

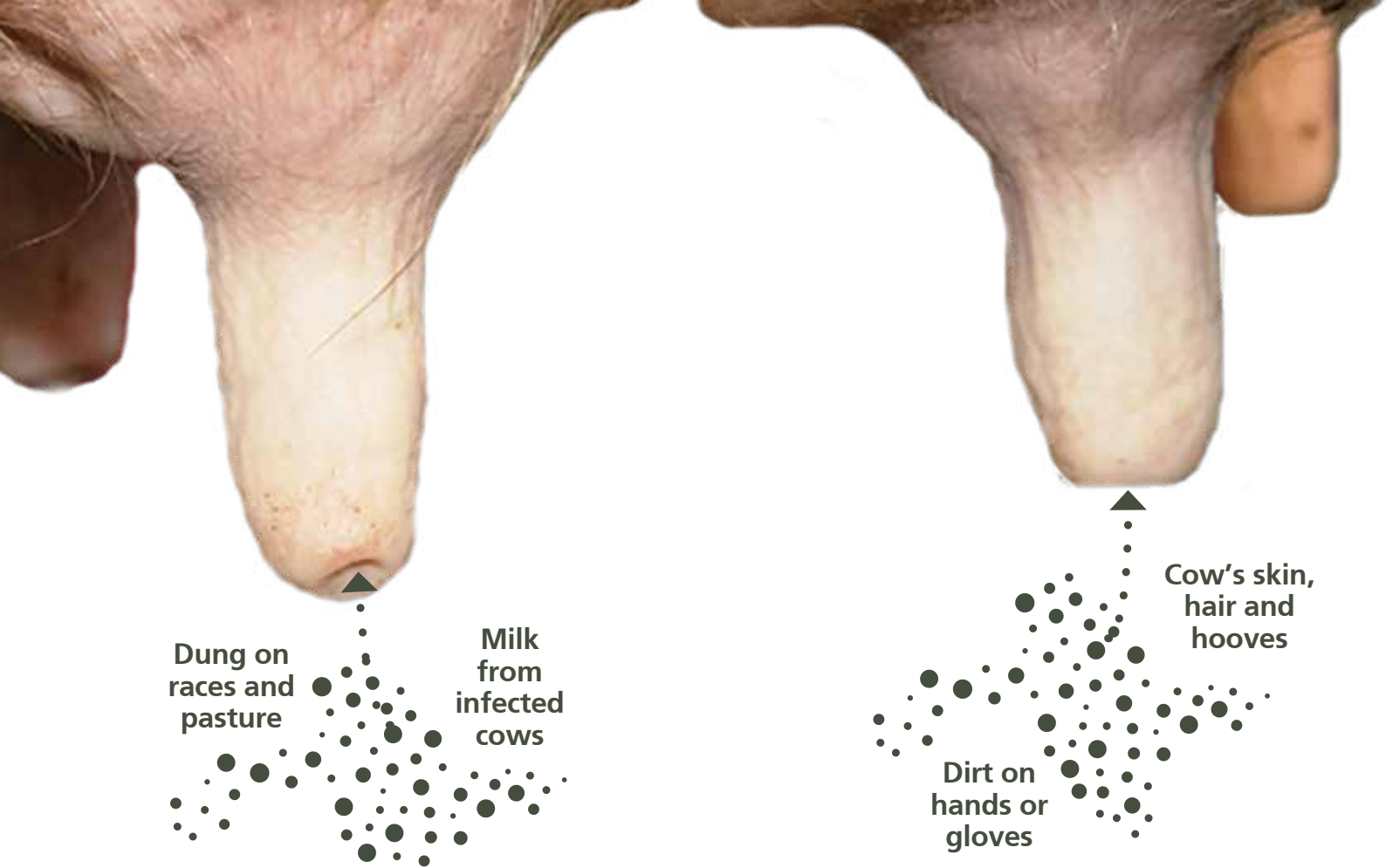
# Healthy Udder

*Quick tips for minimising mastitis*



SmartSMMM 

DairyNZ 



# Healthy udders produce quality milk

Mastitis is usually caused by bacteria, which enter through the teat canal and infect the udder. This guide provides farm teams with practical tips on preventing, finding and treating mastitis.

