DLAR TRAINING SERIES
INVESTIGATING THE RABBIT

PRESENTED BY:
THE DIVISION OF LABORATORY ANIMAL RESOURCES
AND
THE INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE

WAYNE STATE UNIVERSITY

TRAINING SESSION OBJECTIVES

Upon completion of this laboratory, participants should be able to:

- Confidently and safely handle and restrain rabbits.
- Determine the sex of rabbits.
- Be familiar with the appearance of a normal, healthy animal and be able to recognize common signs of distress, injury, or disease.
- Know how to administer SQ, IM, IP and IV injections.
- Know how to obtain a blood sample.
- Know what to expect from an animal under anesthesia.
- Humanely euthanize rabbits and provide an assurance or death.

DIVISION OF LABORATORY ANIMAL RESOURCES
INVESTIGATING THE RABBIT HANDOUT

- Behavioral Signs of Illness, Pain, or Distress
  - Guarding (protecting the painful area)
  - Vocalizing (particularly when the animal moves or the painful area is palpated)
  - Restlessness, such as pacing and repeatedly lying down and getting up again
  - Lack of mobility
  - Failure to groom, causing an unkempt appearance
  - Abnormal resting postures in which the animal appears to be sleeping or is "hunched"
  - Failure to show natural pattern of inquisitiveness

- Observations
  - Behavior in its own cage: animal should be active, curious, able to use all four legs
  - Body condition: animal's weight should be proportional to age and sex
  - Hair coat: ruffled or ungroomed coat may indicate illness or pain

- Rate and pattern of breathing: respiration should appear effortless, and at the same rate as others in the group. Sneezing or noisy breathing are abnormal
- Nose (nares) and eyes: discharge is abnormal
- Skin color (ears, lips): non-pigmented skin should appear pink
- Skin condition: lesions, abrasions, and erythema are examples of abnormal findings
- Cage conditions: are food and water levels as expected? Normal stool present?

III. Behavior
- If frightened, hind legs can kick with enough force to fracture the animal's spine.
- May stamp feet when excited
- Will scratch if not handled properly, biting is extremely rare
- Will scream and/or launch itself from cage if frightened or injured
- Males can spray urine.
- Very inquisitive
- Males will fight each other; females will mount each other, causing pseudopregnancies

IV. Assessment at Cage Level
- Assess cage sanitation
- Check availability of food and water
- Confirm presence of normal volumes of urine and feces
- Confirm that respiration and ability to ambulate appear normal

*Be sure to properly document and initial <u>all</u> noteworthy observations and treatments on the cage chart, which is to remain with the animal at all times.

V. Handling and Restraint
- Do *not* permit the cage door to swing open when attempting to remove the animal: open only enough to permit the insertion of your arm. Rabbits may panic and leap from the cage, resulting in serious injury.
- Grasp a handful of skin at the nape of the neck to secure the animal, then grasp the skin over the rump. Lift the rabbit directly off the cage floor, and in one smooth motion, tuck it headfirst under the elbow/forearm of your non-dominant arm (as you would a football). "Hug" the animal firmly and securely, <u>supporting the</u> <u>hindquarters</u> so it is unable to kick out and cause spinal injury.
- Alternatively, for short distances or to permit examination, "fold" or tuck the animal with the ventral side up, nose and knees in close approximation. When the animal has been transported to the exam table, be sure to use a layer of cageboard or a towel to provide a secure surface.

- Never lift the animal by the ears.
- Rabbits may vocalize when handled or frightened. Be prepared, and do not stop supporting the rabbit.
- To return the animal to the cage, always place the hind end in first or it may jump in, kick outing out and causing possible injury.
- Particularly fractious animals may benefit from "towel restraint."

VI. Hands On Physical Examination

The following items should be checked in a systematic manner:

- Overall condition (appearance, posture, hair coat)
- Eyes and nares for signs of discharge
- Fur at medial aspect of front legs for signs of crusted nasal discharge
- Sneezing or nasal congestion
- Oral cavity- check for malocclusion and overgrown teeth
- Ears for evidence of mites
- Vent area for signs of discharges, diarrhea, or irritation
- Feet and hocks for evidence of "sore hocks"
- Sex of the animal
- Weight of the animal

VII. Identification

A. Ear tag:

- Tag is placed on the dorsal aspect of the ear at the midpoint where no fold is present in cartilage, approximately 5mm from ear margin
- Place the tag in an applicator, position over the indicated area and apply with a swift clamping motion
- Ideally, the tag should be placed with numbers exposed dorsally

