

## 26 Common Questions about CAE

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**I am frequently asked questions about Caprine Arthritis Encephalitis or CAE, so I have listed the common ones and my answers**

### **Question**

*My question is how is CAE spread? I have read and been told so many different things and would like the facts.*

### **Answer**

CAE is a virus that infects white blood cells of the goat so any secretions that contain white blood cells are infectious. The most infectious material is colostrum (which is full of white blood cells) but also milk, blood and the mucous passed by does when in oestrus. Coughing and nasal secretions can also spread it, as can mating, although bucks are much less likely to spread it to does if contact is minimal. I have an article on CAE and spread by matings that you can download from my website - see [www.goatveto.com.au](http://www.goatveto.com.au) . Young kids and dry goats are less likely to spread CAE than milking or adult goats. Most spread happens when does come into oestrus or start to kid. Milking machines also spread CAE so always milk positive does last if running 2 herds (one positive and one negative). Keep any positive goats separated by either a solid wall or a double fence, 2 to 3 m apart i.e. the sneeze distance. When any positive goats come into milk, make sure no milk from them is sweep out of the milking areas onto areas where other goats can access to sniff or graze. Similarly when any positive does kid, regard their bedding as infectious. Only ever use sterile needles when vaccinating your goats and also ensure your tattoo letters are boiled or disinfected after using.

In both Europe and North America, it has been shown that sheep can play a part in spreading CAE, so isolate any positive goats from sheep. Keep sheep away from your goats as well is necessary if the sheep have had past contact with goats.

### **Question**

*My goats have just been tested for CAE but I have two does that are due before test results come back. At what temperature and for how long, should their colostrum and milk be heated without compromising quality in order to prevent possible transmission of CAE to the kids?*

### **Answer**

The recommendations in Smith & Skerman's textbook, "Goat Medicine"<sup>i</sup> are:

- For colostrum - heat to 134.6 degrees F (57 ° C) for 10 minutes then add to a thermos that has been rinsed with boiling water and close and hold for 1 hour. The temperature at the end must be above 132.8 degrees F (56 ° C). Alternatively use frozen cow colostrum (from a cow herd that is tested negative for Johne's disease) or frozen goat colostrum from a closed goat herd that tests annually for CAE and Johne's disease. Others use a double boiler and have the colostrum in the inside container and stir it frequently with the thermometer. Note this won't kill Johne's disease bacteria.

- For goat milk, heat to 165 degrees F (74 ° C) for 15 seconds or use a kid milk replacer. Remember you must be vigilant as even one time when you have not done this right or poured pasteurized milk back into the old bucket without washing & rinsing in boiling water, you have infected all the kids. One UK authority warns that this pasteurization is not foolproof and warns against using any milk from known carriers, even if pasteurized at these temperatures. Also kids will need to be separated from all positive CAE goats. Also the pregnant does should have been tested before they got within 4 weeks of kidding to ensure the accuracy of the test results. All goats in contact in the herd need to come back negative for CAE, before allowing kids to be reared on their mothers, if testing this close to kidding. If any goats come back positive, then you should only feed all kids pasteurized milk and colostrum and retest all goats including kids in 6 months' time.

Also remember that water boils at a lower temperature at high altitudes, although this isn't really a problem in Australia.

### **Question**

*Can CAE be spread by matings?*

### **Answers**

Yes, CAE can be spread by matings. Bucks are especially at risk as mating behaviour involves sniffing the doe's mucous and this oestrus mucous is known to contain high numbers of white blood cells, which in turn contain the CAE virus. Does are a less risk as some case studies have shown e.g. where native goats in developing countries have been exposed to CAE positive imported dairy bucks. However the CAE virus has been found in semen of carrier bucks and in the male reproductive tract. I have summarized the research in an article that can be downloaded from my website [www.goatvetoz.com.au](http://www.goatvetoz.com.au) .

The spread of CAE by matings can be reduced by minimising contact during mating but the only safe way is to ensure that any goats used from mating your goats come from CAE accredited herds (or from herds where all goats over 6 months are tested annually and good biosecurity is maintained if your state has no accreditation scheme).

