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A 4 year-old Saanen **goat** is presented that is **off feed and feverish**, with a **swollen** and draining **abscess** associated with her **left prescapular lymph node**.

Caseous lymphadenitis (CLE) is suspected. What is the causative organism?

<i>Pasteurella trehalosi</i>	HIDE
<i>Corynebacterium pseudotuberculosis</i>	HIDE
<i>Mannheimia haemolytica</i>	HIDE
<i>Pseudomonas aeruginosa</i>	HIDE
<i>Staphylococcus aureus</i>	HIDE

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PREV

1

A 4 year  
draining  
Caseous

Pasteure  
Coryneb  
Mannhe

**Correct: Corynebacterium pseudotuberculosis**

Remember your "C's" -- Caseous lymphadenitis (CL) is caused by Corynebacterium pseudotuberculosis. Potentially ZONOTIC, so wear gloves if you clean/debride an open abscess in a sheep or goat. REPORTABLE in some states (ie: Georgia, Michigan).

Pretty common, and like contagious ecthyma, (Orf), CL is one of those diseases you watch out for when doing health exams for animals going to a fair.

Refs: Smith and Sherman, Goat Medicine, pp. 46-9 and the Merck Veterinary Manual online edition.

<i>Pseudomonas aeruginosa</i>	HIDE
<i>Staphylococcus aureus</i>	HIDE

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Which reportable disease affects horses, pigs, and cattle?

Foot and mouth disease (FMD)	HIDE
Rinderpest	HIDE
Pseudorabies	HIDE
Bluetongue	HIDE
Vesicular stomatitis	HIDE

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Correct

Vesicular stomatitis (VS) can occur in horses, pigs, cows. VS DOES occur in the U.S. and it is one of the big rule outs among vesicular diseases (remember the big 8: BVD, IBR, BPS, MCF, Bluetongue, VS, FMD, Rinderpest).

Bluetongue is almost exclusively a sheep disease (but cattle and deer can get it).

Rinderpest mainly affects cattle. In 2011, the United Nations Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (OIE) officially declared that rinderpest was eradicated globally. But because it is a classic, severe, reportable, stomatitis-type disease, it's unlikely that vets will be allowed to forget rinderpest on DDXs for years.

Pseudorabies is basically a pig pathogen. Can affect cows, but horses (and humans) are resistant.



Which re

Foot and

Rinderp

Pseudor

Blueton

Vesicula

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**zukunft**



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PREV

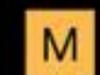
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Which two methods are the best choices for disposal of the carcass of a cow with bovine spongiform encephalopathy (BSE), or a cow suspected to have BSE?

Incineration, burial	HIDE
Burial, composting	HIDE
Burial, rendering	HIDE
Rendering, dry extrusion	HIDE
Composting, fermentation	HIDE

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1

Which type of disposal is most appropriate for a carcass suspected to carry bovine spongiform encephalopathy (BSE)?

Incineration

Burial, covered

Burial, open

Rendering

Correct:

The best way to dispose of a carcass suspected to carry bovine spongiform encephalopathy (BSE) is incineration, but burial is also acceptable.

Any answer involving rendering is wrong, because the causative agents of BSE (prions) are still infective, even in rendered material, which may be used in animal feeds.

Alkaline hydrolysis, a relatively new technology, is a good option to dispose of carcasses.

Some drawbacks included limited facilities in North America, higher cost (compared to say, digging a big hole...) and regulatory hurdles concerning effluent.

Refs: The Merck Veterinary Manual online edition.

