactation:**
 - Flooring – slatted vs solid floor, floor material
 - Floor hygiene
 - Time of introduction to farrowing pen
 - Duration of lactation period
 - Number of daily feedings during lactation
 - Type of feed
- **Housing and management during pregnancy**
 - Feeding system
 - Type of feed
 - Group size and group dynamics
 - Loose-housing period
 - Bedding material
- **Herd characteristics**
 - Herd size
 - Batch size
 - Staff

Potential sow level risk factors

- **Sow condition during pregnancy**
 - Body condition, previous shoulder ulcers, bite wounds on shoulder and body, lameness
- **Sow condition during lactation**
 - Body condition, cleanliness, pressure injuries hocks/carpal joint/distal limbs, lameness
 - Sow dimensions, parity, liveborn and stillborn piglets, litter size
 - Pen dimensions, pen hygiene

Prevalence of shoulder ulcers



12,1 % right shoulder, 8,5 % left shoulder

Herd level risk factors

- **Little or no straw bedding, pregnant sows OR(>20% shoulder ulcers) = 4,8 compared to deep litter system**
- **No significant effect of**
 - Herd structure: herd size, batch size, staff numbers
 - Management farrowing: batch size, straw at farrowing, introduction to farrowing pen days before farrowing, duration of lactation
 - Management gestation: group size, group dynamics
 - Feeding during lactation: type of feed, source of feed, meals per day (but common intervention)
 - Feeding during gestation: feeding system, type of feed, source of feed

