Administering Medication and Care

IN THE DAILY LIFE of a veterinarian or veterinary technician, the majority of animal care involves administering medication to sick animals, giving vaccines for viruses, and providing care when animals are in an emergency situation. Many livestock producers care for their own cattle and horses by giving drenches, oral medications, and routine vaccinations. Therefore, understanding the different routes of medication is important when following a veterinarian's directions for care and use of medication. In addition, knowledge of basic first aid can be useful if an animal is hit by a car or is injured by a piece of equipment.

(Courtesy, Veterinary Medical Center, Texas A&M University)

Objectives:

1. Explain the equipment, routes, and terminology associated with administering veterinary medications.
2. Describe the application of bandages and the use of basic first aid to care for animals in an emergency before reaching a veterinarian.

Key Terms:

balling guns
drench guns
epidural (intraspinal)
first aid
hypodermic syringes and needles
injected/injectable
intradermal
intramammary
intramuscular (IM)
intraocular
intraosseous infusion
intraperitoneal (IP)
intravenous (IV)
multidose hypodermic syringes
multiple injections
per os (PO)
subcutaneous (SQ)
topical
tourniquet

Equipment, Routes, and Terminology for Administering Medications

Many equipment types exist for administering medication. **Hypodermic syringes and needles**—small syringes used with hollow needles for injections of material into the skin—are common. Hypodermic needles are often used to administer vaccines or emergency medication.

Multidose hypodermic syringes are used to inject fluids into the body or draw them from it; they can be used multiple times. The syringes consist of a plunder, barrel, and various types and sizes of needles. Before filling syringes, the instructions on the medicine bottle should be read carefully.

After filling any type of syringe with the product to be injected, point the syringe upward and tap the barrel to make air bubbles move into the syringe tip. Slowly and carefully push the plunger to eject the air bubbles from the syringe before injecting the product.

Drench guns are used to administer calcium, niacin, de-wormers, and other drenches. These squirt liquid between the cheek and teeth so the animals swallow it without the risk of liquid entering the lungs.

Balling guns administer oral medication by use of a long barrel that places the medication at the back of the animal's throat. Balling guns are used in cattle to deliver oral medications in pill form. Also, a cow will occasionally swallow metal objects accidentally while grazing. The metal objects can cause injury and a disease called Hardware Disease. A balling gun will be used to put a magnet in the cow's stomach to attract nails and other metal objects.

FIGURE 1. A balling gun is used for oral administration of medication to cattle.

ROUTES OF ADMINISTRATION

Several methods are used to give vaccines and medications to animals. **Topical** medications are given externally. The most common forms are lotions, creams, and ointments, which are applied to the ears, nose, eyes, or skin. Lotions are usually water based, thin, and quickly absorbed by the skin.

Creams are thicker and require a longer period of time to be absorbed. Creams (e.g., triple antibiotic formula) may be used on wounds to help them heal faster. Ointments are the thick-

est; the medicine is suspended in a greasy substance to slow absorption. Eye ointments are common for conditions such as dry eye.

Oral medications are given by mouth and are labeled with the term **per os** or the initials **PO**. These medications are usually in pill or liquid form. The veterinarian will tell you how frequently to give the drug and if it should be taken with a meal. Another route may be chosen if the oral medication tastes too bitter or if the animal has diarrhea or vomiting.

FIGURE 2. This is an example of oral medication.

Injected/injectable medicines involve giving medications under the skin or into a muscle or vein with a sterile needle and syringe. It is important to understand the different routes to give an injectable medication or vaccine.

INJECTION METHODS

Several injection types are used to administer vaccinations and medications to animals: intradermal, subcutaneous, intramuscular, intravenous, intraosseous infusions, and intraocular.

Intradermal injections are given into the skin and are used in animals when administering an allergy test just like in humans.

Subcutaneous (SQ) is an injection given under the skin. These injections should be given in areas where there is loose skin, such as half way up the neck in front of the shoulder. Because of cancer forming at the vaccine sites in cats that have received routine vaccines, it is now recommended that SQ vaccines be given on the limbs, as far away from the main body as possible. Then if cancer occurs, the limb may be amputated to save the animal's life.

Intramuscular (IM) is an injection given directly into the muscle. In cattle, for example, IM injections should always be given in front of the shoulder instead of on the rump because injections leave scars that cause the meat to be condemned at harvesting facilities. The most valuable cuts from a cow are the areas behind the shoulder, so avoiding these areas preserves the expensive cuts of meat. Give IM injections deep in a muscle. Use a needle that is long enough to penetrate the skin, subcutaneous tissue, and fat to reach the muscle. The needle should enter the skin perpendicular to the skin's surface. Always pull back on the syringe plunger before injecting the drug to be certain you are in the muscle instead of in a vein. If blood is aspirated, redirect the needle and try again.