Composting, fermentation HIDE

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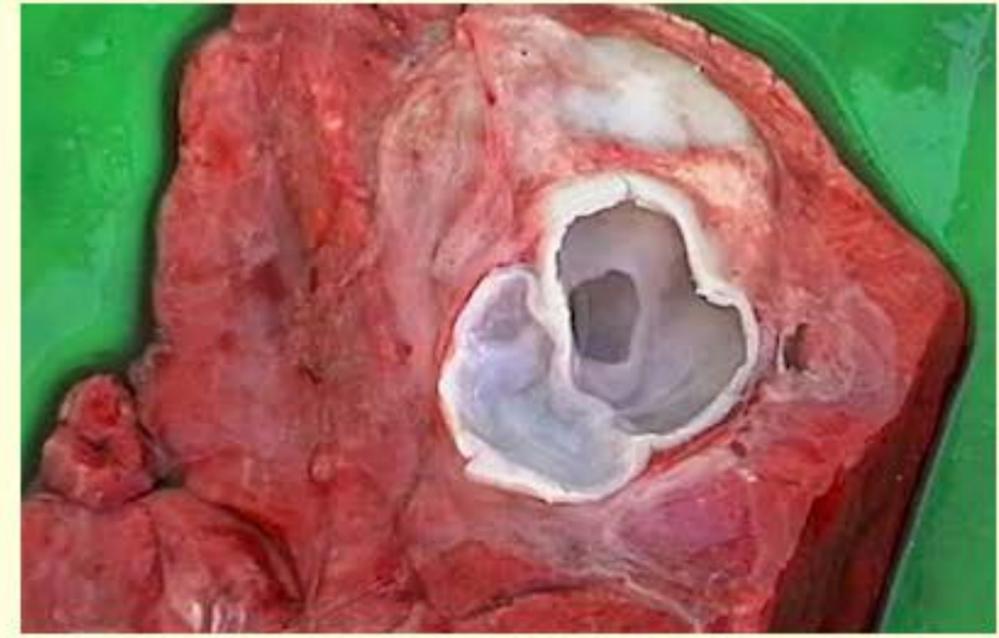
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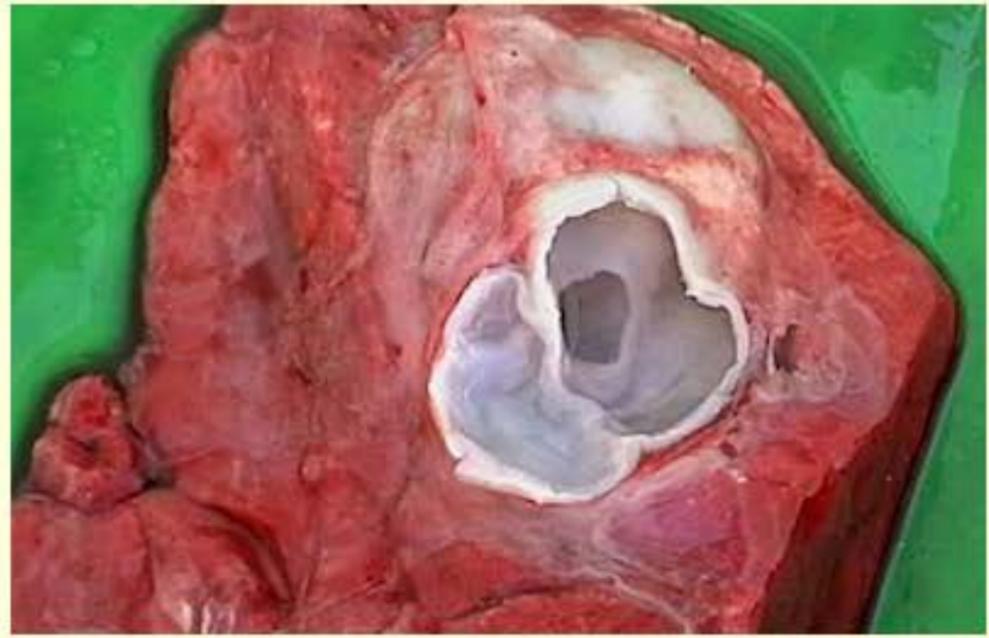
A **dead sheep** from a large range flock in the Western US is presented for necropsy. The animal had a **cough, occasional reluctance to move**, and **hemoptysis** just before being found dead.

**Necropsy** of the **lungs** reveals the following lesions (see below).

What is the most likely cause of this finding?



What is the most likely cause of this finding?



<i>Spirocerca lupi</i>	HIDE
<i>Cryptococcus neoformans</i>	HIDE
<i>Trichostrongylus colubriformis</i>	HIDE
<i>Echinococcus granulosus</i>	HIDE
<i>Fasciola hepatica</i>	HIDE

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animal had a cough, occasional reluctance to move, and nemoptysis just before being found dead.