### **Question**

*We just did CAE testing on our three goats. The people we bought them from said they were tested negative but we always test to make sure. The two new ones came back with CAE positive and the other one was negative. The new ones are 4 months old when we tested and the older one was 10 months. We have read you shouldn't test till after 6 months because it could be the maternal antibodies that are showing on the test so we plan to test again when over 6 months.*

### **Answer**

Not testing young animals until 6 months of age is a general recommendation for all diseases. This is because the antibodies of the mother are transferred to the young with the colostrum and hence if the dam has antibodies to past disease exposure, then the kid/lamb/calf will be given these antibodies which are then picked up by the serological test. However, unlike other diseases, goats with CAE are infectious for life, so I suspect that if your 2 kids got enough maternal antibodies to CAE via the colostrum to test positive, then they would also have received CAE virus via the mothers' colostrum as well. If the mother's colostrum was pasteurized first, then they might be OK and test

negative after 6 months. However a small trial done in Western Australia found that CAE antibodies from the mother given to kids via colostrum only lasted 8 weeks.<sup>ii</sup>

Personally, I would return the kids and ask for your money back. Failing that option, isolate the 2 positive kids immediately and follow the rules for running a positive and negative CAE herds on the same property e.g. solid walls or double fences 2-3 metres apart, milk positive does last, don't allow these doe kids to be mated with you negative bucks and never share equipment without disinfection. These 2 positive kids will always be a risk for all other goats that come into contact with them or any equipment that have their secretions or milk on them.

Also remember that a single test for CAE on a kid or new goat is no guarantee of them being free of the virus and a retest must be done in 6 months. They should be kept isolated until the second test comes back negative.

Next time only ever buy from herds that test for CAE (and other diseases like Johne's disease) annually and ALL the goats come back negative. Some states in Australia have accreditation schemes for CAE and these provide extra protections by the rules of the accreditation programs e.g. not allowing does to come for mating unless they also come from negative herds, not allowing goats to board etc.

### **Question**

*Can CAE be spread by artificial insemination or embryo transfer?*

### **Answers**

In 2012 a group of researchers in France and Mexico reviewed all the available literature about the risks of spreading small ruminant lentivirus (the new name for CAE) by AI (artificial insemination) and ET (embryo transfer). They looked at the current protocols developed by the International Embryo Transfer Society (IETS) and the World Organization for Animal Health (OIE), and which are applied for international exchanges of reproductive material. They were critical of 2 studies that followed kids born from donor does with clinical CAE whose embryos were implanted into negative recipients for only following the kids for 4 and 6 months respectively, as they pointed out it can take up to 8 months for CAE antibodies to be created. All kids were negative but not followed for long enough. One other study did however follow kids for 3 years and found the kids stayed negative. The CAE virus can be isolated from the doe's oviducts and the buck's reproductive tract and semen. In addition, laboratory studies with collected embryos showed they could be infected with the CAE virus. They concluded that ET posed minimal risk if the embryos had the outer layer maintained and were washed 10 times as per the protocols, but mentioned that more studies were needed with larger numbers of goats. However their conclusions about AI was that "the risk of transmission through sexual contact appears to be low, despite studies demonstrating the presence of the virus in semen. However, too few studies have been performed to enable any definite conclusions to be drawn and further work is warranted."

### **Question**

*I have been told that the CAE tests are so inaccurate that they aren't worth doing. How accurate are these tests?*

### **Answer**

In Australia we have excellent quality control for our veterinary laboratories. All vet labs in Australia are accredited and also routinely sent samples for proficiency testing and if they fail these tests they

have their accreditation removed until they can pass them. Also all diagnostic tests for diseases were certified by the Standing Committee Australian Animal Health Laboratories Standards, which sits under the Standing Council for Primary Industries, which sits under Council of Australian Governments or COAG. SCAHLS had representatives from government labs, private labs, Universities and the CSIRO. They have approved the ELISA (and AGID) for CAE testing. Only laboratories that have NATA accreditation and specifically NATA accreditation for CAE testing, should be used – see [www.nata.com.au](http://www.nata.com.au) .

