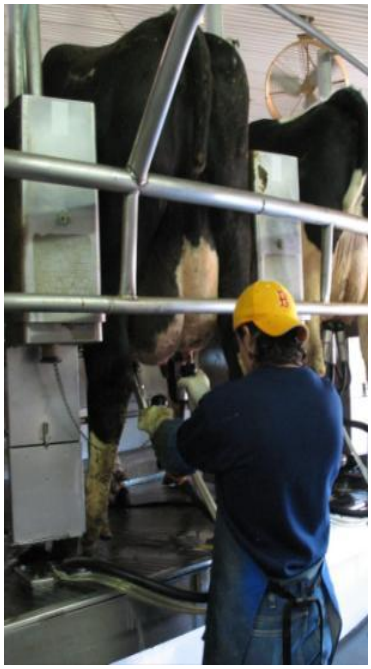
Defending the Milk Supply in the Parlor

Ellen Jordan, PhD; Ralph Bruno, DVM; Juan Hernandez-Rivera, PhD;
and Kevin Lager, MS -Texas AgriLife Extension Service



Since the terrorist attack of 9-11 the world has changed. Now more than ever, today's farm workers play a key role in producing, defending and protecting our food supply. Key steps for employees in the parlor to create a line of defense for the milk supply while performing their regular duties follow.

When everyone in the milking parlor works together they can achieve four goals to provide a safe, abundant milk supply for consumers.

1. Harvest the highest quality product possible.
2. Take good care of the cows and identify when they are sick.
3. Produce meat and milk that are free of antibiotics.
4. Ensure biosecurity on the farm to protect the herd, themselves and their family.

Pride and attention to detail are needed to attain these goals. The process creates a layer of security for our agriculture products beyond what law enforcement can provide.

Goal 1: Harvest the Highest Quality Product

The five steps to harvesting high quality products include: 1) using proper, sanitary milking procedures, 2) maintaining the milking equipment, 3) dipping ALL teats after milking, 4) detecting and treating cows with mastitis, as needed, during lactation and at dry off, and 5) culling cows with chronic mastitis.

Step 1: Proper, Sanitary Milking Procedures

Each farm develops milking procedures. These procedures include: examining foremilk to detect clinical mastitis, applying pre-dip to clean the teat, waiting at least 30 seconds before drying the teat, using one cloth or towel per cow, attaching teat cups within 90 seconds of starting, adjusting the unit to hang straight and to prevent liner slips and squawks, shutting off the vacuum before removing the milking unit, and dipping or spraying every teat completely following milking.

Although not always found written in farm protocols, workers must start with clean hands and wash their hands frequently during milking. At a minimum wash hands before milking, during milking when needed, before treating a cow for mastitis, before taking a milk sample to culture, prior to eating, and at the end of milking.

To be effective, hand washing requires six distinct steps: 1) wet the hands, preferably with warm water, 2) apply soap, 3) wash hands for at least 20 seconds paying particular attention to cracks in the skin and nails, 4) rinse thoroughly, 5) dry with a clean towel, and 6) turn off the water faucet with the towel.

Wear gloves during milking to limit spreading bacteria from cow to cow, cow to equipment to cow, or even from cow to worker. Bare hands provide many cracks and crevices for bacteria to hide. Gloves create a much smoother surface that is easier to clean. Gloved hands can carry bacteria, they require frequent washing as well.

Step 2: Maintain Milking Equipment

Develop and follow a milking equipment check list. Vary the list depending upon parlor size, type of parlor, equipment installed, and number of cows milked. Some tasks such as sanitizing and washing the equipment will be done daily, while others will be completed weekly, monthly, quarterly or annually.

Replace rubber and plastic parts regularly based on manufacturer's recommendations and specifications, even if they don't look "worn out". Notify a supervisor if equipment needs repair.

Step 3: Dip Teats after Milking

Apply a teat dip to each and every teat immediately after removing the milking claw. Cover the entire teat. Dipping results in more complete coverage and is preferred to other methods.

