

## Beef Safety Assurance Requires Safe Injections

There is a lot more to injecting cattle than stabbing a haunch and shoving the plunger down. Not all needles and syringes are alike nor is there one best, all-round needle.

Needle size, or thickness, is an important consideration. This measure is known as "gauge," says Dr. Ron Erskine, a Michigan State University College of Veterinary Medicine assistant professor and veterinarian. The smaller the number, the smaller the diameter of the needle is.

In general, the best gauge for vaccine injection is a 16- or 18-gauge needle, Erskine says. "While 14- or a 16-gauge needle is good for vein injection, a 14-gauge offers a bit more advantage in handling heavy, viscous materials."

Larger-gauged needles make smaller holes. Smaller holes make it harder for vaccines to flow out of the same hole in which they were injected.

Standard needle lengths are an inch to 1.5 inches long. Inch-long needles are ideal for subcutaneous injections while 1.5 inch needles are best for intramuscular injections.

When choosing syringes, use smaller ones for smaller doses. In general, try to limit intramuscular injections to 10 to 12 cubic centimeters (cc's). "Fifteen cc's is the absolute upper limit," says Erskine.

Clean syringes between use and never mix drugs in them. Use a new needle for each cow to help prevent bovine leukemia virus.

"When giving an intramuscular injection, always pull back on a plunger to see if you are in a vessel," Erskine explains. "If you draw blood into the syringe, put the needle into a new site and try again."

But if it is an intramuscular injection, and blood is drawn into the syringe, change both the syringe and the needle. This is less likely to be a problem with subcutaneous injections, because there are few vessels located immediately beneath the skin.

Should you inject a drug that should not have been administered directly into a vein, sometimes cows show an allergic reaction to the drug. "They'll go down, then get up," says Erskine.

### Intramuscular Injection

As mentioned earlier, use a 1.5-inch needle for intramuscular (IM) injections. "Pull back on the plunger to make sure you haven't hit blood vessels," Erskine says.

Use good restraint on the animal, he adds. "You should pull the tail up while you inject the animal in the leg."

Also be sure the injection goes into the "belly" of the muscle. That means the injection should be placed into the thickest part of the muscle, not the edge.

Always switch needles. "Otherwise, you run a big risk of deep abscesses. It takes time to do the injections right, but is not costly," Erskine says. Limit injections to 12 cc's.

### Intravenous Injection

Intravenous injection (IV) is used when quick absorption and greater distribution of drugs is at issue.

People use a variety of veins, depending on what is being injected. Most use the jugular, the large vein on the side of animals' necks. "I use the tail vein if I am injecting small volumes, like 1 to 2 cc's," says Erskine.

Some people use the mammary veins for IV injection, but this practice is risky. "This location should be reserved for large-volume injections. But be careful; sometimes animals will bleed profusely from this vein," Erskine says.

In abdominal IV injections, be sure to clamp the vein for at least 20 seconds to prevent bleeding. Use 12- to 14-gauge needles for adult cows. "Use a longer needle, put the needle in perpendicular to the vein, then thread it down in a parallel fashion. Once the plunger is down, pull it out quickly."

### Subcutaneous Injection

Erskine recommends using three-quarter inch to one-inch needles for subcutaneous injections. "Pick up the skin and point the needle vertically instead of horizontally," he explains. Don't worry about pulling back the plunger before making injections. "You will rarely go deep enough to puncture a vein or artery when doing a

subcutaneous injection."

Watch out for reactions, especially when using colostridium vaccines.

### Oral Dosing

Oral dosing is used a lot with calves and is done using three different tools. Tube injection typically involves two- to three-quart volumes. The main consideration, says Erskine, is to be sure the drug goes down the esophagus and not the trachea.

Speculum and pill gun usage should be limited to single doses, unless they are specifically designed for multidose usage.

Be careful of mouth injury, he warns. "Tears in the mouth can lead to abscesses. Be sure the handle is on the corner of the mouth to assure it gets over the bump in the tongue."

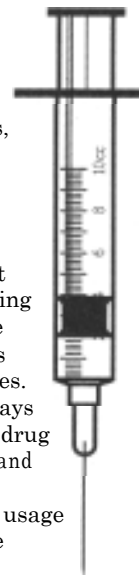
### Intraperitoneal Injection

Intraperitoneal injections (IP) are used primarily for calcium. Erskine recommends use of a large needle. Generally, IP injections are made on the right side of the animal, into the body cavity and away from the rumen.

### Nasal Injection

Nasal injection can be used to vaccinate for IBR or PI3. Nasal injection seems to stimulate the local immune response more rapidly.

"Squirt it fast," Erskine says, "so the calf cannot snort it out."



—Michigan State University  
Extension Information