Sensitivity for detecting CAE by ELISA tests has been shown to be around 97-98% and specificity around 99-100% so false negative and false positives are rare in several studies.<sup>iii</sup> Work in the UK found that the sensitivity and specificity was 100% and 99.6%.<sup>iv</sup> This is partly due to the fact that goats affected by the CAE virus are infected for life. These results are excellent and the same or well above the sensitivity and specificity of the tests that have been used to eradicate other diseases in Australia.

These tests are herd tests because they are accurate for a single point in time and won't pick up goats in the early stages of incubation. So testing should be done on all goats in the herd that are over 6 months. Repeated testing is needed, initially in 6 months (for new introductions) then every 12 months (extended out in herds in accreditation schemes for several years).

### **Question**

*What is the difference between CAE accreditation and whole herd testing?*

### **Answer**

Herds that blood test annually are a lot safer to buy from than herds that don't. Again a herd test is safer than just doing a single blood test in a single goat. Goats can take 6 months (or possibly more), to show up as a positive on blood test after getting the virus. However a single whole herd blood test is only the state of the herd at a single point in time. Also it is only the owner who says that all the goats over 6 months were tested. The next day, the owner could buy and introduce a carrier goat and the CAE virus can then spread in the herd to those previously tested negative. It depends on the level of biosecurity in the goat herd involved.

Goat herds in a CAE accreditation scheme sign up to obey the rules of the scheme and also have their veterinarian inspect their property and monitor the herd. Both vets and goat herd owners have to sign that they have obeyed the rules of the scheme. The rules of the NSW accreditation scheme are as shown in this link- <http://www.dpi.nsw.gov.au/.../CAE-Accreditation-Scheme...>

### **Question**

*I read on the internet that in the USA, goat owners can take their own blood samples from their goats and send them to a laboratory without any input from a veterinarian, Why can't I do this in Australia as it would save me money?*

### **Answer**

The livestock industry is one of the backbones of the Australian economy and as such, it is important that Australia keep its disease free status for diseases our strict quarantine has kept out and if these are unfortunately introduced, that these are quickly identified and traced. An incorrect diagnosis of an exotic animal disease would be a devastating blow to Australia's livestock industries and this is why all vet labs must have accreditation and only veterinarians can submit samples for diagnosis, except in a few cases with prior approval by a veterinarian e.g. hair/ear samples for pestivirus in cattle or milk samples for mastitis. In most states the diagnosis of disease is an act of veterinary

surgery e.g. in Queensland, the Veterinary Surgeons Act 1936, specifically states in Part 1 section 2 A that 'Veterinary science.....includes the following—

- (a) diagnosing diseases in, and injuries to, animals, including, for example, testing animals for diagnostic purposes;

### **Question**

*How can CAE be eradicated from a large herd without culling the lot and starting again?*

### **Answer**

Many herds, large or small have eradicated CAE without culling by using a 2 herd system with a solid wall or double fence (2-3 m apart) separating them. Obviously the larger the herd, the more work is involved. One herd of 3500 and a low initial incidence in the UK achieved eradication after 10 years of testing and culling only (not snatch birthing).

Some hints for larger herds are:

- Wash kids that are blood stained at birth and keep in separate cardboard boxes
- Monitor does' ligaments so you know when they are likely to kid – it only take a few seconds to check does this way
- Apply Elastoplast to the teats of does so if the kids are missed at birth, they can't suckle
- Large herds often have a lot of waste water from the dairy – make sure it isn't washed out to where goats can access it.
- Milk CAE positive does last as milking machines can spread CAE
- Have a good arrangement for pasteurizing colostrum with a good thermometer &/or have lots of frozen colostrum from CAE and Johnne's disease free goats colostrum or Johnne's disease free cow's colostrum. I would investigate the pasteurisers now being sold for calf rearing to see if they would be suitable for rearing kids e.g.

<http://www.thevetgroup.com.au/calfwise-right-from-the-start/dt-platinum-series-pasteurisers/>

or <http://dairytechinc.com/>

And of course the same rules apply as for smaller herds such as

- Only use pasteurized milk or milk replacers to raise kids
- Test doe kids at 6 months and remove any positive reactors
- Only accept new goats from accredited herds or keep new goats in isolation for 6 months and 2 negative tests
- Only ever use sterile needles
- Disinfect tattoo and other equipment between goats
- Don't allow negative goats to mate with positive goats

A survey was done of goat herds in the UK (and sheep herds with Maedi Visna) and why they lost accreditation for CAE (or Maedi Visna, the sheep Small Ruminant Lentiviral disease). Loss of accreditation was generally due to the introduction of new animals.<sup>v</sup> Only 2 goat herds lost their accreditation in the UK over a 10 period.