Step 4: Treat Cows

Identify cows with mastitis. Some signs of mastitis include: painful swelling of one or more quarters; off grade, watery, or bloody milk; and uneven milk out. Do **NOT** put milk from cows with mastitis into the main tank. When a cow has mastitis, follow farm treatment protocols. ***Always mark the cow that has been treated with antibiotics.*** Treat every quarter of every cow at dry off according to farm protocols. Never stop mastitis therapies before the prescribed treatment period is complete. Record the treatments and the withdrawal times for meat and milk.

Step 5: Cull Chronic Mastitis Cows

Each dairy farm manager or owner sets farm specific guidelines for identifying cows that have chronic mastitis. Review treatment records to insure that meat withdrawal times have been followed prior to sales.

Goal 2: Take Excellent Care of the Cows and Identify when They Are Sick

Whenever employees move cattle, slow and easy works best. Take time to look for abnormalities in behavior and appearance when moving the cows to and from the milking parlor.

Once in the parlor, identify cows with mastitis, an inflammation of the udder usually caused by a microorganism. When stripping out foremilk, look for clots or any change in milk appearance. When handling the udder, check for hard spots or "hot" spots that may indicate an infection. Make sure all quarters have milked out evenly. If not, examine the quarter with residual milk for mastitis.

Look beyond mastitis for other signs of illness. Are there lame cows? Are some cows slow to come to the parlor or leave? Do you see lesions or blisters on the teats, udder or mouth? Are the cows more restless in the milking parlor? Tell the manager when something is wrong as all of these signs may indicate a herd health problem. Vaccinations protect cows against many common diseases. Early detection of any disease can prevent its spread and minimize the impact on the herd.

The increase in international travel increases the potential to bring in foreign animal diseases. One example of this is called Foot and Mouth Disease or FMD. Foot and Mouth Disease impacts cows, sheep, pigs, deer, and other cloven hoofed animals. It is very contagious. Animals may have a fever and blister-like lesions on teats, tongue, lips, and between hooves. Milk production decreases dramatically in dairy cows that are infected with Foot and Mouth disease.

Foot and Mouth Disease was last reported in the United States in 1929, Canada in 1952 and Mexico in 1954. It is still found in South America and parts of Asia, Europe, and Africa. Everyone in agriculture as well as our border security must work together to prevent the reintroduction of Foot and Mouth Disease.

Although the United Kingdom had been free of FMD for a number of years, in 2001 a major outbreak occurred there. In all, 6 million animals were slaughtered at an estimated cost of 17 billion dollars before the country was declared FMD free again. The tremendous losses resulted because the disease is very contagious, so many animals were affected. Currently, eradication programs are based on slaughter and destroying carcasses. In addition, the United Kingdom lost their markets both nationally and internationally for livestock.

Although FMD does NOT cause illness in people, other foreign animal diseases may. Thus, we must always look for signs of disease in our animals. Early identification is the key to preventing the spread of any disease. Whenever there are unusual symptoms, report them to the owner, manager, or veterinarian.

Foot and Mouth Disease can be confused with other diseases that we do have in this country such as vesicular stomatitis, bovine viral diarrhea, foot rot or blue tongue. Do NOT panic if you don't recognize something, tell the owner, manager, or veterinarian so they can diagnose the problem. Again, early identification is the key to treating and preventing the spread of any disease.

Goal 3: Produce Meat and Milk that Are Free of Antibiotics

An *antibiotic* is a substance or compound that kills bacteria or inhibits their growth. Penicillin, a common antibiotic, was first discovered in 1928. Other antibiotic discoveries have followed. The therapeutic usage in food animals began shortly after their discovery. Antibiotics are used both to treat and prevent diseases in food animals. Approximately 87% of all antibiotics used in animals are for treatment of disease.