Cows with a healthy udder:

- produce more milk
- are easier to milk
- have less mastitis
- suffer less pain
- are more likely to get in calf
- have a longer productive lifetime and
- provide more profit.

For more, go to [dairynz.co.nz/mastitis](https://dairynz.co.nz/mastitis).

**Prevent**

**Find**

**Treat**

## Prevention is better than cure

# CUPS ON - quietly and smoothly

All milkers should share a consistent milking routine.



## 1. Bringing the cows in

**Bring** cows to the farm dairy calmly to minimise stress, mud splash onto teats and damage to cows' feet. Cows should enter dairy with heads down, so they can see where to place their feet.



## 2. Clean

**Clean** teats if very dirty, using low pressure hose. Dry with paper towels before cupping.



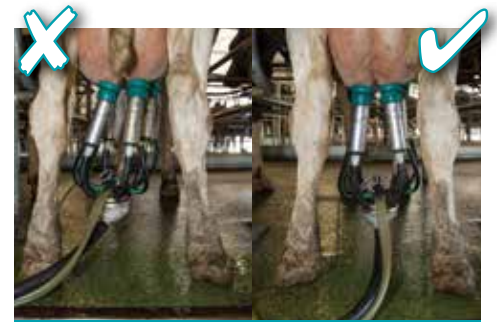
## 3. Check

**Check** for teat damage or signs of mastitis e.g. swollen left quarter in this photo. Strip before cluster attachment if mastitis is suspected.



## 4. Cup

**Cup** quietly and smoothly to minimise air intake. Use finger to guide teat into cup.



## 5. Align

**Align** cups to avoid uneven milk out.

## Check these at each milking



## Vacuum

Check vacuum gauge daily.



## Air holes

Keep air admission holes in cluster clean.



## Rubberware

Check for split or worn rubberware, especially liners, and replace.

**PREVENT**



# CUPS OFF - quietly and smoothly

Has she finished milking?



## Wrinkled and even

Udder wrinkled and soft. All quarters evenly milked out.



## Dribble

Small continuous dribble in bowl.

## Avoid rough cup removal



Taking cups off too quickly or roughly will allow air to enter cups and force milk droplets onto the teat. This can help bacteria to spread from teat to teat.



## 1. Break

**Break** vacuum by closing the clamp or kinking the long milk tube, close to the cluster.



## 2. Wait

**Wait** a couple of seconds for vacuum to break and cluster to fall away. Slight twist of the cluster can help.



## 3. Cows leaving

**Exit** cows quietly and calmly, without excessive splashing of manure. Provide fresh feed to keep cows standing, as teats take up to an hour to close after milking.



Avoid - these can lead to mastitis:

## Liner slip (squawks)



## Uneven milk out

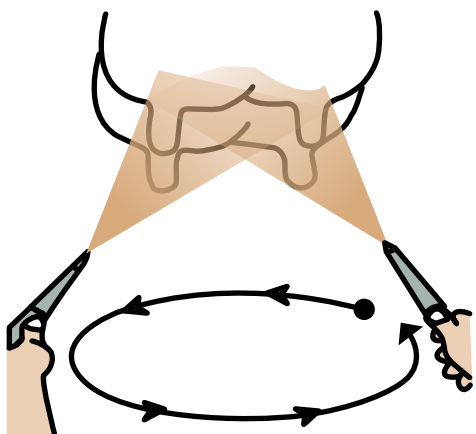


Get expert help if more than 5% of cows have these in a milking.



Ideally, wash empty bails. If necessary, use low pressure, high volume water to wash away manure, to prevent aerosols of bacteria-laden droplets reaching udders.