Associations between shoulder ulcers and sow condition

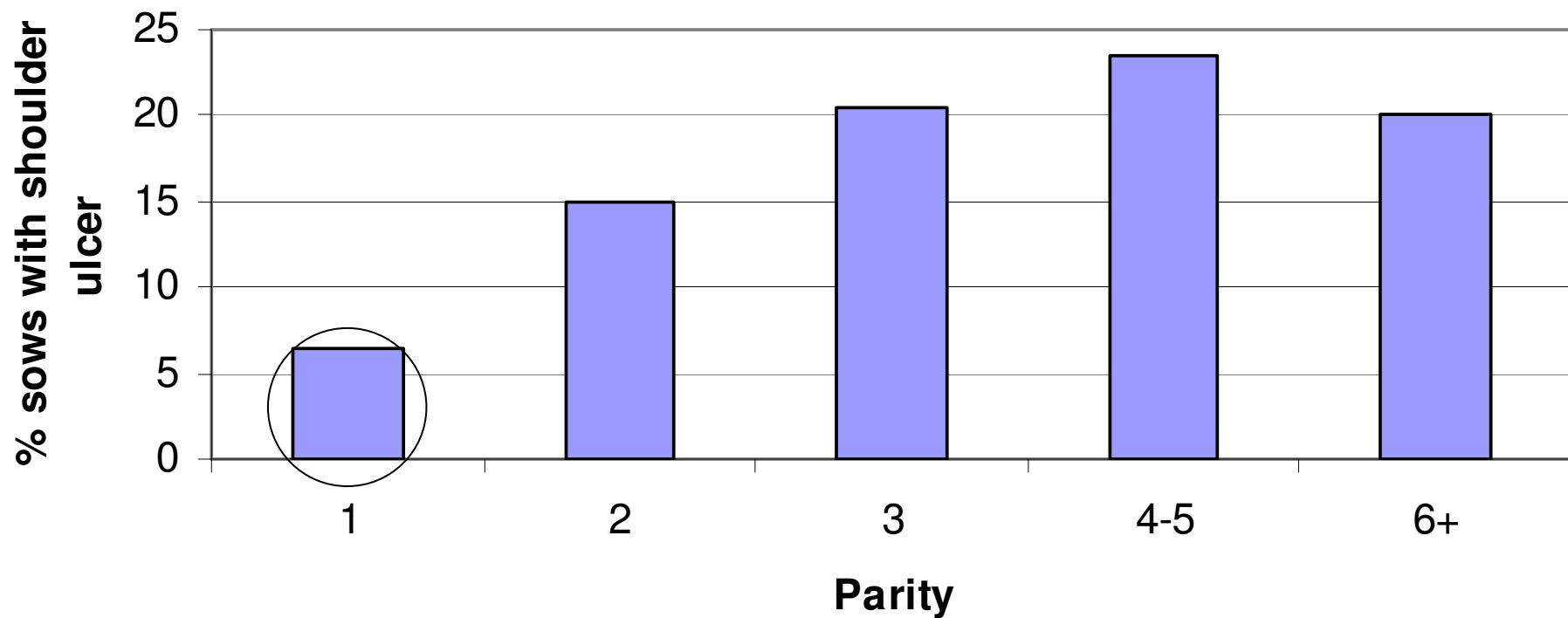


- **Shoulder ulcers and sow characteristics**
- **Shoulder ulcers and sow condition during pregnancy (2-3 months before farrowing)**
- **Shoulder ulcers and general sow condition in the lactation period**

