Drug Administration in Dairy Cows:

Administering Injections





Overview

Although manufacturer drug labels do not usually specify where on an animal's body a subcutaneous or intramuscular injection must be given, beef and dairy quality assurance programs recommend that intramuscular or subcutaneous injections be given in the neck area. Doing so helps prevent tissue trauma caused by injections in areas of the animal's body that are harvested for human consumption. Beef and dairy assurance programs are important as they encourage the responsible production and management of animals in ways that help to

create safe wholesome food for consumers.

In this video, a Holstein dairy cow will be injected subcutaneously on the left side of the neck. Here the herd manager can be seen first drawing the vaccine up into a syringe. Prior to administering the vaccine, the herd manager must first restrain the cow's head in a way that exposes the neck area. To do this, a halter is placed on the cow's head and her head is tied over to the right side of the chute to expose the left neck area. To administer a subcutaneous injection, the herd manager first tents the skin at the site for injection. Doing so assures that when the needle enters the skin it does not inadvertently enter



muscle tissue. Next, the needle is advanced under the skin, the syringe plunger is drawn back, the vaccine is injected, and the needle and syringe are removed. If there had been blood entering the syringe when the plunger was drawn back, the herd manager would have redirected the needle to avoid injecting the vaccine into the blood stream. An important exception to the recommendation that injections be given in the neck area is for ceftiofur crystalline free acid. This is a cephalosporin class drug which is labeled for subcutaneous injection in the middle third of the outside of the ear, or at the base of the ear. For this particular drug, the location of drug administration is important as it corresponds to a part of the animal that is removed at slaughter, and failure to administer the drug at these locations could affect tissue residues of this cephalosporin class drug. Beef and dairy quality assurance programs also recommend that no more than 10 milliliters of a drug be given at any one location as a way to help reduce the chances for tissue

trauma at injection sites.

In this video, a total of 30 milliliters must be injected. To inject additional volume, the herd manager pulls the needle part way out, redirects the needle, draws back to make sure a blood vessel has not been entered, and then injects another 10 millilters. Other sites that are sometimes used for intramuscular injections include the area over the top of the hip and the caudal or rear thigh muscles. To give an intramuscular injection in the rear thigh muscles, the herd manager first raises the cow's tail and then inserts the needle into the muscle, injects the



medication, and then removes the needle and syringe. Some drugs are only labeled for IV use and the administration of these drugs by another route can create severe tissue damage and pain when injected outside the vein.

In addition, meat withdrawal and/or milk withhold times can become much longer than what is stated on the manufacturer's drug label when the labeled route of injection is not observed. The recommended site for IV injection of most drugs is the jugular vein which runs in the jugular furrow along both sides of the neck.

In this video, an IV injection of both a large and small volume of fluid will be demonstrated. In order to safely administer an IV injection in the jugular vein, the cow's head must first be restrained. Common methods of restraint include halters, as shown earlier in this video, and nose tongs as shown here. Prior to placing the needle into the jugular vein, the bottle of calcium-dextrose plus electrolytes is attached to simplex tubing and hung from the chute above the cow's head. The skin is first wetted with 70% alcohol to clean the area prior to injection. This also helps to smooth the hair and make the vein easier to see. Once the vein is visualized, a 14 gauge needle is placed. Next the simplex tubing is attached to the needle and the medication is allowed to run into the vein by



gravity flow. During this process, it is important to periodically check the injection site to make sure the area is not becoming swollen and to make sure the medication is flowing normally. When the medication is flowing well, air bubbles can be seen bubbling into the bottle. If the needle happened to come out of the vein but remained in the tissue spaces around the vein, the injection site would rapidly swell. If this happened, it would be necessary to stop the flow of medication, redirect the needle back into the jugular vein and then restart the flow or simply replace the needle and then continue running the medication into the cow. Once the bottle of medication has been given, the needle is removed. A small volume of medication can be injected directly from a syringe through a needle placed into the jugular vein. The needle is placed into the vein, the syringe plunger is drawn back to make sure that the needle is in the jugular vein, the drug is injected, and the needle is removed. After the drug is given, the cow's head is released and she is returned back to her pen.