Antibiotic usage is necessary to treat sick animals and to protect the food supply. Some antibiotics are used for treating mastitis. Whenever using an antibiotic to treat a cow for mastitis, record the following information:

- Date
- Cow ID
- Quarter
- Diagnosis
- Treatment
- Withdrawal time for meat and milk

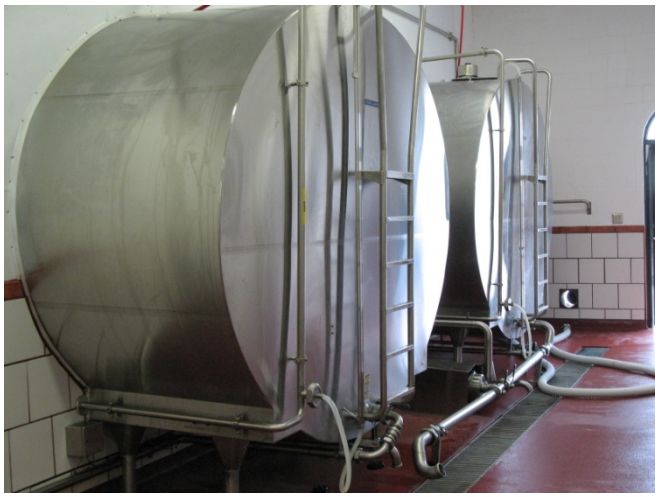
Records help a) identify new problems, b) assist the herd owner with determining what may be the cause of an illness or disorder, c) provide information to evaluate whether treatments are working, and d) track cows that need to be rechecked or withheld from the meat or milk supply.

What's the difference between an antibiotic residue and antibiotic resistance? An **antibiotic residue** is a detectable amount of antibiotics in either the meat, milk or both after using antibiotics to treat cows and calves with mastitis, pneumonia, metritis, diarrhea or other diseases. **Antibiotic resistance** is when an antimicrobial substance, like an antibiotic, is no longer effective in killing or inhibiting the growth of bacteria that once was susceptible to it. Antibiotic resistance has been one of the main issues since the discovery of antibiotics. The first report of antibiotic resistance was the result of indiscriminate use reported in 1946.

There are several concerns with antibiotic use.

1) Food safety – Is there an antibiotic residue in milk, meat, eggs, etc. Some people have an allergic reaction to antibiotics.
2) Public perception that many bacteria that cause illness in humans are becoming resistant to antibiotics.
3) Concern that antibiotics used in livestock have created part of the resistance problem.

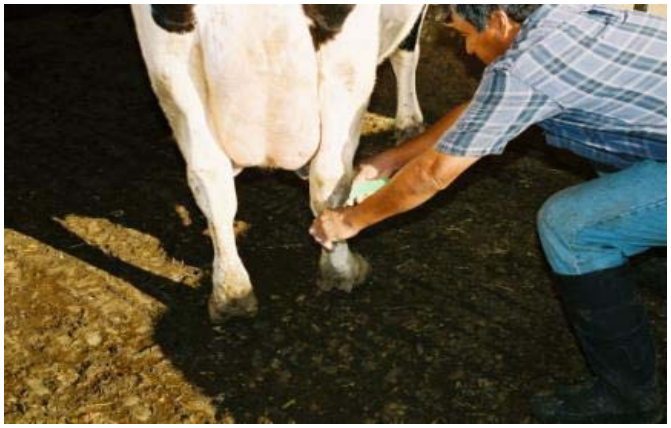
What are the consequences of residues in meat or milk? At the slaughter plant a carcass that tests positive for antibiotics is condemned and discarded. If a milk tank tests positive for an antibiotic residue, the milk is discarded. Either way the producer does not get paid. The violation is reported to USDA or FDA. For meat residues, there is a residue violator list posted on the web. Producers may lose their ability to sell milk or cows for beef depending upon the number of violations and the antibiotics identified.



During 2009, over 99.9% of all milk tanker trucks were negative for antibiotics. On the meat side, the results aren't perfect either. For example, the total number of animals slaughtered was not reported by FSIS (Food Safety Inspection Service); however over half of the cattle found in violation during one week in 2010 were from dairy cows. In addition, veal calves had over a third of the animals on the positive residue list that week.