### **Question**

*I just tested my herd for CAE because one had a hard udder. All does are positive. I am debating on culling everyone and starting fresh with new goats. Is there a recommended time frame for her to leave the barn/pasture unoccupied to prevent re-contamination?*

### **Answer**

Very little research has been done on how long the CAE virus lasts in the environment but most viruses of the same family as the CAE virus don't last long once outside the animal's body. Once reference stated that after 1-2 weeks any pastures grazed by CAE positive goats would be safe.<sup>vi</sup> These researchers also found that the CAE virus "has been found in faeces and urine and to contaminate food troughs and drinking bowls, though to a minor extent. " The Merck Vet Manual (2014) recommends that "shared equipment should be disinfected using phenolic or quaternary ammonium compounds." Phenolic disinfectants (i.e. coal tar or pine type household disinfectants such as "Lysol") also kill Johne's disease bacteria. However they are too irritant to use on the skin of goats and wear gloves if using on equipment.

### **Question**

*Can I spread CAE on my clothes?*

### **Answer**

Yes, it is possible to spread CAE by people's clothes or shared equipment. Anything that is moved between a positive herd and negative goats that is coated with milk, oestrus mucous or other bodily fluids can spread it. These bodily fluids have to be inhaled or ingested by the negative goats before the white blood cells die off (by sunlight, dehydration, bleach, detergent etc) so contact has to be quite soon.

Changing clothes when visiting different goat herds and after attending shows is good general biosecurity. So get into the habit of changing after leaving your home property and before seeing your animals. Have certain clothes that you wear when feeding and managing your goats and don't use them for any other purpose.

### **Question**

*Can I spread CAE by using a vaccination gun?*

### **Answer**

Yes, it is possible to spread CAE by using a vaccination gun, unless a sterile needle is used for each goat. It is better to use disposable sterile needle and syringe for vaccinating goats. Anything that is used that enters the goat's body can spread CAE.

### **Question**

*Why did my goat that tested positive not ever develop full blown CAE? How long does it take before a goat will show symptoms of CAE?*

### **Answer**

It can take up to 8 years for a goat to develop CAE clinical signs. Some goats may die of another cause before ever showing signs of CAE and some may never develop signs. However the most common time for clinical signs to develop is a couple of months after the first kidding. However clinical signs occur earlier and earlier as the viral load in the herd increases i.e. when a higher and higher % of goats test positive for CAE and hence have the virus and are excreting it.

This is why CAE is such an insidious disease as new goats can act as Trojan horses bringing in CAE to free herds and spreading it to other goats. A high number of goats can become carriers of the virus before the goat herd owner notices clinical signs. This was shown recent studies in Spain.<sup>vii</sup> Regular whole herd testing is critical.

### **Question**

*Why did my CAE negative goat suddenly develop CAE symptoms?*

### **Answer**

A single negative test is only the status of a goat at one point of time and the goat could be infected the very next day. This is why repeated negative tests are required for accreditation schemes.

However assuming the test was recent this could have been a false negative although this is unlikely if the rules for testing goats for accreditation are followed. The CAE virus attaches to the white blood cells of goats so it is no wonder that it affects the goat's immune system and hence its ability to produce antibodies. Antibodies are what is tested for in the lab when blood samples are taken. This reduced immune system is also the reason why goats with CAE tend to get many more diseases and infections such as mastitis. When a goat has CAE it can give a false negative test, although this is rare. A study done in NSW found that 2 out of 7 goats with clinical signs of CAE (and which had virus detected) were negative on blood test.<sup>viii</sup> However this was done in the late 1980s with the old Gel test and was thought to be due to test problems. This is the reason why accreditation schemes' rules require a veterinarian to also certify that none of the goats have clinical signs of CAE.