# TEAT SPRAY - every cow, every milking



## 1. Spray

**Spray** in a circular motion.

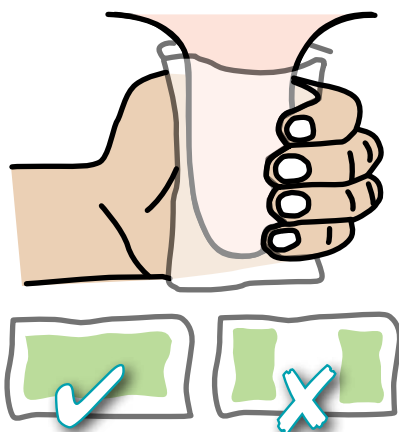


## 2. Cover

**Cover** all surfaces of teats.

- !** *Teat spraying helps:*
- *reduce new mastitis cases by 50%*
  - *reduce bacteria on teats*
  - *improve teat skin condition.*

## Check teat spray coverage



## Check

Check occasionally to see how effective your teat spraying is.

Using a clean paper towel, wrap your hand around a teat and then unroll the paper to see if all the surfaces of the teat have been sprayed.



## Good

This teat sprayer has a fine spray pattern, there are no gaps and the spray is wide enough to cover all teats. No blocked nozzles.



## Poor

This teat sprayer has a very narrow width of heavy spray. This will use more teat spray and will take longer to cover all teats.



**Aim to use 20ml per cow per milking for good coverage.**

# TEAT SPRAY - make up correctly

## 1. Use a registered product

- **Check registration** with MPI (ACVM Act).

## 2. Mix a fresh batch regularly

- Every 2-3 days is recommended.
- Use potable (drinking quality) water to mix up teat spray.  
**Cooled water from hot water tank is an option.**

## 3. Mix according to label

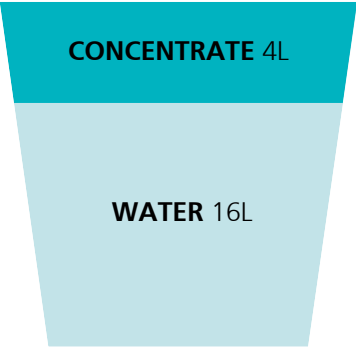
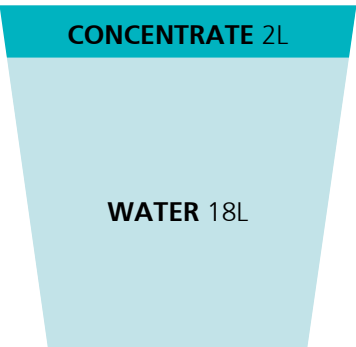
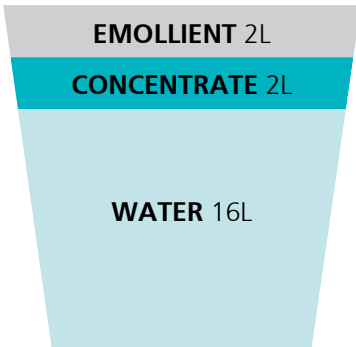
- **Dilution rates may change as mastitis risk changes.**
- Make up clear instructions for your farm, and provide designated measuring containers.

## 4. Use extra emollient if required

- Emollient (glycerine or sorbitol) are skin conditioners.
- Use extra emollient when teat condition is likely to be poor (e.g. in spring or wet, muddy conditions).

## Check your recipe

Not all products are the same. Some are registered for different dilutions. Incorrect mixing can lead to problems with residues or outbreaks of mastitis. For your safety, always add chemicals to water.

1:4	1:9	1:9 + emollient
		
To make <b>20L teat spray</b> : first add 16L water, then add 4L concentrate.	To make <b>20L teat spray</b> : first add 18L water, then add 2L concentrate.	To make <b>20L teat spray</b> : first add 16L water, then add 2L concentrate, and 2L emollient.
<b>Product A</b> Standard Mix. No extra emollient.	<b>Product B</b> Standard Mix. No extra emollient.	<b>Product B</b> Standard Mix. Plus extra emollient.



# TEATS - avoid teat damage

Healthy teats look like this:



! Teat damage often leads to mastitis.

💡 Get expert help if more than 5% of cows have teat damage.

