Remember to worm ALL of the farm dogs, not just the working dogs.

The Problem with "Spots" (and NO this is not about Dalmatians)

Dr. Kathy Parker

C. ovis (also referred to as sheep measles) is the intermediate stage of the *Taenia ovis* tapeworm in the dog. *Taenia* can infect any member of the canine family, wild or domestic, including coyote, wolf, bear, or fox. It is critical for you to understand that **this is NOT a sheep tapeworm; it is a dog tapeworm that must infect sheep to complete its life cycle**. For this discussion we will focus on controlling the dog risk since it is the most common final host where the adult tapeworm lives—all 6.5 feet of it! To continue the life cycle, the affected sheep **must** be eaten by one of the definitive hosts (dog, bear, coyote, fox, and wolf). This is a **critical control point** in managing *C. ovis*, and not allowing scavenging of your dead sheep (of any age) will break the *C. ovis* life cycle. Making a predator proof enclosure for the composting of dead animals would also help break the *C. ovis* life cycle.

While living in the dog's intestine attached only by its mouth parts, the adult worm may shed up to 250,000 eggs per day in the dog's stool. The eggs are contained in a "segment" of the tapeworm and may stick to the dog's coat to be washed off in the water trough or dropped off when the dog rolls in the straw pack. The eggs contaminate anything that the dog can poop in or on: the pasture, feed bunk, chop house, silage pit, round bale feeder, or that puddle in the corral that the sheep insist on drinking out of. The *Taenia* eggs can live up to six months in the environment, depending on the environmental conditions.

After the sheep consumes the eggs while feeding on *Taenia* contaminated feed or drinking water contaminated with *Taenia* segments, the eggs then hatch, **in** the sheep, not on the **ground**. It takes approximately 4 to 5 weeks for the eggs to develop into infective cysts. Assuming that your lambs may start to eat forage by about 30 days of age, they could have *C. ovis* infective cysts by 60 days of age! For dogs to become re-infected they **must** eat an affected sheep carcass. Makes you think twice about feeding the guardian dogs those dead lambs doesn't it?

By the time that the lamb is market weight (by 116 to 176 days of age) most of the cysts die and they become hard and gritty; this white spot is what is known as sheep measles (or *C. ovis*) and is detected at the time of meat inspection when the carcass may be condemned because of it. This parasite is not a human health hazard, even if someone were to eat the raw meat containing the tapeworm cysts because **the parasite does not ever infect humans**, but who would want to eat a piece of meat riddled with tapeworm cysts? It could be worse; in cattle, Cystercicosis is a CFIA Reportable disease because beef is the intermediate host for the human tapeworm and the presence of cysts results in condemnation. Commonly cases of *C. bovis* result when humans use the feed yard or shed as an outhouse. The really nasty one is the pig tapeworm. When humans are exposed to the eggs of the pig tapeworm the person potentially can become infected with the worm passing eggs in their stool or they may

get the larval form where the cysts are localized in their brain. Pigs raised in confinement are low risk becoming infected with *Taenia* but this can be a serious problem when pigs are raised outdoors on dirt.

A tool for you to do a self–assessment of your *C. ovis* risk and how to determine a deworming frequency for your farm dogs.

as suggested by Dr. Kathy Parker

When deciding what worming protocol to follow for your dogs as part of a *C. ovis* control program please consider the following:

- **All protocols are recommendations and none are considered industry standards.** While basic principles will apply to each parasite control program, the risk level will vary between production units. The goal is to control the environmental load of *Taenia* eggs in the lamb's environment. Remember that once the eggs are in the environment, they are able to survive for up to six months.
- It is critical to recognize that while regular deworming of dogs with a cestocidal drug is important to the overall well-being of your guardian and working dogs and critical to controlling general zoonotic risk posed by house pets, the recommendations regarding *C. ovis* deworming protocols are about protecting the sheep and the value of your production. It is one thing to produce lamb for slaughter where the primary producer is assuming the condemnation risk at slaughter. You made the decision;

A cestocidal drug - One that is effective at eliminating tapeworms in the dog but has no effect on the eggs already shed into the environment.