Sow characteristics



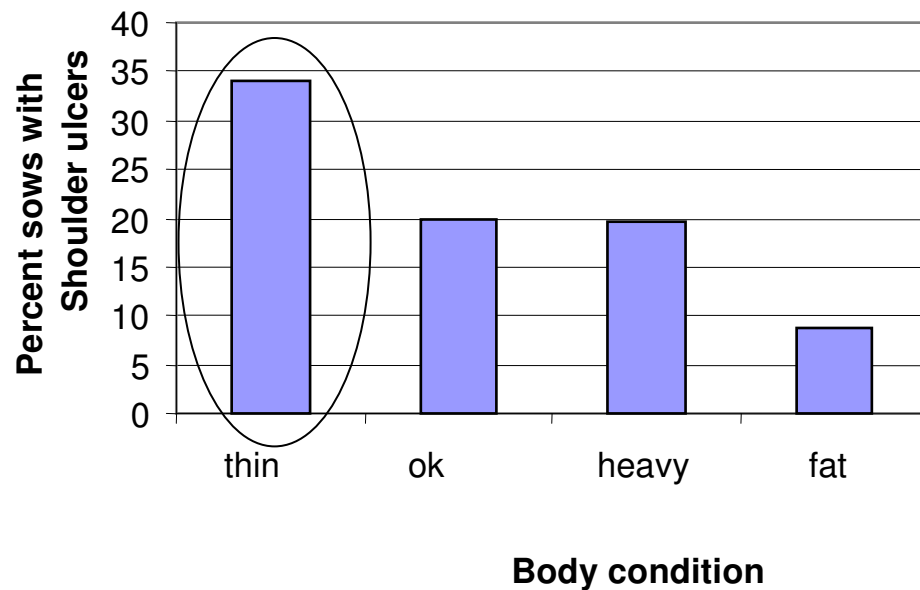
Parity associated with shoulder ulcers



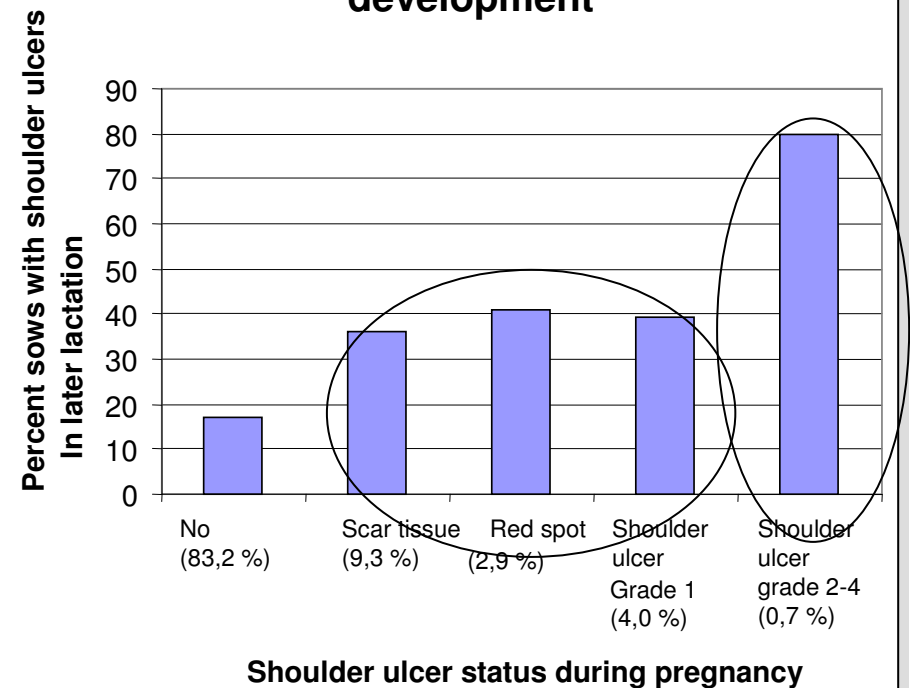
Important sow risk factors from pregnancy



Effect of body condition during pregnancy on shoulder ulcer development



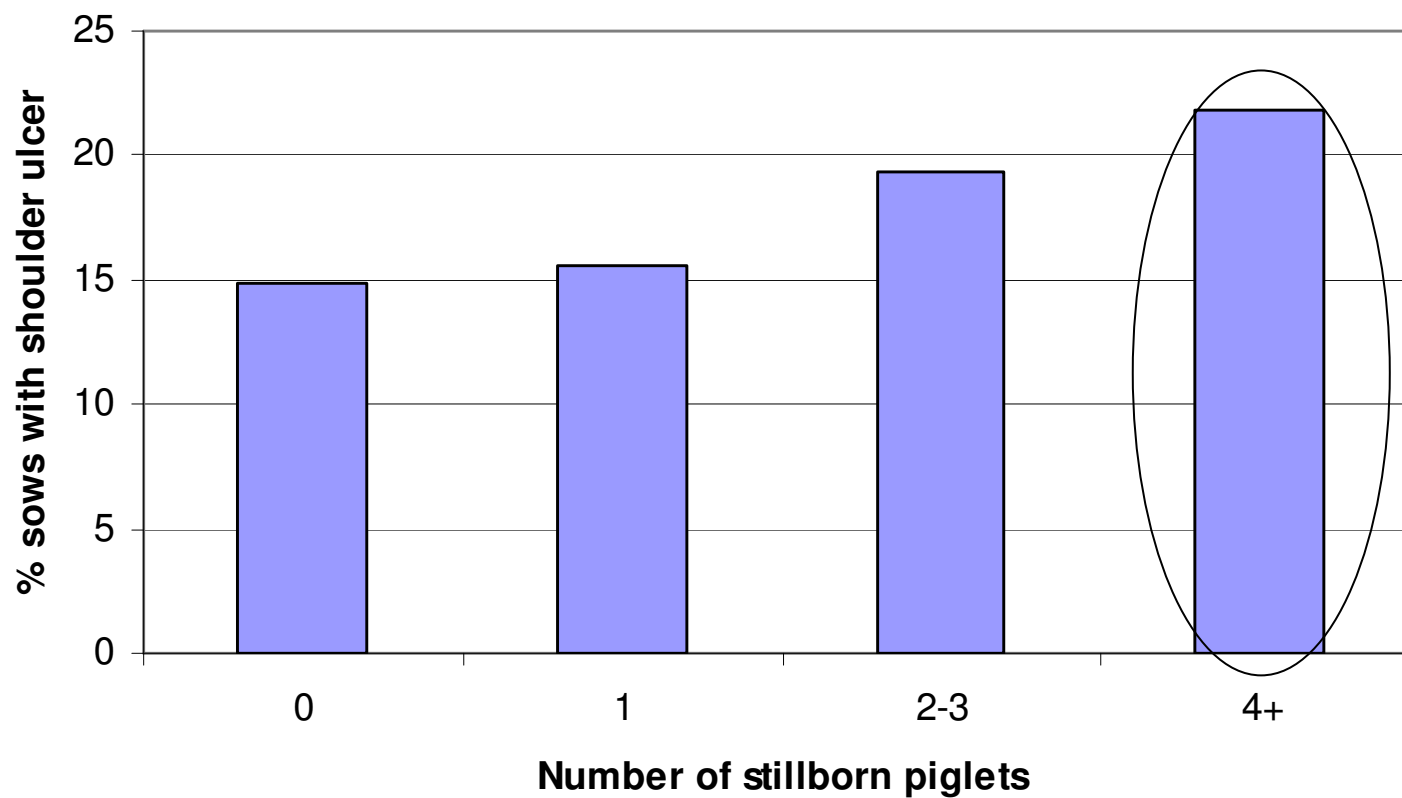
Effect of shoulder ulcer status during pregnancy on shoulder ulcer development



