

Animal welfare – a new program area at ISU-CVM

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Animal welfare program at ISU-CVM



- Train DVM students to understand animal welfare, esp. in relation to animal production
- Provide extension to producers, public about animal welfare issues, bridge dialogue about needs and expectations
- Develop a research program to address animal welfare issues, esp. in relation to animal production

Extension and education for veterinarians, producers and public

- Seminars, symposia and reviews on “hot topics” to keep informed on current science and policy
- Active website (with Dr. Anna Johnson) as “front desk” for animal welfare information, upcoming events and query/discussion board
- Collaborative on-farm research projects to implement and evaluate welfare interventions and marketing opportunities
- Assisting producers and veterinarians in responding to food animal behavior and welfare situations

Iowa Animal Care Response



- Task force established June 2008-IVMA, ISU CVM, ARLI, IA State Veterinary Office
- Coordinate efforts for animal cruelty, emergency response
 - Training program for DVMs and law enforcement about IA cruelty statutes (launched IVMA Feb. 10 '09 meeting)
 - Coordinate response and education with commodity groups, extension agents, shelters

ISU-CVM Welfare Team - new additions



Dr. Jan Shearer

Dr. Ray Brooks

Animal welfare – a multidisciplinary approach



Animal welfare is the state of an animal as it attempts to cope with its environment

- Biological function
- Affective states
- Nature

Human action, responsibilities

- “Animal husbandry”, “Animal protection”, “Animal care”, “cruelty” “neglect”

Care of the compromised animal: A survey of hospital pens used on Ontario swine farms



(Millman S, Sheppard K, Dewey C, Friendship R, 2003)

- 108 producers were interviewed by veterinary team during annual surveillance project visit
- Questions about the use of hospital pens and associated health management
- Team viewed and photographed the pens where possible

Husbandry for compromised pigs



N= 66 farms that reported using hospital pens

Managing convalescence



Variation in terminology used, and attitudes/attention to sick pigs

- “Hospital pen”
- “Infirmary”
- “Treatment pen”
- “Isolation pen”
- “Sick pen”
- “Death pen”

Decisions about humane endpoints and euthanasia particularly difficult & inconsistent

- Psychological factors
- Economic factors
- Logistical factors

Current study: Assessing captive bolt technology for on-farm euthanasia



- Non-penetrating for up to 30 lbs
- Three bolt lengths for older pigs, including mature sows and boars
- Cadavers, then on-farm data collection

Masters Thesis project, Ms. Jennifer Woods

Rethinking sickness behavior: Caring for the compromised animal

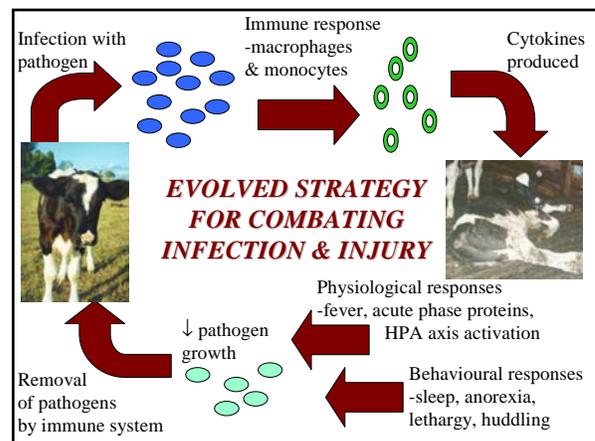


Jean Francois Millet, 1864

Behavioral responses of animals during onset of systemic infections are relatively consistent across species in response to bacterial, viral and protozoan pathogens

Hart proposed the concept of “sickness behavior” as a highly organized, evolved behavioral strategy, and facilitates febrile response

Hart, B.L., 1988. Biological basis of the behavior of sick animals. *Neurosci. Biobehav. Rev.*, 12:123-137



Behavior tests to “ask” animals about their needs and preferences



Swine model: antibiotic associated diarrhea (sickness behavior)



250 mg/kg ampicillin was fed to piglets in milk solution on successive days

Mild to moderate diarrhea within 24-36 hours, recovery by 72 hours

Gray, Colgoni, vanderVinne, Sheppard, Millman, 2005. ASM General Meeting, Atlanta

Effects of microflora shift on behavior of weaned pigs



One pig was treated with ampicillin, penmates received placebo doses

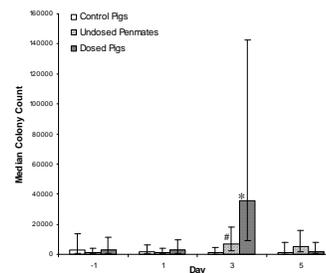
Video analysis to compare behavior of treated pig vs. penmates and control pens

No differences in feeding behavior

Aggression by treated pig increased on Day +3 (P<0.006)

A Colgoni, JT Gray, ST Millman, 2006

Microflora shift: lac+ amp-resistant coliforms



(Colgoni, A, Gray, J.T., Millman, S.T., in preparation. The impact of gastrointestinal microflora shift on social behavior of group-housed swine.)