Your Job - Reduce the Risk of Residues

When treating an animal, read and follow directions on the label or from the farm veterinarian. Record the treatment. If any antibiotics are used in treatments:



- Mark the cow,
- Follow discard protocols for milk, and
- Record MEAT withdrawal time.

Remember there are two "withdrawal" times - one for milk and one for meat.

Communication is the key to preventing residues. Communicate to and between employees, owners, and veterinarians. Label all antibiotics properly. Store drugs properly in a clean, temperature controlled, locked location. Separate medications for lactating and non-lactating animals to reduce the chance of accidental residue violations. Maintain an accurate inventory.

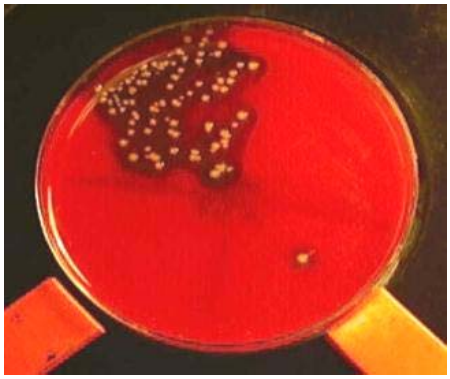
Your Job - Reducing Potential Resistance

Follow the directions for the amount of antibiotic to be used, the number of times to treat, and the amount of time between treatments. If a cow doesn't respond, follow farm policy developed with the herd veterinarian for further diagnosis or treatment.

Do Resistant Bacteria from Animals Automatically Cause People Harm?

The answer is "**No"**. A cascade of events must occur for people to be harmed by resistant bacteria. 1) The resistant bacteria must live and multiply in the animal; 2) The resistant bacteria must be taken off the farm; 3) After arriving at the processing plant, the resistant bacteria must survive the sanitation steps during harvesting of the meat or pasteurization of milk; 4) The resistant bacteria must still be alive when eaten or contacted by a person; 5) Once the resistant bacteria is eaten or comes in contact with the person it must be able to multiply and cause some type of an illness; 6) The ill person must be so sick that they go to a doctor; 7) The doctor must then prescribe a similar antibiotic to the patient; and 8) Finally the patient must get worse or fail to recover.

Final Words on Antibiotics



What we all want is to produce a healthy, wholesome product. Our goals, when using medications, should include:

- a product, meat or milk, free of residues;
- preventing antimicrobial resistance; and
- meat that is free from injection sites that detracts from beef quality.

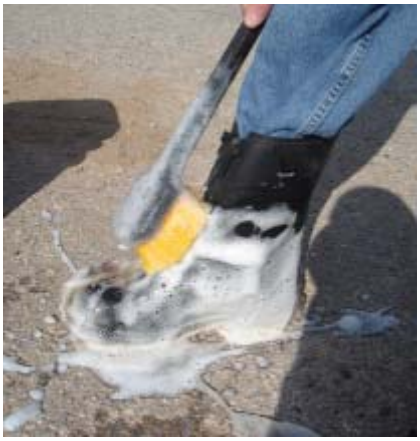
Goal 4: Ensure Biosecurity on the Farm and Protect Yourself and Your Family

Biosecurity encompasses all the steps taken to prevent infectious diseases from affecting a herd of animals and the people who care for them. On a dairy, workers prevent the spread of disease by keeping supplies and equipment clean and well maintained. Follow these steps to protect the farm and animals as well as yourself and your family.

1. **Use separate tractors and loaders for feed and manure.** Bacteria live in manure; therefore feed contamination occurs if the same equipment is used for both. If possible, use separate equipment for young stock as well.