Necropsy  
What is t

This is a hydatid cyst of *Echinococcus granulosus*, a cestode whose definitive hosts in North America are dogs, wolves, coyotes, foxes, and several other wild carnivores.



It is seen especially in range sheep in contact with wild or domestic dogs. Intermediate hosts include sheep, goats, cattle, pigs, horses, deer, PEOPLE, and some other animals.

The cysts are found in liver and lungs (occasionally in other organs and tissues) and can limit commercial use of affected carcasses or offal.

Click here to see the [CDC's information page on echinococcosis](#). Adult cestodes in the intestine of dogs do not usually cause clinical signs.

Clinical signs vary based on type of infection, age, underlying conditions, etc. and range from unthriftiness and malaise to intussusception or blockage of the intestine, emaciation, and seizures.

<i>Spirocera lupi</i>	HIDE
<i>Cryptococcus neoformans</i>	HIDE
<i>Trichostrongylus colubriformis</i>	HIDE
<i>Echinococcus granulosus</i>	HIDE
<i>Fasciola hepatica</i>	HIDE

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What is the most effective treatment for feline aggression?

Selective serotonin reuptake inhibitors	HIDE
Buspirone	HIDE
Reassurance	HIDE
Negative reinforcement (reprimand, noise, water squirt)	HIDE
Benzodiazepines	HIDE

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What is t

Selectiv

Buspiro

Reassur

Negative

Benzodiazepines

Desensitization and counterconditioning might first begin with odors by grooming each cat with a brush or towel used on the other, and by feeding each cat separately in a common area on opposite sides of a partition (glass, screen, or solid door) and then in a common area at sufficient distance that the cats can be calm and take food or play with toys. Training one or both cats to wear a leash and harness can help to ensure safety and distance during reintroductions, while a bell on the aggressor can help the victim be aware of its whereabouts

Correct:

Selective serotonin reuptake inhibitors (SSRIs) or tricyclic antidepressants combined with desensitization and counter conditioning exercises are the most effective way to manage feline aggression.

rebuke

Negative reinforcement such as reprimands and punishment are ineffective and counterproductive. Offering reassurance or reward for an aggressive act may enhance aggressive learned behavior.

Anxiolytics such as buspirone or benzodiazepines may decrease patient inhibition thus increasing aggression. Diazepam also carries the low risk of fatal hepatotoxicity.

Refs: Landsberg, Handbook of Behavior Problems of the Dog and Cat, 2nd ed, pp

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You serologically test 100 Siberian box turtles for galloping halitosis. 27 turtles test seropositive and 73 test seronegative.

However, molecular testing reveals 3/27 of the seropositive turtles are disease free and 10/73 of the seronegative turtles are diseased.

The entire fur-bearing turtle industry depends on your answer: What is the Predictive Value Negative (PVN) of your serologic test?

70%	HIDE
95%	HIDE
73%	HIDE
89%	HIDE
86%	HIDE

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1

Predictive Value Negative (PVN) is 86%.  
Remember: you are **comparing TWO TESTS** here.

You sero  
27 turtle  
However  
10/73 of  
The entire  
Negative

Here is how you do it: First, draw a 2x2 table, and label the boxes a,b,c,d.  $PVN = d/(c+d)$ . Click here to see a [Basic 2X2 table](#). Now, add in the TOTAL number of animals (100), the total positive by YOUR test (27) and the total negative by YOUR test (73), like this diagram: [2x2 with totals](#).

**Now the (slightly) tricky part.** Add in the numbers that YOUR test got WRONG according to the gold standard test. (3 false pos in box b, 10 false neg in box c): Click here to see [2x2 with b and c cells](#).

Last, subtract to fill in your "d" box ( $73-10=63$ ) and do the math to calculate  $PVN = d/(c+d) = 63/73 = 0.86$  or 86% : Click here to see the final [2x2 with all cells filled](#) and PVN calculated.

70%	
95%	
73%	
89%	HIDE
86%	HIDE

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**zukunft**



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Which type of cat is predisposed to excessive play aggression?

