Health Management

Pathology
HEALTH MANAGEMENT

• Daily observation
  – Food and water level
  – Cage and room condition
  – Animal condition
    • BARH: Bright, alert, responsive, and hydrated
    • QARD: Quiet, alert, responsive, and dehydrated
    • Moribund: Not alert or responsive--dying
    • Body condition (rate 1 – 5 or 1 – 10)
    • Posture and movement
    • Relative size of animals in cage
    • Blood and fluid discharges
    • Wounds, swellings
    • Urine and fecal output
HUSBANDRY PROBLEMS

• Look for these first
  – Accessibility of food and water
  – Flooded cages
  – Fighting, isolation, overcrowding
  – Environmental parameters
CLINICAL DIAGNOSTICS

• Sick animals should be sent to the clinical pathology laboratory.
• Sentinels should be established to regularly check for subclinical diseases.
  – One cage (4 mice or 2 rats) quarterly per 80 cages
  – Use lines that seroconvert well plus immunocompromized
  – Set up at weaning
  – Housed on dirty bedding taken from other cages within the barrier
  – Housed on bottom shelf of rack
Humane Endpoints

• Inability to reach food or water for 24 hrs
• 20% decrease in normal body weight
• BC score of less than 2 on a 5-point scale
• Tumor burden
  – 10% of bwt
  – Exceeds 2 cm in the mouse or 4 cm in the rat
  – Prevents normal mobility
  – Abscessed or ulcerated
• Unrelieved pain
PATHOLOGY
Hair and Skin

- **Signs**
  - Rough hair coat (unkempt, unthrifty, ungroomed)
  - Alopecia (hair loss)
  - Erythema (redness)
  - Edema (swelling)
  - Pruritis: Itching/scratching (scaling or flaking)
  - Lesions: size and depth
    - Granulated tissue: Scabbed, dry
    - Raw, moist or weeping
  - Mass, swelling, tumor: size, ulceration, mobility
Barbering

- The plucking out or chewing off of fur
- Alopecia without skin lesions
- Head and upper body
- Most common in mice, particularly in C57s
- Consistent patterns for a single barberer
- Probably not related to dominance or overcrowding
- TX: enrichment, separation
- Stereopathy/neuropathology
- Trichotillomania?
MOBS

- Move over buddy syndrome—fighting
- Alopecia with lesions
- Tail and hind quarters
- Caused by
  - Grouping adult males
  - Overcrowding
  - Incompatible animals
- Mice, hamsters, & rabbits
- Tx: separate, enrichment, bedding transfer
Barbering/Fighting

- Alopecia, sometimes bite wounds and lesions
- Occurs in group housed rabbits around maturity
- Often have to separate rabbits
Ulcerative Dermatitis

- “C57 Dermatitis” Mouse line C57Bl is highly prone.
- Also seen in rats
- Cycle of itch—scratch—scab—itch
- Lesions most common over neck—easily reached by hind feet.
- Excoriation common in mice because skin and muscle is thin
- TX: Provide enrichment or trim toenails if caught early. Topical ointments or DNS. Cull if severe or persistent.
Ulcerative pododermatitis

• Sore hocks
• Signs: Lesions or abscesses on plantar surface of foot
• Rabbits and guinea pigs
• Cause:
  – Husbandry—rough or wet cage floor, obesity
  – Genetic—thin fur pads
• Tx:
  – Selective breeding
  – Clean, dry cage
  – Limited feed
  – Topical antibiotics, bandages
Ectoparasites

- Alopecia is widespread but sporadic
- Pruritus—itching
- Skin—scaly, possible lesions from scratching
- Mites most common, also lice and fleas
- Tx: Ivermectin, permethrin powder

Myobia musculi
Malocclusion

- Found in all rodents in hypsodontic teeth
- Signs: Teeth overgrown, drooling, malnutrition
- Cause: Poor alignment of teeth
  - Trauma
  - Genetic
- Tx: Clip teeth or cull
Malocclusion

- All teeth affected in rabbits and guinea pigs (slobbers)
- Tx:
  - Anesthesia
  - Clip with wire cutters
  - File even with Dremel tool.
Mammary Gland Tumor

- Usually benign and encapsulated in rats
- Most common cause of geriatric death (male and female)
- Signs: Swelling on ventral or lateral surface
- Tx: Surgery or euthanasia
Mammary Gland Tumor