Also when a goat is heavily pregnant it is under the influence of a lot of hormones which are designed to not allow the growing foetus (which are actually a foreign body with different genes) to be rejected by the doe. These hormones can mean that a false negative test can occur. Alternatively at this time there can be extra stickiness of the blood antibodies and false positives. In accreditation schemes rules, blood samples must not be taken within 1 month either side of kidding.

This is another reason why you should never buy a goat solely on the basis of a single negative test. An accredited herd whose goats have been tested at the right time and also examined by a vet for clinical signs of CAE is the only safe source of dairy goats.

### **Question**

*Why do we need to worry about CAE? It is not of economically important as the goats just get big knees and you can just shoot them when they get too bad.*

### **Answer**

Some earlier studies found that there was no difference between milk production records of first lactation does (which is not surprising as CAE clinical signs generally do not appear so early), but even these found differences in milk composition.<sup>ix</sup> Later studies have shown that CAE is economically important for dairy goats with reduced milk quality, additional mastitis and reduced milk production.<sup>x</sup> But there are other considerations that need to be considered.

Australian consumers are very concerned about animal welfare as demonstrated by the drop in sales of eggs from caged chickens and the move away from pork from tethered sows. Similar Australian voters are very concerned about animal welfare as demonstrated with the backlash against inhumane slaughter of exported sheep and cattle or the bleeding of greyhounds. Having goats that are crippled with CAE, a disease with no treatment, is an animal welfare issue that will eventually affect the reputation of goat keepers. If consumers felt that buying goat products perpetuated cruelty then they would no longer buy them or would demand RSPCA approved or similar labelling.

Consumers of goat products are also concerned about their health and only want healthy food or food that will actually improve their health. Having a virus in the milk and meat, which is of the same family as the AIDS virus and which reduces the goats' immune system and causes arthritis & nervous disease is not a good selling point. The Australian dairy cattle industry recognised this and recently eliminated their similar virus by eradicating Enzootic Bovine Leucosis. European dairy goat

factories have recognized this and are ensuring their suppliers are gaining or are free from CAE. For Australian goat producers to maintain their competitiveness in high value markets, freedom from CAE may become important. How would Australian goat producers respond if European goat products were advertised as “CAE-free”?

Australia is also a well-recognized provider of genetics and livestock globally and it promotes its disease free status. Most under-developed countries native goats are CAE free and CAE is introduced into these countries by imported goats, most recently in Malaysia.<sup>xi</sup> I have an article on this subject available for free download from my website – <http://www.goatveto.com.au> called “CAE, a Disease that Developed Countries give to the Goats in Under-developed Countries”

Other countries have been eradicating CAE and if Australia wants to remain competitive, it must do likewise. Australia has a good industry in selling goat semen but a recent review recommended that semen only be collected from goats kept in special CAE free herds that are tested regularly.<sup>xii</sup>

### **Question**

*If kid is of the doe's blood and CAE is in its blood, doesn't the kid have CAE already?*

### **Answer**

No, there is a ruminant placenta (which is different from a human placenta), that stops doe's blood with the virus getting into the kids. Only a very small % of kids born to CAE positive does get CAE if they are removed at birth; maybe they inhaled or ingested some of the doe's blood or fluids during birth. This is why kids must be tested at 6 months. Washing kids immediately after birth helps, as does keeping kids in separate cardboard boxes (so they don't suck each other's ears etc).

### **Question**

*Once I take the kids away from my CAE positive doe should I milk her?*

### **Answer**

Unless the doe is badly effected by CAE you will probably have to milk her. Miking is a risk that can be managed by always milking CAE positives does last (we know milking machines can spread it and also while milking some milk may splash around) and general hygiene with the milk area (as milk is full of virus). CAE positive does should always be separated from other goats anyway but if dripping milk from their teats, they drip virus. Make sure none of their milk gets on your clothes or shoes or ideally change after looking after handling CAE positive does.

### **Question**

*Can I drink the milk from my CAE positive does?*

### **Answer**

I have drunk lots of CAE positive milk in my life as have many others, especially before we knew how to what CAE and control it. Lots of goat keepers who drank CAE milk were or are, regular blood donors, myself included, and were always negative to AIDS tests even though CAE and AIDS are very similar viruses. However do we know CAE milk can infect lambs and Rocky Mountain goats and give them similar disease signs similar to CAE. Another risk to be managed is that CAE affects the doe's immune system so on average, milk from CAE positive does be of a lower quality i.e. higher cell counts. CAE positive goats are more susceptible to other diseases, so pasteurization would be advisable. So it is your choice once you know the risks.