No human contact before 3 months of age	HIDE
Nursing queens	HIDE
Weaned early, hand-raised	HIDE
Siamese breed	HIDE
Intact males	HIDE

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Overview



Mark this Question



Lab Values



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Report a Problem



- 1
- Which ty
- No hum
- Nursing
- Weaned**
- Siamese
- Intact m

Correct

Kittens who are weaned early, or hand-raised, or bottle fed exclusively by people may never learn to modulate their play-aggression responses to other cats. They are not adequately socialized and may not know when to stop being aggressive.

Rx usually involves behavioral modification, socialization. For serious aggression issues, regardless of type, if you are asked what meds to use, think of tri-cyclic anti-depressants (TCAs- ie: amitriptyline, clomipramine) or selective serotonin re-uptake inhibitors (SSRIs- ie: fluoxetine, paroxetine).

Follow this link to see a Merck table of Behavioral modification meds. Don't memorize: just note the weird names. If you see these, then the question may be about behavior-mod.

The two big behavioral issues in cats are feline aggression and inappropriate elimination.

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**zukunftreview**

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Which method is the **WORST** for disposal of the carcass of an animal with suspected bovine spongiform encephalopathy (**BSE**)?

Incineration	HIDE
Rendering	HIDE
Burial	HIDE
Composting	HIDE
Dry extrusion	HIDE

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spongifo

- Compos
- Burial
- Renderi
- Incinera

Dry extrusion HIDE

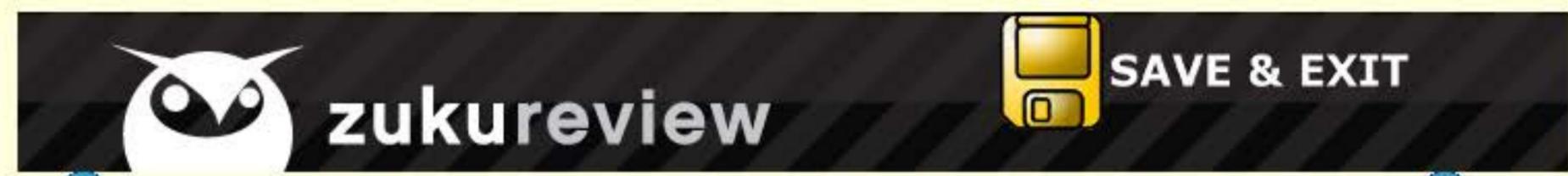
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Correct:

Rendering is the WORST choice for a way to dispose of a carcass suspected to carry Bovine spongiform encephalopathy (BSE), because the causative agents of BSE (prions) are still infective, even in rendered material, which may be used in animal feeds.

Refs: The Merck Veterinary Manual online edition.



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A case of plague would be expected in which part of the United States?

South	HIDE
West	HIDE
East	HIDE
North	HIDE
Southeast	HIDE

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1

A case o

- South
- West
- East
- North
- Southeast

Correct:

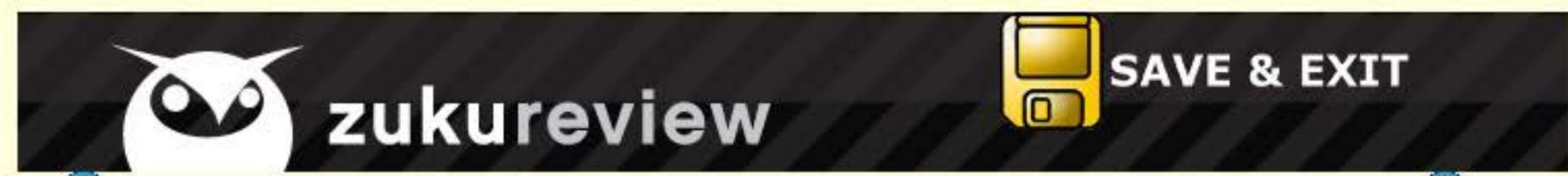
Go WEST young vet, if you want to encounter cases of plague, mostly in CATS. Think DRY places: New Mexico, Arizona, California, Texas, Nevada. (Also Oregon, Washington, Idaho, and believe it or not, Hawaii)

Refs: Blackwell's 5-Minute Vet Consult Canine Feline, 4th ed. p.1077 and the Merck Veterinary Manual online edition.