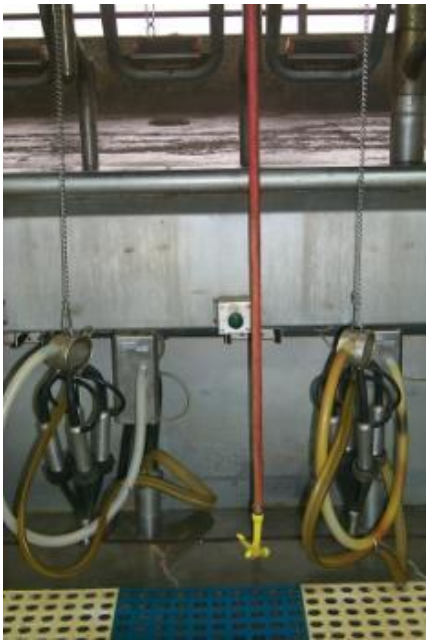
2. **Always wear clean clothes.** Wear clean clothes to work each day. If you work for multiple employers, change clothes between jobs. Wash clothes in the hottest temperature possible and tumble dry.

3. **Check your boots.** Make sure there is NO dirt on your boots. Clean and disinfect boots between pens, particularly after working in sick pen. Work with the youngest animals on a farm first and the "sick" pen last. Wash your boots before you leave the farm. Preferably own two pairs of boots, one for work and one for off-farm. If you work for multiple employers, change boots between jobs.



4. **Question visitors.** Ask visitors to report to the office or to the owner. Don't assume people wandering around the farm should be there. Know farm protocols that restrict close contact or handling of animals by visitors. Make sure visitors wear clean protective clothing and footwear when they enter the facilities. If you see someone you don't recognize, TELL the boss.

5. **Lock gates and doors as directed.** Keep drug storage areas locked to prevent theft and contamination of drugs. Develop a plan to secure bulk tanks that allows haulers to pick up milk, but prevents outsiders from putting anything into the milk supply. Discourage outsiders from accessing feed by using a perimeter fence. Lock well houses to prevent water source contamination. Secure hazardous chemicals to protect workers, children, pets, and farm animals.



6. **Report anything out of the ordinary.** Follow farm procedures for reporting, treating and recording animals with mastitis, lameness or any other illness. Report suspicious activity of not only visitors, but other employees and service personnel. For example, if a plane flies low over pens, notify your superior. Note whether any spray comes in contact with the cows or feed storage areas.

7. **Clean and sanitize milking equipment.** Follow the farm procedures to clean equipment before and after every milking. Sanitize the bulk tank after milk is picked up.

Specific procedures vary for each farm and areas within a farm. Follow them. Keep children away from all cleaning compounds.

8. **Remember, if you see something unusual – REPORT IT!** This can be lesions, a high number of sick animals, unknown visitors or abnormal animal behavior.

9. **Wash your hands and boots before leaving the farm at the end of the day.** Protect yourself, your family and your animals by washing your hands frequently - before you go to the farm, before you eat, and after you finish work. Take at least 20 seconds and properly wash your hands.

10. **Protect your animals at home.** Change your clothes before working with your animals. Keep a separate pair of boots for working at home.

11. **If you travel out of the U.S., realize you may need to stay off farms when you return for a period of time.** How long will depend upon what country you go to, what diseases are currently active in that country, and whether you visit farms while travelling abroad.

Together We Can Meet the "Parlor Worker Goals"

1. Harvest the highest quality product possible.
2. Take good care of the cows and identify when they are sick.
3. Produce meat and milk that are free of antibiotics.
4. Ensure biosecurity on the farm to protect the herd, yourself and your family.

As a side benefit, workers are part of the first responder defense system for our milk supply.

Collaborators: *Mireille Chahine, PhD, University of Idaho*
Robert Hagevoort, PhD, New Mexico State University

Funding provided by the National Center for Foreign Animal and Zoonotic Disease Defense, a Department of Homeland Security Science and Technology Center of Excellence.

NM STATE UNIVERSITY Dairy Extension Program dairy.NMSU.edu

University of Idaho Extension