Damaged teats look like this:



**Causes:** cuts and scrapes, cow standing on teats.

**Actions:** add extra emollient to teat spray (page 6). Get vet advice for severe cases.



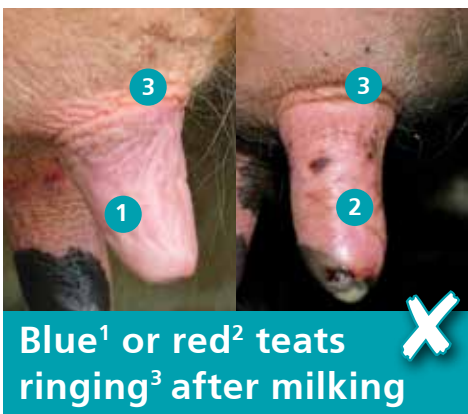
**Causes:** prolonged exposure to mud, wind and rain, incorrect teat spray mix or coverage.

**Actions:** check teat spray mix and coverage (page 5). Extra emollient in teat spray can help prevent cracking. Reduce overmilking.



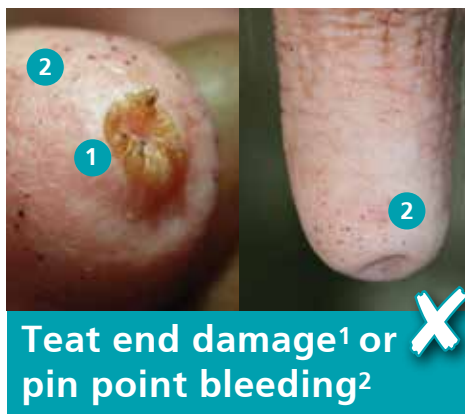
**Causes:** poor machine function leading to infected lesions<sup>1</sup> (black spot or pock) or infection of the whole teat end<sup>2</sup>.

**Actions:** get machine tested and correct faults. Consult vet. Switch to iodine-based teat spray. Improve coverage.



**Causes:** poor pulsation, excessive vacuum, incompatible liner/shell.

**Actions:** get machine tested and correct faults. A vacuum test, at the teat end during milking, will better identify faults.



**Causes:** poor machine function, pulsation failure, excessive vacuum, overmilking.

**Actions:** get machine tested and correct faults. Remove cups when cow has finished milking., to reduce overmilking.

💡 A milking machine test will find areas that need fixing, even if your machine sounds OK.  
A test during milking will better identify faults.  
Replace liners every 2500 cow milkings for best teat massage.

# CLINICAL MASTITIS - needs treatment

- Cows with **clinical mastitis show visible signs** or changes in udder or milk.
- **Stripping cows by hand**, as shown below is used to find these signs.
- Cows with clinical signs are **usually treated** with antibiotics (pages 12 & 13).



## 1. Look

**Look** for swollen udder, one quarter not milking out properly, cow stomping or kicking.



## 2. Feel

**Feel** for heat or coldness compared with other quarters, or signs of pain when touched.



## 3. Strip

**Strip** milk onto dark surface. Avoid getting milk on hands. Look for clots, discoloured milk.

## Signs to look for



## Udder

Udder swollen, hard, hot or cold compared with other quarters. Painful to touch.



## Clots

Clots in foremilk. Clots can be small, rubbery or stringy.



## Milk

Milk unusual colour or consistency - watery, bloody, yellowish or clotted.

## When to look for clinical mastitis



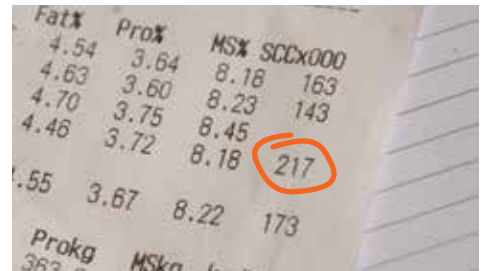
## Milking

One quarter not milking out properly compared to others. Cow avoiding milking or showing sudden drop in milk yield. Strip to check for clinical signs.



## Filter sock

Clots on filter sock after milking may indicate a new clinical case. Hand-strip all cows to find it.



## Bulk milk

Sudden spike in bulk milk SCC (somatic cell count) may indicate a new clinical case. Hand-strip all cows to find it.



If you find a new clinical case, draft the cow out before cupping her to reduce spread of infection and avoid milk quality problems. Follow MRS T (page 11).



# SUBCLINICAL MASTITIS - monitor

- Cows with **subclinical mastitis show no visible signs** so tests are needed to find signs of infection.
- The **Rapid Mastitis Test (RMT)**, as shown below, tests for the SCC (somatic cell count) in milk.
- Cows with a positive result **are not normally treated** with antibiotics. Monitor for clinical signs that require treatment.