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In a household with six cats, two have started urinating outside the household litter box. Of the following choices, what is the best initial recommendation?

Add six litter boxes	HIDE
Cover the litter boxes	HIDE
Deodorize the litter	HIDE
Amitriptyline therapy	HIDE
Separate the cats	HIDE

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Correct

Add six litter boxes, one litter box per cat plus one (i.e. have seven litter boxes in this household).

Other methods to encourage appropriate urination would include identifying preferred sites for the litter boxes, using only uncovered litter boxes, scooping litter daily, changing litter weekly, and using unscented, clumping-type litter.

At hospital presentation, the first course of action would be to examine and run urinalyses on the affected animals to rule out urinary tract infection.

Refs: Landsberg, Handbook of Behavior Problems of the Dog and Cat 2nd ed, p. 164, Cote, Clinical Veterinary Advisor-Dogs and Cats, 3rd ed. pp. 541-3 and the Merck Veterinary Manual online edition

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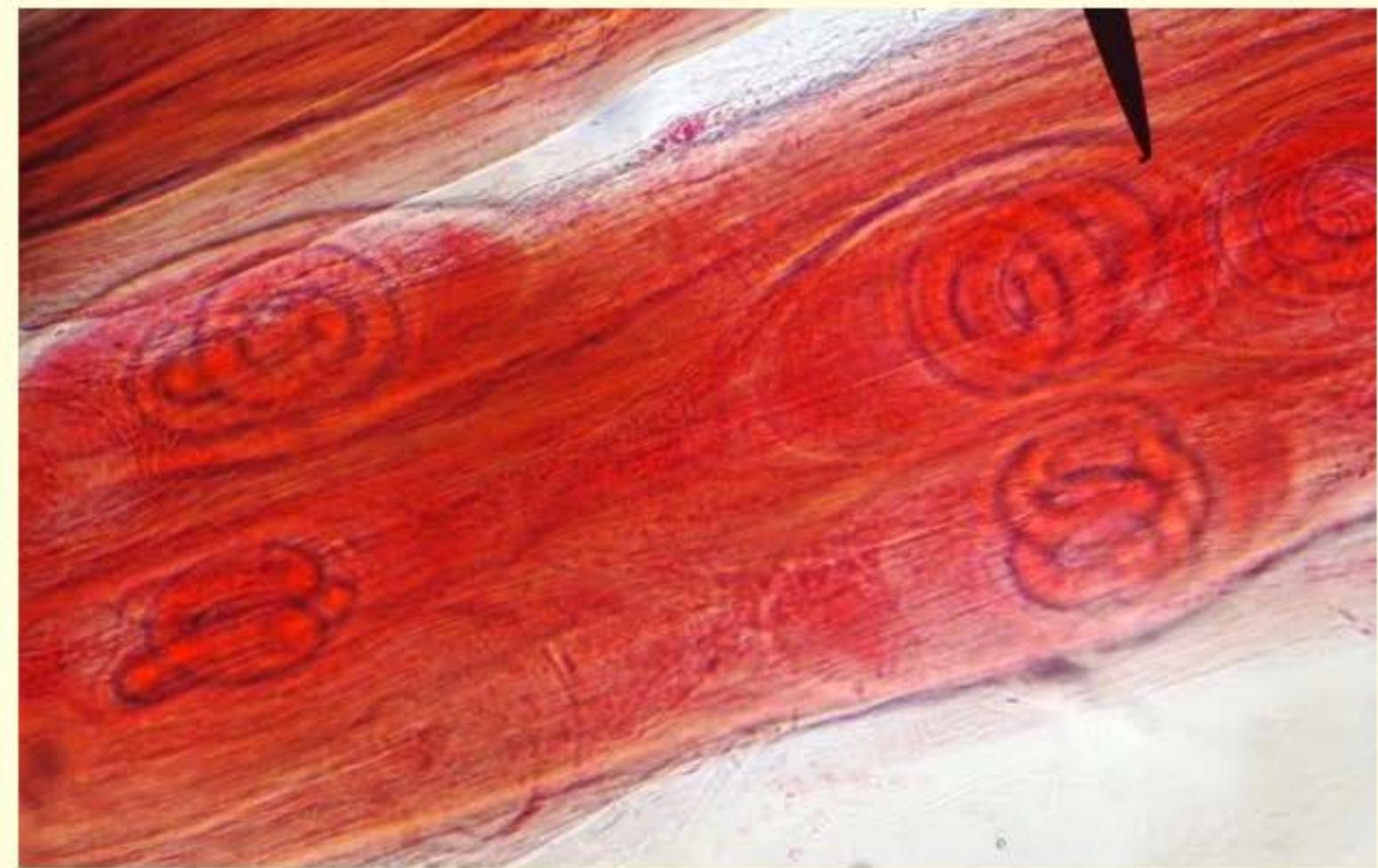
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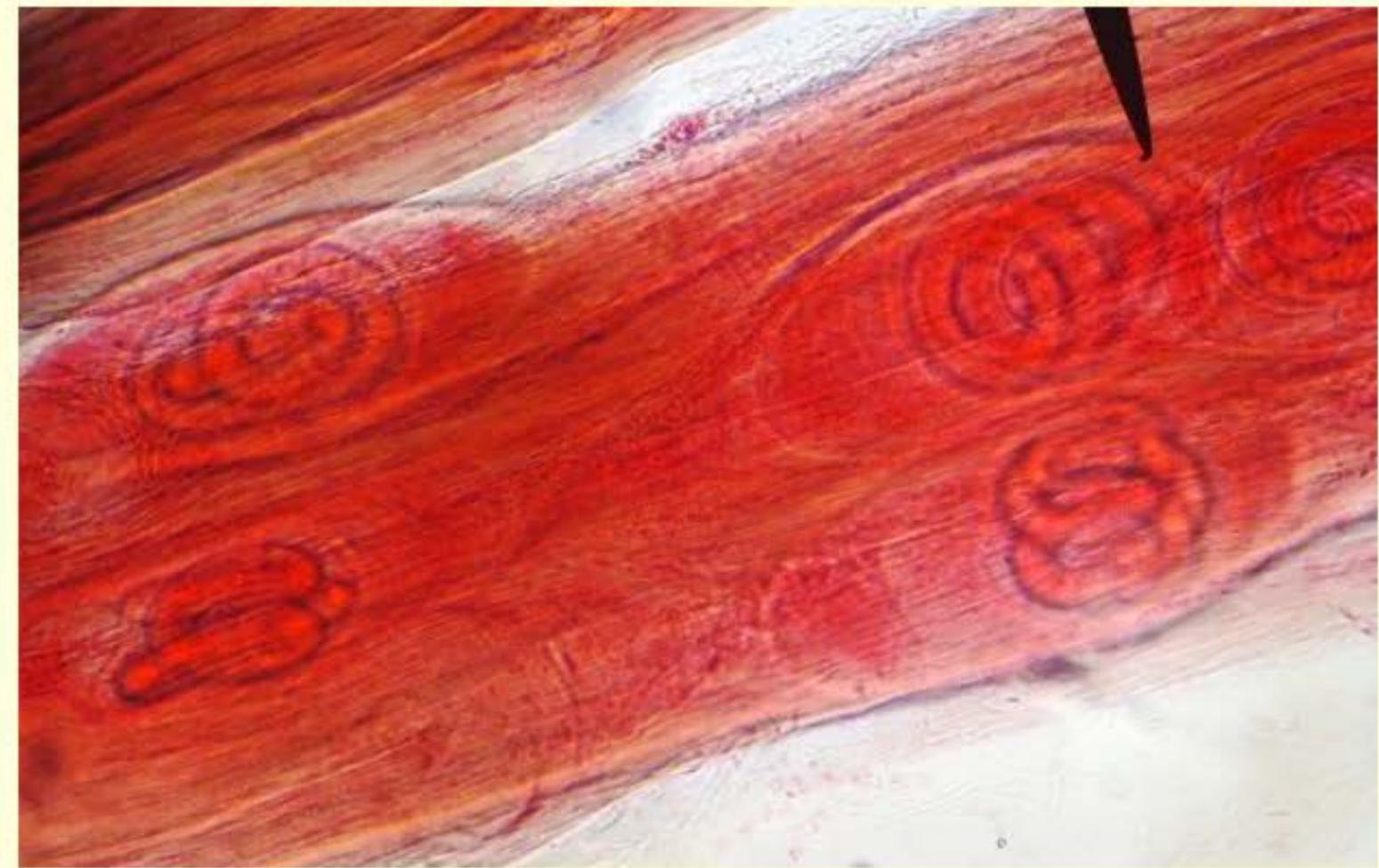
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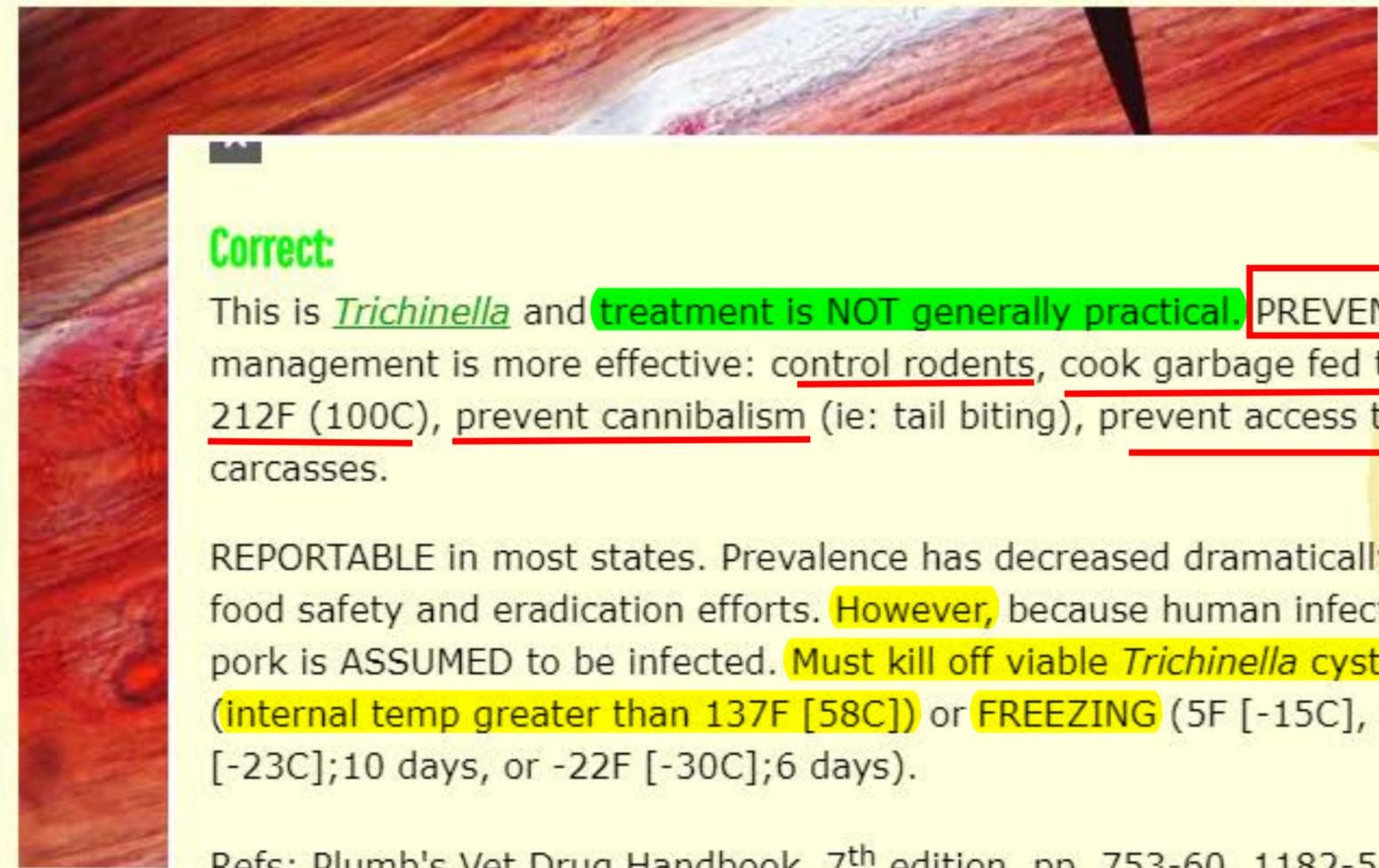
The following image is seen from a tongue muscle biopsy on a pig.

