



DID YOU KNOW?

- ▶ In 2019, penicillin accounted for nearly 40 percent of milk residues in MN and over 20 percent of all drug residues in meat animals nationwide.
- ▶ The labeled dose for use of penicillin G procaine is 1ml/100 lbs, ONCE a day
- ▶ Most producers use penicillin at a much higher dosing level – this significantly lengthens the milk and meat withdrawal times for this drug!



Using Injectable Penicillin G Procaine

Injectable penicillin is one of the most commonly used drugs in livestock production. It is also one of the most common causes of residues in milk and meat.

How is penicillin used in livestock production?

Penicillin was approved by the FDA many years ago to treat bacterial pneumonia in cattle and sheep and is still a useful tool for treating animal diseases. As an over-the-counter (OTC) drug, penicillin is readily available at farm stores without a prescription from a veterinarian. It may also be used in an extra-label manner, under the supervision and guidance of a veterinarian, using different dosage levels and for other disease indications.

What is the difference between preparations of penicillin?

Penicillin is made in three different injectable preparations – penicillin G procaine, penicillin benzathine and potassium penicillin. Penicillin G procaine has approved uses in dairy animals, as well as other animals, and is the most commonly used and available formulation for farm animals. Penicillin benzathine, which is combined with penicillin G procaine, is intended for use in beef cattle only. Injectable potassium penicillin has no approvals for use in food animals. Residues may occur if penicillin benzathine preparations are mistakenly used instead of penicillin G procaine.

What is the FDA approved label dose for penicillin G procaine?

The FDA approved label for penicillin specifies a dose of 1ml/100 pounds of bodyweight, administered once a day, in the muscle (IM) with no more than 10ml per injection site. The treatment duration varies between brands from four to seven consecutive days. At this dose and duration of treatment, the label recommendation for most brands is 48 hours for milk withdrawal and 14 days for slaughter withdrawal. Producers can use penicillin according to label directions without veterinary oversight.

What are other commonly recommended dosing schedules for penicillin G procaine?

Because the labeled dose is not often an effective treatment level, current dosing practices on many farms are much higher than those doses found on the label. Veterinarians commonly recommend doses of 3-5ml/100 pounds of bodyweight once or twice a day to achieve therapeutic dosing levels. This deviation from the FDA labeled dose is termed extra-label-drug-use (ELDU). While these doses are likely to be more effective, producers must realize that such doses lead to prolonged withdrawal times for both meat and milk. At these treatment levels, withdrawal times can often exceed 5 days in milk and 21 days in meat. Producers must consult with their veterinarian regarding use of penicillin in this manner so that they can use appropriate withdrawal times.

Why do penicillin residues occur?

Producers often use penicillin in an ELDU manner such as a higher dose, increased frequency of administration or longer duration. Yet, they often adhere to the FDA labeled withdrawal time (intended for the lower dose, once daily or shorter duration treatment) for milk and meat. Other ways producers may get a penicillin residue is by exceeding the maximum labeled injection site volume, failing to properly shake the vial or by administering the drug intramammary, topically or under the skin.

How can I avoid a residue?

You can prevent residues by using the following practices:

- Warm the vial to room temperature and agitate the vial well prior to withdrawing the dose.
- Give the medication in the muscle.
- Limit the volume per injection site to 10 ml or as stated on the bottle.
- Read the label on each bottle – each manufacturer has a slightly different label and instructions for use vary.
- Consult with your veterinarian for an extra-label drug use label that includes the extended milk or meat withdrawal time.
- Test the milk from an individually treated cow before commingling into the bulk tank and test the tank before leaving the farm.

Table 1: Examples of Penicillin G Procaine

Trade Name (Brand)	Duration of Use	Milk Withdrawal	Meat Withdrawal
Pen Aqueous (Aspen) Penject (Bimeda) Pro-Pen-G (Bimeda) Vetripin G (VetOne)	Not to exceed 7 consecutive days in Non-lactating cattle and beef: Not to exceed 5 consecutive days in lactating cattle	48 hours	4 days
Bactracillin (Aspen) Norocillin (Norbrook Labs) Penicillin injectable (Durvet) Pen One Pro (VetOne)	Not to exceed 4 consecutive days	48 hours	14 days

Table 2. Examples of Penicillin Benzathine combinations

Trade Name (Brand)	Cattle Class	Milk Withdrawal	Meat Withdrawal
Bactracillin G Benzathine (Aspen) BenzaPen 48 (VetOne) Combi-Pen-48 (Bimeda) Dura Pen (Durvet)	BEEF ONLY	BEEF ONLY	BEEF ONLY: 30 Days

For additional information visit www.mda.state.mn.us/residue-prevention