## 1. Discard

**Discard** the first 1-2 strips of milk and check for clots.



## 2. Strip

**Strip** next 1-2 from each quarter into separate wells of the RMT paddle.



## 3. Pour

**Pour** off excess milk down to the line in the bottom of well, leaving equal amounts of milk in each well.



## 4. Add

**Add RMT reagent**, same amount as milk, to each well.



## 5. Swirl

**Swirl** in a circular motion for 10-20 seconds.

**Look** for a thick gel to form. The greater the SCC the thicker the gel.



## 6. Tip out

**Tip out** slowly and look for egg-like gel (see top right well).



## 7. Rinse

**Rinse** paddle before testing next cow. Mark those cows with a positive quarter and monitor for 2-3 days.

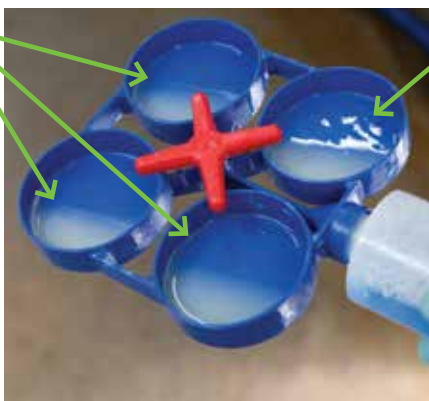


*Do not treat subclinical cows unless advised by vet. Record and monitor for clinical signs.*

## Gel results

Nil

Low SCC



Slight

Moderate SCC



Strong

High SCC

**FIND**

- 9 -

# BACTERIAL CULTURE - aids decisions

- Milk samples from cases of mastitis can be tested to identify the bacteria responsible.
- Collect a milk sample **before** the cow has been treated with antibiotics.
- **Good hygiene** will prevent a false diagnosis, caused by contaminants getting into the sample.
- The **correct way** to collect a milk sample for culture is shown below.



## 1. Record

**Record** cow number, quarter and date on the tube and lid. Use clean gloves.



## 2. Scrub

**Scrub** each teat end with a teat wipe or cotton wool ball soaked in 70% meths. **Scrub until the teat end is clean.**



## 3. Prepare

**Prepare** tube. Remove lid, taking care not to touch inside of the lid or tube. Hold lid between thumb and little finger.



## 4. Discard

**Discard** the first 1-2 strips of milk onto the ground.



## 5. Collect

**Collect** 1-2 strips of milk into sterile tube. Hold tube at 45° angle 3-4cm from teat end so dirt from udder does not fall in. Re-cap immediately.



## 6. Refrigerate

**Refrigerate** sample. If not being tested same day, freeze samples. Take to vet for analysis.

## Which cows do I sample?

**Discuss with your vet first, but consider sampling:**

- quarters with new or persistent clinical mastitis
- clinical cases during mastitis outbreaks and/or
- RMT-positive quarters from high SCC cows.

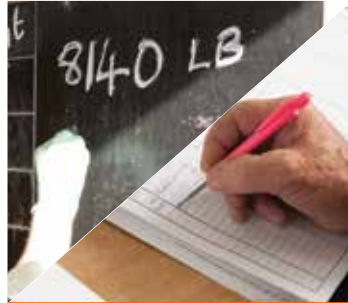
# FOLLOW MRS T - to avoid mistakes

- Mark and separate cow **before treatment** to prevent inhibitory substance grades.
- Make sure the cow receives **complete course of treatment**, as advised by your vet.
- Milk must be **kept out** of the bulk tank during treatment and for right amount of time after last treatment. Check label on product.



## 1. Mark

**Mark** first, when you have decided a cow needs antibiotic treatment.



## 2. Record

**Record** her number and treatment details. All treatments must be recorded in your animal health records.



## 3. Separate

**Separate** her from the milking herd – to make sure you will not accidentally treat the wrong cow, or milk her into the vat once she is treated.



## 4. Treat

**Treat** her after marking, recording and separating. Refer to farm treatment plan for most suitable antibiotic product.