- Usually malignant in mice
- Tx: Euthanasia
- Tumor burden humane endpoints: size, BC, mobility, and ulceration
Hydrocephalus

- “Water on the brain”
  - Congenital
- Encephalitis--Infection
  - Disease Symptom
MHV

• Mouse hepatitis virus
• Signs: Encephalitis, diarrhea, tremors, weight loss, poor reproduction
• High mortality rate in 7-13 day-olds and immunocompromised
• Transmission: direct contact, aerosol, tumors, placenta
• Tx: None

Liver with multifocal necrosis
Pasteurellosis

• Respiratory infection (bacterial)
  – Pasteurella pneumotropica (mice)
  – Pasteurella multocida (rabbits)
• Signs (mice): Labored breathing, photophobia, conjunctivitis, abscesses, infertility
• Transmission: Respiratory aerosol or fecal contamination
• Tx: Antibiotics control but don’t eliminate
Pasteurella multocida (Snuffles)

Signs (rabbit)
- Snuffling
- Purulent nasal discharge
- Abscess/conjunctivitis
- Head tilt
SDAV

- Sialodacryoadenitis Virus
- Respiratory—Associated with red tears
- Signs: Squinting, photophobia, sneezing, cervical swelling, bulging eyes, porphyrin staining (chromodacryorrhea)
- Transmission: Direct contact, aerosol
- Tx: Highly contagious but self-limiting.
Scurvy

- Hypovitaminosis C
- Cause: Lack of vitamin C
  - Lack enzyme to convert D-glucose to L-ascorbic acid
- Signs in first 2 weeks
  - Lethargy, rough hair coat
  - Diarrhea, weight loss, anorexia
  - Ocular and nasal discharges
  - Swelling, bleeding & bruising of joints and gengiva.
  - Internal hemorrhaging
  - Skeletal defects occur in young growing animals.
Scurvy

• Death occurs within 3 to 4 weeks
• Tx: Ascorbic acid in feed, water, orally, or by injection
• Prevention: Proper handling and storage of feed
Enteropathies

• Signs
  – Diarrhea (watery feces and perianal staining)
  – Constipation (little or no fecal pellets, small fecal pellets)
  – Lack of urine/dehydration
  – Off feed/anorexia
  – Listlessness
  – Sudden death

Diarrhea

Cecotroph
Proliferative Ileitis

• “Wet Tail”
• Signs: Moist perianal region, diarrhea, lethargy, anorexia, dehydration, rectal prolapse, death.
• High mortality in 3 to 10 week old hamsters
• Cause: Intracellular bacterium *Lawsonia intracellularis*
• Tx: Aggressive administration of antibiotics & electrolytes coupled with forced feeding.

Rectal and Vaginal prolapse in a mouse
Hair Balls

• Trichobezoars
  – Lick fur, can’t vomit
  – Increased with high temperatures, pruritic skin, low dietary fiber, boredom or stress.

• Signs
  – Anorexia, constipation, lethargy
  – Ruptured intestine

• Specific TX: Proteolytic enzymes—Bio-Serv Pineapple Stix sticks.
Weaning stress

• Naïve gut--loss of passive immunity, low gastric acidity
• Stress caused by separation from mom lowers immunity
• Proliferation of Clostridium ssp.
• Bacterial toxins lead to possibly death
Antibiotic toxicity

• Narrow-spectrum antibiotics cause dysbiosis
  – Decrease gram positive flora
  – Overgrowth of gram negative coliforms (E. coli) and gram positive spore-forming Clostridium

• Signs
  – Anorexia—off feed
  – Diarrhea, dehydration

• Broad-spectrum antibiotics
  – All bacteria are killed at once
Ketosis—Pregnancy Toxemia

• Metabolic energy imbalance resulting in low blood glucose and high levels of ketone bodies.
• Sign: Doe goes off feed
  – Abortion and/or death of doe
  – Agalactia (no milk if kits are born)
• Associated with first litter, obesity, or old age
• Breed early and often
Treatment for Enteropathies

• Diagnosis
  – Check water supply and feed
  – Check for urine and feces in pan
  – Check teeth
• Rodents: Wet mash
• Rabbits and guinea pigs
  – Fiber—lots of oat hay
  – Stimulate appetite--veggies
• Provide nutrients: Nutrical, gel diets, or other high energy diet replacers, powdered feed, baby food.
• Hydrate—SQ Saline or Ringer’s lactate