The possibility that children who drink raw CAE milk drinkers showing up later as positive on an AIDS test was mentioned as a possibility in two scientific journal articles.<sup>xiii</sup> Specifically "so there is a

possibility that CAEV replicates in humans and may participate in immunological cross-phenomena, but this should be further studied.<sup>xiv</sup> However I know lots of goat keepers who drank CAE milk but were regular blood donors, myself included and were always negative to AIDS tests.

### **Question**

*Can my sheep get CAE?*

### **Answer**

Yes. Now researchers are calling CAE the Small Ruminant Lentivirus as CAE is so similar to the Maedi Visna virus in sheep and both diseases can jump species, experts now group both viruses together. Maedi Visna has never been diagnosed in Australian sheep. However sheep can get CAE, if lambs are fed CAE positive goats' milk. Rocky Mountain goats have also developed clinical signs similar to CAE when fed CAE positive milk.<sup>xv</sup> Sheep kept with CAE positive dairy goats have tested positive for CAE.<sup>xvi</sup> It is theatrically possible for sheep to get Maedi Visna from goats with CAE.<sup>xvii</sup> So it is best to keep your sheep and goats separated by double or solid fences unless you know your goats are CAE free.

### **Question**

*My 3 year old dairy doe is CAE positive (she's never been bred and she never will be). She's had no symptoms until recently. She's developed knee swelling and pain (to where she prefers to stand on her knees but she will walk). I'd like to see if I can get this sweet girl much less symptomatic again before I make the decision that it's time to put her down. I need to know I did all I can for her because she deserves it.*

### **Answer**

Goats with chronic arthritis and pain can be treated with Non-Steroidal Anti-Inflammatory Drugs or NSAIDs. A veterinarian must work with you to work out firstly the dose to reduce pain and allow mobility and then adjust this dose to the lowest possible to maintain these effects. The minimum dose is used to reduce any potential side-effects e.g. on the gastro-intestinal tract. As your goat will not be producing milk nor meat, this makes the veterinarian's job a lot easier in choosing options.

Besides providing pain relief some of these drugs can also reduce inflammation and prevents bone and cartilage destruction. Meloxicam is one such NSAID but goats metabolize this drug faster than other livestock and pets. Meloxicam is available as tablets, a liquid that can be added to feed, a medicine that can be absorbed by the mouth mucosa and as an injection.

The other things you can do for your doe is to check her feet regularly as if she is walking on her knees her hooves will not be worn down. Her feet will need trimming frequently. Also ensure she has lots of soft bedding in her shed and make sure she can access plenty of hay as she won't be grazing pasture as much as she normally would.

### **Question**

*I bought 45 does who are majorly malnourished, (I thought some would die on the way home). They were bought 4 years ago from a clean herd and bred with bucks from another clean herd However they only weigh approximately 25-30kg i.e. super poor. With 4year olds under VERY stressed conditions (lice worms, no decent feed etc), could they have CAE with no signs? There are no swollen knees in these goats.*

### **Answer**

Yes, they can still have CAE even though very stressed and there are no signs. Stress is a trigger for CAE but signs can take months to appear after the stress e.g. first kidding is often a trigger stress but

CAE signs often don't occur till mid lactation. Also some goats can be carriers and never show signs, especially if they viral load (number of carriers) is very low. Also it is not just signs of swollen knees that you should be looking for but also wasting, hard udder, swellings on top of head or over shoulders and swellings in other joints.

As these goats are in poor condition with lice and worms, it can affect their test. I would delay doing the test until 1 month after they have kidded and they have improved in condition. I would vaccinate them now as then wait 4 weeks before testing. Vaccination is needed as you will be increasing their feed from what they are used to and you are unsure of the vaccination status with such poorly cared for goats. Attached are the rules for NSW CAE scheme <http://www.dpi.nsw.gov.au/agriculture/livestock/goats/health/cae-accreditation-scheme> which requires all tested animals to be healthy, not within 1 month of kidding and at least 1 month after vaccination.