## Examples of marking systems



### Bright red paint



### Leg bands



### Use two systems



### Mark treatments

**Mark treatments** (T1, T2, T3) with a line after each treatment.



### Mark withholding

**Mark** with a line on each day milk is withheld after last treatment (D1, D2, D3, D4).



### Mark clear to vat

Remember to **cancel paint** markings with a different colour.



*Good systems help prevent inhibitory substance grades. Remember to explain your systems to your relief milker. Use signs as visual reminders.*



# TREAT CLINICAL CASES

- **Lactating cow antibiotics** are used to treat clinical mastitis in lactating or dry cows.
- Most cases of mastitis are treated via the teat (**intramammary**) - see page 13.
- In some cases, your vet may prescribe an injectable (**intramuscular**) product - see below.
- Consult the **animal health treatment plan** approved by your vet for the correct treatment.
- Dry cow antibiotics **SHOULD NOT** be used to treat clinical cases - see page 14.

## Antibiotics can be delivered by:



**Intramammary** - inserted into teat



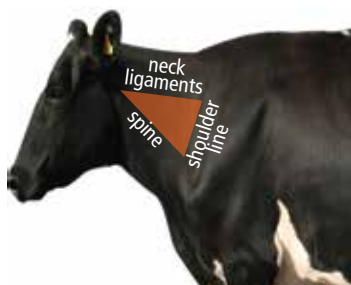
**Intramuscular** - usually injected into the neck

## Intramuscular - injection into the muscle



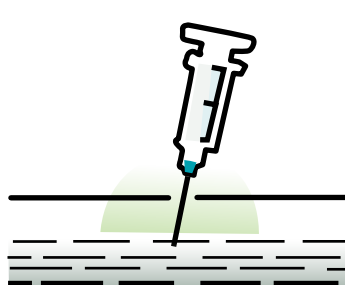
### 1. Rub

**Rub** off visible dirt or swab with teat wipes or cotton wool soaked in 70% meths. Always try to inject into the neck – avoid the rump.



### 2. Aim

**Aim** for middle of triangle (spine, ligament of neck and shoulder line). **Check** on label if product requires injection into muscle (**intramuscular**). Some products may be injected just under the skin (**subcutaneous**).



### 3. Inject

**Inject** contents of syringe into muscle layer. Maximum volume injected at any site is as per the label.



### 4. Dispose

**Dispose** of the needle safely in a sealed container. Use a new needle for every cow (16 gauge, 1-1.5 inch long).

# Intramammary – treatment into the teat

Use clean technique to prepare teats before inserting the tube.



## 1. Milk

**Milk** the cow out completely then restrain her safely. Follow MRS T.



## 2. Hygiene

**Hygiene** is critical – wear clean gloves or wash hands.



## 3. Scrub

**Scrub** the teat end until it is clean with teat wipes or a cotton wool ball soaked in 70% meths. Remove the cap from the treatment tube.



## 4. Insert

**Insert** the tip of the tube gently into the teat canal. Partial insertion (3-4mm) is ideal. Do not touch anything else before inserting.

To help see the opening, strip a small amount of milk out of the teat.



## 5. Squeeze

**Squeeze** the contents of the tube gently into the teat canal. Hold teat firmly but avoid blocking the teat canal. Empty the whole tube into the teat, then remove. Massage teat to disperse contents.



## 6. Spray

**Spray** with normal teat spray and release the cow into the treatment herd.



*Hygiene is critical when using intramammary products. Poor hygiene can result in sick or dead cows.*



*If taking a sample for bacterial culture, do it before treatment (page 10).*

# FOR USE AT DRY OFF

- **Dry cow (antibiotic) treatments (DCT)** are used to treat existing infections and prevent new cases in the dry period and after calving. Only use DCT directly after a cow's last milking of the season.
- **Internal teat sealants** (non-antibiotic) are used to prevent new cases in the dry period in low SCC cows. They can also be used immediately after DCT, to extend protection in dry cows (combination treatment).



## 1. Hygiene

**Hygiene is critical** – wear clean gloves or wash hands.



## 2. Scrub

**Scrub** the first teat end, usually front left, until it is clean with medicated wipes or a cotton wool ball soaked in 70% meths. Remove the cap from the treatment tube.