Farrowing characteristics



Shoulder ulcers in sows with stillborn piglets



Association between shoulder ulcers and other clinical parameters lactating sow



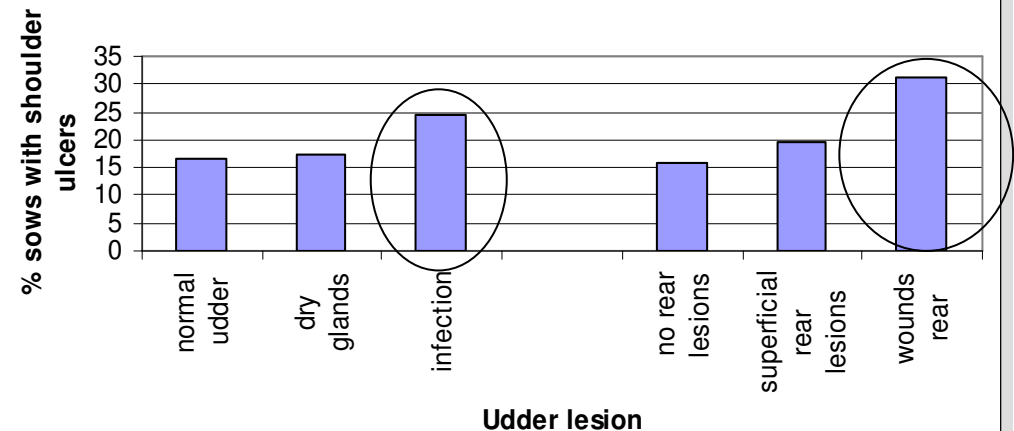
Body condition associated with shoulder ulcers



Limb disorders and shoulder ulcers



Udder lesions and shoulder ulcers



Clinical measures not associated with shoulder ulcers



- **Wounds on body of sow (head, neck, shoulder)**
- **Pressure injuries hock, carpal joint or distal limbs**

Characteristics of sows with a high risk of shoulder ulcers

- **Third parity or older**
- **Shoulder ulcers in previous lactations**
- **Poor body condition during pregnancy**
- **Many stillborn piglets (farrowing problems/long farrowings?)**
- **Poor body condition during lactation**
- **Lame or abnormal hooves**
- **Udder infection or wounds udder**

Conclusion

- **No characteristic herd level factor (apart from lack of bedding in pregnant sows) present in herds with shoulder ulcer problems**
- **Herd differences in prevalence of shoulder ulcers more likely to be associated with management of individual sows:**
 - parity, previous shoulder ulcers, body condition during pregnancy and lactation, farrowing problems, limb disorders, udder diseases

Thank you for your attention