Intravenous (IV) is an injection given directly into the vein and is most commonly used for animals in the hospital. Most anesthetic drugs are administered this way to allow a quick response. Fluids are also given to animals by this route. The vein used depends on the animal

type. The jugular vein is typically used with horses, cattle, and sheep. The jugular, cephalic, and saphenous veins are used in small animals.

The **intraosseous infusion** is an injection given directly into the bone marrow. **Epidural (intraspinal)** injections are given directly into the spinal canal and provide pain relief to the hind region. **Intraperitoneal (IP)** injections are given in the peritoneal space or abdominal cavity. These injections are sometimes used to treat dairy cattle that are sick because of calcium depletion. **Intraocular** injections are given under the eyelid, into the cornea, or into the anterior chamber of the eye.

Intramammary injections are given directly into the mammary gland. This type of injection is common in dairy cattle with bacterial infections of the udder (mastitis); antibiotics are given directly into the mammary glands to provide the most direct route of treatment. When giving **multiple injections**, it is important to choose different injection sites on the body (e.g. opposite sides of the neck) when repeating treatments over a number of days.

Basic First Aid for Emergencies

First aid is the immediate care or treatment of a sick or injured animal. First aid is used until a veterinarian can be found. Many types of dressing and bandages can be used to cover an animal's wound: gauze, tapes, prepared dressings, and cotton.

When an area on an animal is injured, the wound must be cleaned and protected so the area will not become infected or further injured. If there is a possibility that the animal is in shock, unconscious, or may be bleeding internally, the animal must be handled with extreme care. Signs of shock include rapid breathing, pale gums, collapse, weakness, and a rapid but weak pulse. If the shock has progressed, you may see very bright red gums.

Use caution with any hurt animal. Animals in pain may become frightened and try to bite, kick, or strike. Animals in shock are very sensitive and should be kept still in an area free from distractions until the veterinarian can arrive to properly help the animal.

Animals with broken bones should be kept still to reduce pain and additional injury. If an animal's eye is protruding from its eyelids, the eye should be kept moist with sterile pads and distilled water until the veterinarian arrives. Eye injuries are common in small breed dogs, such as Pugs and Shih Tzus.

FIGURE 3. Prior to surgery, an animal with a broken bone should be kept still.

APPLYING BANDAGES

Never apply a bandage too tightly, unless it is a pressure bandage. Apply tape to secure the bandage and to prevent the animal from removing it. If the animal is bleeding, use a bandage rather than a **tourniquet**, which is a compressing device used to control circulation to an extremity for a period of time. If a tourniquet is used, it must be loosened for a few minutes every hour because total loss of blood flow can cause the structures below the tourniquet to die due to a lack of blood supply.

Because there is always a good possibility that an initial wound has been contaminated, all attempts to provide bandaging for an injured animal should be the result of a temporary cover until prompt veterinary medical attention is obtained. After demonstrated by the veterinarian, you may be able to continue bandage changes on your own.

Bandages need to be changed regularly, and there are many signs that will determine when they need to be changed. A bandage needs to be replaced if the bandage is saturated with pus and wound secretions, if the bandaged area is extremely swollen, or if the original bandage was applied improperly.

It is also important that all materials used to dress a wound are sterile. When applying a dressing to an animal's leg or foot, the gauze can be wrapped around the leg but it may need to be twisted depending on the contour of the animal's body. To keep the bandage on the animal, it is best to split the gauze at the ends and tie it around the animal's leg. Tape should be used to secure the bandage and gauze.

FIGURE 4. Depending on the animal, gauze may need to be twisted when wrapping it around the wounded area.

Summary:

There are many administering routes for animal medications. The most common routes are oral, intramuscular, subcutaneous, and intravenous. Epidurals and intramammary injections are also used. In addition to hypodermic syringes and needles, balling guns and drench guns can be used to give medication to animals.

First aid, such as bandaging, can be important for preventing further injury until a veterinarian can be reached. Bandaging can be a valuable skill if an animal is bleeding or has a large wound.

Checking Your Knowledge:

1. List three ways to give an injectable medication.
2. What is first aid?
3. What type of equipment would be used to give a magnet to a cow?
4. Why should a tourniquet not be used in most animals with bleeding?
5. What type of injection goes under the skin?

Expanding Your Knowledge:

Spend a day with a veterinarian and observe him or her giving various types of injections to animals. Ask for a demonstration on how to properly administer first aid to an animal and how to perform different types of bandaging techniques.

Web Links:

American Veterinary Medical Association
http://www.avma.org/

American Society for Prevention of Cruelty to Animals and Poison Control Center
http://www.aspca.org