## 3. Insert

**Insert** the tip of the tube gently into the teat canal. Partial insertion (3-4 mm) is ideal. Do not touch anything else before inserting.



## 4. Squeeze

**Squeeze** the contents of the tube gently into the teat canal. Hold teat firmly but avoid blocking the teat canal. Empty the whole tube into the teat, then remove. Antibiotic DCT can be massaged up into the udder.



## 5. Repeat

**Repeat** steps 2, 3 and 4 to administer the teat sealant, if giving combination treatment. Then move on to the next teat (e.g. front right). Do NOT massage teat sealant up into the udder.



## 6. Spray

**Spray** with normal teat spray once all teats treated. If still milking other cows, mark her well. Release the cow.

**!** *Hygiene is critical when using intramammary products. Poor hygiene can result in sick or dead cows.*



*When squeezing in teat sealants, pinch off top of teat where it meets the udder, to keep sealant inside the teat cavity or sinus.*

*DO NOT massage teat sealants up into the udder.*



# Prevent

# Find

# Treat

## Springers



**Teat spray** springers 2-3 times per week.

**Calve** on clean, dry paddocks - avoid mud.

**Milk** before calving if leaking milk.

**Look** out for hot/swollen quarters when running cows through yards.

**Do not strip** quarters unless cow has hot/swollen udder, indicating mastitis.

**Treat** with lactating cow antibiotic if clinical mastitis is found (*pages 12 & 13*).

**Strip out** quarter before treatment. If possible start milking the cow.

**Observe** meat withholding times for bobby calves.

## Colostrum cows



**Milk** within 12-24 hours of calving, after milkers and before treated cows.

**Teat spray** after every milking (*page 5*).

**Check** for teat damage (*page 7*).

**Strip** all quarters and check for clinical signs at each milking (*page 8*).

**Identify** high somatic cell count (SCC) cows (*page 9*) before they leave the colostrum herd and monitor.

**Treat** with lactating cow antibiotic if clinical mastitis is found. Strip out quarter before treatment.

**Follow MRS T** - Mark, Record, Separate and Treat (*page 11*).

## Milkers



**Milk** cows hygienically, apply cups to clean, dry teats, keep hands clean or wear gloves (*pages 3 & 4*).

**Maintain** milking machine to prevent teat damage.

**Teat spray** after every milking (*pages 5 & 6*).

**Strip** all cows for clinical signs weekly during first 6-8 weeks of season.

**Strip** when clots appear on filter sock or bulk tank SCC spikes.

**Strip** high SCC cows after herd test to check for clinical signs.

**Treat** with lactating cow antibiotic if clinical mastitis is found.

**Strip out** quarter before treatment. Only treat cows with high SCC if advised to by your vet.

**Follow MRS T.**

## Treated cows



**Milk** treated cows last and separate from milking herd to reduce spread of infection.

**Teat spray** after every milking.

**Strip** to check for recovery of clinical signs after last treatment and at end of withholding period.

**Collect** culture samples from persistent clinical cases (*page 10*).

**Keep milk out** of bulk tank for withholding period.

**If clinical signs** have not resolved by end of withholding period, consult your vet.

## Dry cows



**Protect low SCC cows** after last milking.

**Consult your vet** about appropriate treatments, including internal teat sealants, for low SCC cows (*page 14*).

**Spray teats** after any examinations.

**Check** cows by running through farm dairy 7-14 days after dry off.

**Feel** for hot/swollen quarters; do not strip cows unless cows suspected to have clinical mastitis.

**Treat cows** that had clinical mastitis or high SCC with appropriate treatment, according to vet (*page 14*).

If clinical mastitis found, strip out and treat with lactating cow antibiotic.  
**Record details.**



**Prevent**

**Find**

**Treat**

**Prevention is better than cure**

*Check out our Healthy Udder resources at  
[dairynz.co.nz/mastitis](https://dairynz.co.nz/mastitis)*

0800 4 324 7969 | [dairynz.co.nz](https://dairynz.co.nz)

DNZ10-207 | Version 3 – June 2017

**DairyNZ** 