B. Microchip:

- Microchips with individual identification may be used with transponder wands to ID rabbits
- Microchip is injected subcutaneously between the scapula; sedation is not required

VIII. Injection Techniques

- Subcutaneous (or SQ) injection: can be administered anywhere skin can be tented; most commonly given in the area over the scapula. Solution is delivered into the space between the skin and underlying fascia when skin is tented. Always use the smallest needle gauge practical, introducing it on a plane parallel with the animal's top line. Aspirate after needle insertion to insure injection does not occur into a vessel.
- Intramuscular (or IM) injection: can be administered into the biceps, triceps, quadriceps, or lumbar region off the midline. Insert the needle into the muscle on a 45 degree angle. When using the quadriceps, use care to avoid the sciatic nerve which follows the posterior aspect of the femur. Always use the smallest needle gauge practical; aspirate after needle insertion to insure injection does not occur into a vessel.

- Intradermal (or ID) injection: avoiding the nape of the neck, shave a small area and prep with isopropyl alcohol. Using a 25 gauge, .5" needle, insert the needle as if to administer a SQ injection, then tunnel up into the skin and between the layers. This will prevent injectate from leaking from the injection site. For multiple injections, sedation is recommended.
- Intravenous (or IV) injection or blood collection: pluck the hair which lays over the lateral ear vein and prep with isopropyl to facilitate vasodilation (a warm/hot compress will also cause further vasodilation). Occlude the vessel at the base of the ear, and use a 22 gauge needle or 20 gauge cather (or smaller, depending on the rabbit's size) to enter the vessel as close to the ear tip as is practical. Insure that the needle is inserted on a plane parallel to the vessel; gentle aspiration is necessary to prevent vessel collapse. The saphenous, jugular, and medial ear artery can be used for blood collection, but the artery should not be used for injections.
- Intraperitoneal (or IP) injection: hold the rabbit ventral side up, grasping the skin over the nape of the neck and rump. Enter the needle on a 45 degree angle in the lower quadrant of the abdomen; aspirate to insure needle placement does not occur into an intestine, urinary bladder or blood vessel.
- Cardiac puncture for exsanguination: this procedure is only to be performed terminally, and only under general anesthesia. Place the rabbit in dorsal recumbancy, entering an 18 or 20 gauge, 1" – 1.5" needle just under the sternum on a 45 degree angle. As soon as the needle is under the skin, begin gentle aspiration while the needle is advanced toward the heart. Cease needle advancement when blood flows freely into the syringe and stabilize placement using the thumb of your non-dominant hand. If flow stops, gently rotate the needle or slightly advance or retract the needle. Aspiration pressure should not be of sufficient force to collapse the ventricle.

IX. Parenteral Anesthesia

One of the most common injectable combinations used in rabbits is ketamine and xylazine, to which torbutrol may also be added for additional analgesia and duration of action. The recommended doses for these agents are: ketamine at 35 mg/kg IM, xylazine at 5 mg/kg IM, and torbutrol at 0.1 mg/kg IM. Bland ophthalmic base ointment must be used to protect the corneas as ketamine will suppress the blink reflex. Heat supplementation is required throughout the anesthetic and recovery periods.

X. Assurance of Death

This is accomplished after any method of euthanasia by the creation of an open thoracotomy, removal of a vital organ, or transaction of the aorta.

PHYSIOLOGICAL DATA FOR THE RABBIT (*Oryctolagus cuniculus)*

Description

- Usually silent, but may scream or growl when hurt or panicked
- Almost never bite, but scratches are common
- Two most commonly used research breeds are the Dutch Belted at 5 lbs. and New Zealand White at 10 lbs.
- Males are referred to as bucks, females are does, and offspring are kits or bunnies

Anatomy

- Classified as lagomorphs due to dentition which differs from rodents: 2 pair of incisors in maxilla and 1 in mandible
- Dewlap is a large fold of skin more prominent in females
- Chin glands are used to mark territory
- Have 5 pairs of mammary glands
- No foot pads
- Bucks testes are anterior to penis; testes are retractable
- Does have 2 cervices
- Stomach is thin walled

Normal Values and Other Statistics

- Body temp: 101 – 103 degrees F
- Respiratory rate: 35 – 65 per minute
- Heart rate: 120 – 300 beats per minute
- Gestation is 30 days
- Weaned at 4 – 6 weeks
- Average litter size is 6
- Sexually mature at 6 months of age
- Average life span: 5 – 8 years