### **Question**

*If I don't add any new goats except for any born here on the farm, I don't show goats nor do they have any outside contacts with other goats and the herd has been tested negative two years in a row, can I now assume they are all negative? Could I safely stop testing since there would be no other exposure?*

### **Answer**

Do you have no visitors who wear their farm clothes? No goat milk brought in? No borrowed tattoo or other equipment? Was the lab you used NATA accredited? Did you followed the rules about when to take blood samples i.e. no testing close to kidding or within 1 month of vaccination? I would test 1 more time annually then stretch out to every 2 years then every 3 years while increasing your biosecurity at the same time. It is a balance- the longer you stretch out the testing interval to save money, then the wider CAE spreads in your herd before you find it, if you did get it by some breakdown in your biosecurity. The other consideration is whether you want to sell goats and if the buyers want the peace of mind that comes with annual testing.

### **Question**

*I got a CAE positive goat last year (bought from an untested herd as a kid)... When she was 8 months I tested and she came back positive... she was culled from my dairy herd... should I retest now? Or a year from when I got rid of her..?*

### **Answer**

As a rule of thumb you test every 6 months culling or isolating any positives until 2 clear tests then test every 12 months. Fortunately spread by kids is less likely. Spread by adult does is much higher probably due to milk, oestrus discharge and blood from kidding. Testing is needed to remove carriers before spread.

### **Question**

*If I have a clean tested herd, and I breed my does to someone else's buck, that has recently tested negative for CAE, but a year or two from now that same buck tests positive, and my only breeding to my does was from when he tested negative, do I now have to be concerned about my does getting CAE from him when he tested negative or only if I were to use him after he tested positive?*

### **Answer**

Basically in the situation you described you should not have any concerns. While it takes a few weeks from infection to develop antibodies and hence test positive, a year means you don't have to worry. It is a good example of why if you own a buck you should only ever allow does from tested negative herds to come for service. I have a well referenced paper on my website that discusses the risks of mating & CAE spread, so download and read this. See <http://www.goatveto.com.au/cae.html>

### Question

*I am planning to test my goats for CAE. Most herds here in my European country are not tested and the virus is probably quite common here. I was wondering about what to do if we find positive goats in our herd. The recommendation here is, if 10% or more test positive, cull the whole herd. Is that a standard practice? I haven't had any signs of the disease, but they are not tested, so I don't know if we have the virus.*

### Answer

It depends on your situation, why you are keeping goats and how important are the goats you currently have. Certainly culling is the easy way to get rid of CAE from your herd but only if you can replace them with goats that come from herds which are tested negative for CAE annually and are closed and have good biosecurity. Any positive goats you decide to keep must be kept separate from the negative goats by a solid wall or double fence and always fed and milked last. If you decide to breed from them then the kids must be snatch birthed and raised on colostrum from goats in accreditation schemes for both CAE and Johne's disease. This colostrum can be frozen. You are doing the right thing in testing as the sooner you find out if you have CAE, the sooner you can eradicate it. Spread is very slow when goats are kids, so testing sooner rather than later is best (before they kid and hence discharge blood and milk). Hope your test comes back negative and you then can use the information on my Let's Eradicate CAE Facebook page and my website to improve your biosecurity and keep CAE out of your goat herd forever. If you do have positives, then you have some serious thinking to do i.e. can you separate positives forever by double/solid fences, can you snatch birth (remember it is possible to induce does so they kid on weekends), can you retest every 6 months to identify goats that have only recently been infected from these positives ?

### Question

*Does freezing kill the CAE virus in milk?*

### Answer

The answer is probably no. No research has been done to my knowledge on this, probably because most researchers would say it wouldn't kill the virus. I recommend that people freeze a sample of milk before they treat goats for mastitis so the sample can be sent to a lab if the treatment doesn't work as the bacteria would be safe in the frozen sample and would grow when sent to a laboratory for a culture and antibiotic sensitivity test. We also know many diseases are passed in frozen semen kept in liquid nitrogen. As the CAE virus is in the goats cells it would be even better protected from freezing than other disease organisms.

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