The main goals of good milking management are fast, efficient and complete milk out, production of large quantities of milk of the highest quality and the maintenance of good udder health. If you adhere to the following guidelines before, during and after milking you will certainly be closer to achieving these goals.

Pre-Milking
Clean and healthy stockmen and cows, together with clean surroundings and milking apparatus, will ensure that your milk meets the highest quality standard. Stockmen should have clean hands and wear clean clothing (boots and hairnets) when milking animals. There should be no sneezing, coughing or spitting in the vicinity of the milking area. The milking environment must also be free of any undesirable odour and dust. Immediately before and after milking the milking equipment must be thoroughly cleaned and sterilised.

When bringing cows into the holding area from the feedlot or pasture they should be allowed to walk at their own pace. The farmer should take this opportunity to observe for signs of heat. On arrival at the holding area, they should be allowed to rest. Clean, fresh water should be provided for them. It is important to keep them calm. The hormone oxytocin, which counteracts the effects of oxytocin (the milk let-down hormone) is released when animals are excited. Any dirt, mud or faeces should be washed off the animal. Particular attention should be paid to cleaning the rear end of the cow, including the udder (Figure 1) and the lower part of the hind legs. The animal should then be allowed to drip dry.

Ensure that the floor of the milking parlour is kept clean in the event that a cow leaks off her teat cups.

Preparation for milking
Animals that are already stimulated and are “leaking” milk should be milked first followed by the recently calved and then the first calved. All animals must be disease free. The dominant cows in the herd, as long as they are disease free should be allowed to enter the milking parlour before their time. Cows infected with mastitis should be milked last.

Feeding of cows can be done either before, during or after milking. Whether time is chosen, ensure that consistency is maintained. Certain feedstuffs e.g. grass silage and wet by-products can be fed to give milk an off-smell or taste. If these are to be fed to the animals it is best to do so after milking. Do not give food milk ing cows a ration that contains more than 18% Crude Protein. High protein rations can negatively affect the reproductive functioning of the milking animal especially when consumed during early lactation.

The teats should be washed with potable water. Test each quarter of the cow’s udder for clinical mastitis. The teats should then be washed with a paper towel dipped in a disinfectant solution (with the correct concentration of active ingredient as directed). This stimulates the release of oxytocin thereby initiating milk let-down. The teats are then dried off with paper towels (Figure 2). Use one or more pieces per cow. Do not recycle pieces.

Milking
This can be done manually or by a machine. Whatever the approach adopted be sure to maintain consistency as the cow will associate the equipment, routines and even sounds with milking thereby stimulating milk let-down.

The specific training requirements of dairy cattle during different stages of lactation can be found in Nutrient Requirements of Dairy Cattle.¹
1. Hand milking: Cleanliness of the teat (Figure 3) and udder is important but the entire rear flank of the cow should also be cleaned as facial material or dust accumulated on these areas can easily fall into the milking bucket. In some cases you may need to tie the tail of the cow since its movements may annoy the milker and can even pitch foreign material into the bucket.

Fingerpads should be kept short to prevent damage to the teats of the cow and to limit areas for dirt to accumulate. Be on the lookout for hoof movements that might cause the bucket to overturn and in some cases it may be required to tied both hind legs. The milker may need to sit on a stool of a comfortable height to enable easy access to the cow’s udder. Only 2 teats can be hand-milked at once. For good milk removal, the front quarters should be done first. When you are removing complete milk out of the front quarters they move to the two rear quarters. Repeat this once to ensure proper and complete milk removal in all quarters. Avoid any actions that may cause injury to the teat lining.

2. Machine milking: In this process, milk is removed from the udder by means of a vacuum applied to the end of the teat canal. A cluster comprising of a clawpiece and 4 test cups is attached to the teats of the cow (Figure 4). A pulsator allows for intermittent periods from the vacuum pressure. This prevents damage and allows for maintenance of blood circulation to the teat. The action of the vacuum and pulsator is thought to be similar to the sucking action of a calf. Milk is removed from the udder and channeled through a series of hoses to the graduated milking receptacle. The milk yield of each cow is recorded before being channelled to a bulk tank. Avoid over milking and prolonged stripping of the udder. Most cows will be milked out in 3-4 minutes by a machine so speed is essential. Over milking can damage the delicate tissues in the teat predisposing the udder to infection.

When milk flow is down to a minimum gently massage the quarters in a downward motion with one hand in union with the machine’s pulsations while placing some tension on the test cups with the other. When the residual milk is withdrawn, release the vacuum pressure and gently remove the test cups.

Post milking
Regardless of whether machine or hand milking is practised, each teat should be treated in a cup of iodine or chlorine based disinfectant solution immediately after milking (Figure 5). This serves to remove any milk that may be in the teat and protects the udder against bacterial infection. Dirty hands spread diseases from cow to cow. Hands should be dipped in a disinfectant solution between milking each cow (Figure 6).

Every effort should be made to ensure that the procedures outlined here become a routine as much so as possible. The cow will associate these procedures with milking and in so doing will reduce the incidence of oxytocin. Any deviation from the routine may cause milking to be difficult and, depending on the degree of deviation, milk let-down may be blocked by the secretion of high levels of adrenaline in the blood. This usually happens when the cow is in pain or fear. The result is poor milk let-down and an animal that becomes increasingly predisposed to mastitis.

Test for clinical mastitis
This can be done by means of a strip cup (Figure 7) or utilising a black cloth. With this test, visible evidence of abnormality of milk for example clots, flakes or a watery appearance is being sought. Milk is splattered into the cup or onto the cloth. If one quarter of the cow’s udder is infected with mastitis, it does not mean the other three quarters are infected as well. However, if one quarter of the udder is treated then milk from the other three quarters should not be used for human consumption. If mastitis is found that cow should be stripped on the ground. It may or may not be treated depending on the level of infection.

Preliminary test of the udder
When doing this you are essentially feeling for lumpy or swollen tissue. This could be indicative of mastitis.

Test for sub-clinical mastitis
California Mastitis Test (CMT)
This test is done to detect the presence of sub-clinical mastitis in each quarter of the udder of any milking cow and can also be conducted on milk samples obtained from the bulk tank to determine the presence of subclinical mastitis in the entire milking herd. The frequency is determined by the results of the clinical mastitis test. Generally a 2-week interval is sufficient.

If an animal is detected with sub-clinical mastitis it is not cost effective to treat with antibiotics. Where clinical mastitis is observed you should treat with antibiotics under the guidance and supervision of a veterinarian. Where the organism responsible for infection is unknown, it is a good practice to take a sample of the infected milk to the lab for identification in order to determine a suitable antibiotic for treatment. Do not use milk up to 72 hours after the last treatment. Use only when this period has passed and the milk appears to have cleared up.

Further reading