Please answer the questions below:	High Count 10 points for each "Yes" answer	Intermediate Count 7 points for each "Yes" answer	Low Count 3 points for each "Yes" answer	None. Count 0 points for each " No" answer
Have you had a lamb condemned, or been notified that **ONE** of your lambs was condemned, because of C. ovis?				
Do you use guardian dogs for predator control?				
Do you use stock dogs for handling livestock?				
Do your farm dogs (pets) have access to the areas where the sheep are? If they can get into the pens or pastures then they are a risk.				
Do any of your dogs have access to feed and water sources (hay, silage, etc.)?				
Do any of your dogs have access to corrals, intentionally or not?				
Are your lambs finished in a dry lot that is **NOT** housed confinement?				
Have you recently acquired new dogs to your farm with unconfirmed worming history?				
Are your lambs ever on pasture, at all?				
Will you have lambs on your farm in the next 6 months?				
Suggested frequency of cestocidal administration to **ALL** dogs on the farm (even the little fluffy creature that lives in the house).	Monthly, without fail for any score greater than 90	Every 2 months for any score greater than 56 but less than 90	Every 3 months (quarterly) for any score greater than 9 but less than 56	None required. If you do not have any dogs, of any description, there is nobody to deworm.

you assume the risk. It is quite another situation when the lambs are sold to another party who then assumes the condemnation risk attributed to *C. ovis* and has no means to control that risk other than purchasing lambs from producers with aggressive *C. ovis* prevention protocols and deliberately avoiding those who have a *C. ovis* problem and refuse to address it.

Use the questionnaire on the previous to classify what your *C. ovis* risk **may be** and determine what a reasonable de-worming protocol may be for your farm. Circle what your answer is to the question presented in the left hand column, whichever column has the majority of your answers in it may suggest what your *C. ovis* risk is. According to your "risk" the suggested treatment frequency is in the bottom row.

Remember that these questions apply to **all** dogs, even those who wish they were a farm dog but live in the house and those who come to visit.

How do you know when your dogs are infected with *Taenia*?

For a lot of internal parasites it is correct to suggest that a fecal floatation (done by your vet) can be an indication of parasite load. Unfortunately, most *Taenia* eggs exit the dog encased in a tapeworm segment (known as a proglottid) and consequently free eggs are rarely found in a fecal float of the dog's stool. If the eggs are released from their segment into the feces early then it would be possible to detect them on a fecal floatation. So the good news is, if the *Taenia* eggs are identified on the fecal float it means your dog is infected, but just because they are not identified in the fecal float **does not mean** that your dog is not carrying the *Taenia* worm (this is called a false negative result).

What products do I use to worm my dogs and how much will it cost?

Because all products that control tapeworms are prescription drugs you will need to get your products either from your vet or a pharmacist. The cost will vary by retail outlet and region and some products are easier to administer than others. There are **NO topical wormers** currently available to control *Taenia* in dogs; you **must** use oral medications. Below is a chart outlining what your options are for controlling *Taenia*.

We use Biltricide for our guardian dogs because I have a terrible time getting pills into them and I can fool them into eating a piece of meat (not lamb) with a quarter of a pill in it, and because by far it is the cheapest way to worm guardian dogs against *Taenia*.

Product Name	Active Ingredient	Product Form	Dosage for a 100 pound dog	Cost, on a scale of 7, with 7 being the most costly, and 1 being the least cost per treatment per dog
Drontal Plus	Praziquantal Pyrantal pamoate Febantal	68 mg tablet	3.5 tablets all at once	6
Droncit	Praziquantal	50 mg tablet	3 tablets all at once	4
Panacur	Fenbenazole	222 mg per gram of powder	3 x 4.5 gram packages each day for 3 days in a row.	7
Panacur granules 22.2%	Fenbendazole	222 mg per gram of powder	10 grams each day for 3 days in a row	3
Lopatol	Nitroscanate	500 mg tablet	4.5 tablets all at once	5
Biltricide	Praziquantal	600 mg tablet	0.25 of a tablet once	**1 (by a huge margin)**
Cestex	Epsiprantel	25 mg tablet	4.5 tablets all at once	2

All of this is fine and good but remember that your companion animals may be "home" to other parasites that can and will infect humans if the circumstances are right, so periodically throughout the year consider what we refer to at the clinic as a "broad spectrum" deworming to eliminate all of the other parasites that your dogs will carry besides *Taenia*, just to be safe. **Why risk losing the value of a market lamb for the sake of regular treatments for your dogs, as little as $8 a dose?**