Effects of *Salmonella* Typhimurium on the behavior of group housed swine

Determine the **behavioral changes** that accompany *Salmonella* infection in group housed newly weaned swine.

- Identify parameters for on-farm clinical scoring
- Identify changes in the time-budget
- Identify changes in social behaviour such as aggression and abnormal behavior



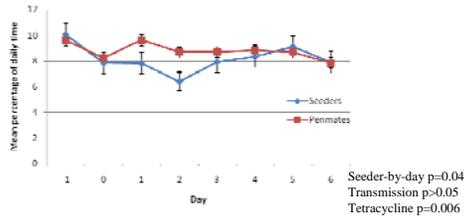
Janet Higginson, MSc Thesis, 2008

Study Design

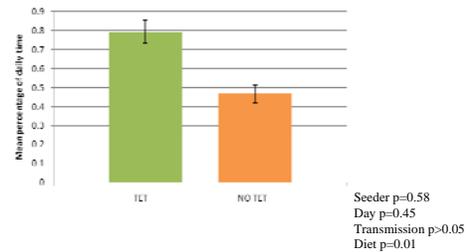
- Disease Model
 - 10^7 - 10^8 CFU *Salmonella* Typhimurium (Gray et al., 1996)
 - 1 seeder per pen
 - Transmission determined at necropsy
- Experimental Design
 - 2x2 factorial design, 3 trials
- Treatments
 - 2 *Salmonella* strains: cmy2+ antimicrobial resistant strain (Salm-AMR) and cmy2- (Salm)
 - 2 diets: starter diet with (TET) and without tetracycline (NO TET)

Rooting

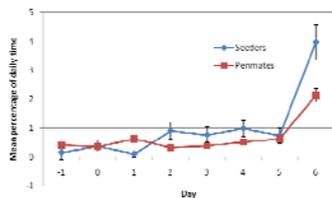
- Seeders performed less rooting (seeder-by-day $p=0.04$)
- Diet effect ($p=0.006$), TET diet spent ~50% less time rooting



Drinking



Abnormal Behavior



- Transmission associated with abnormal behavior ($p=0.007$)
- Diet ($p=0.0009$) and *Salmonella* strain ($p=0.03$) effects

Aspects of the therapy and behavioural impacts of neonatal calf diarrhea complex

Cynthia Todd
MSc Thesis Defence

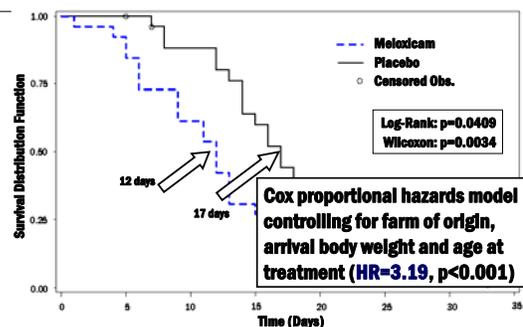


Experimental Methods

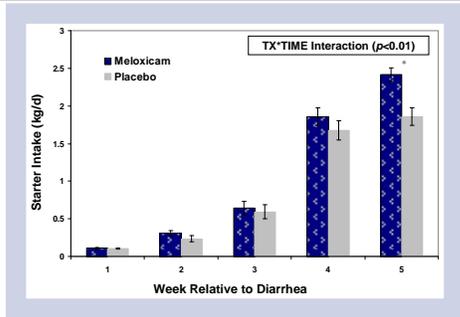
- Enrolled at the natural onset of diarrhea
- Double-blind controlled study
- Random assignment of calves to treatment
- Single subcutaneous injection of meloxicam or placebo
 - 0.5 mg/kg body weight
- Oral electrolyte solution offered to all calves



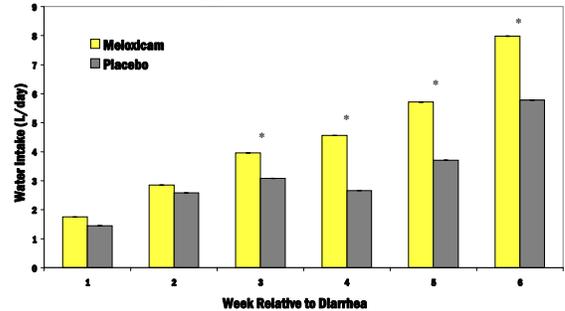
Kaplan-Meier survival function curves for time to starter ration consumption



Starter ration consumption (Cynthia Todd, MSc project 2007)



Least square means and standard errors for water consumption as determined by the final generalized linear mixed model



Summary, Cynthia Todd MSc

- ❑ Meloxicam-treated calves maintained a stronger appetite for milk during sickness
- ❑ Meloxicam-treated calves began consuming starter ration earlier and at a faster rate
- ❑ Meloxicam-treated calves consumed more water
- ❑ Meloxicam-treated calves gained more body weight
- ❑ Meloxicam-treated calves tended to wean earlier but with no difference in weaning weight



Photograph by Yann Arthus Bertrand, "Beasts and their Keepers"