How would this disease be treated?





Pyrantel pamoate in feed from 6 weeks	HIDE
Ivermectin SQ, at weaning & 1 week pre-slaughter	HIDE
Albendazole PO, whole herd, repeat after 14 days	HIDE
Fenbendazole PO for sow, ~2 weeks before farrowing	HIDE
Treatment is not practical	HIDE



**Correct:**

This is *Trichinella* and **treatment is NOT generally practical.** PREVENTION with good management is more effective: control rodents, cook garbage fed to pigs 30 min at 212F (100C), prevent cannibalism (ie: tail biting), prevent access to wildlife carcasses.

REPORTABLE in most states. Prevalence has decreased dramatically in the US due to food safety and eradication efforts. However, because human infection is devastating, pork is ASSUMED to be infected. **Must kill off viable *Trichinella* cysts with COOKING (internal temp greater than 137F [58C]) or FREEZING (5F [-15C], 20 days; -9.4F [-23C];10 days, or -22F [-30C];6 days).**

Refs: Plumb's Vet Drug Handbook, 7<sup>th</sup> edition, pp. 753-60, 1182-5 and the Merck Veterinary Manual online edition. Image courtesy: Froggerl.com

Pyrantel pamoate in feed from 6 weeks	HIDE
Ivermectin SQ, at weaning & 1 week pre-slaughter	HIDE
Albendazole PO, whole herd, repeat after 14 days	HIDE
Fenbendazole PO for sow, ~2 weeks before farrowing	HIDE
Treatment is not practical	HIDE

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A flock of **sheep** in the Ivory Coast presents with fever, **lesions on the corner of the mouth**, emaciation, dyspnea, and diarrhea.

Which one of the following choices is the most likely diagnosis?



Image courtesy, Dr L Mahin.

Caprine arthritis and encephalitis	HIDE
Peste des Petits Ruminants	HIDE
African contagious gastroenteritis	HIDE
Rinderpest	HIDE
Maedi-Visna	HIDE

A flock of sheep in the Ivory Coast presents with fever, lesions on the corner of the mouth, emaciated

Which of



Image courtesy



**Correct:**

Peste de Petits Ruminants (PPR) is a viral disease that until 2010 was often mistaken for rinderpest.

Conjunctivitis and stomatitis are the most often seen lesions. PPR is a reportable disease.

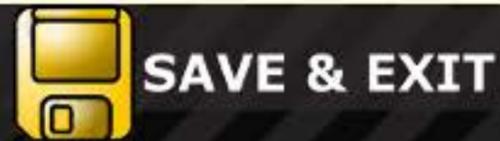
Rinderpest has been officially eradicated since 2011.

Refs: Merck Vet Manual 10<sup>th</sup> ed. online, Peste de Petits Ruminants, Image courtesy, Dr L Mahin.

Caprine arthritis and encephalitis	HIDE
<b>Peste des Petits Ruminants</b>	HIDE
African contagious gastroenteritis	HIDE
Rinderpest	HIDE
Maedi-Visna	HIDE



**zukureview**



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**Methicillin-resistant *Staph aureus*** (MRSA) is most commonly isolated from which one of the following choices?

Dogs	HIDE
Psittacines	HIDE
Humans	HIDE
Cats	HIDE
Cattle	HIDE

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- 11 ✓
- Methicilli following
- Dogs
- Psittacir
- Humans**
- Cats
- Cattle

**Correct: Humans**

Methicillin-resistant *Staph aureus* is found in the nasopharynx of 30% of humans and is usually not carried by dogs and cats. MRSA is thought to be transmitted to pets from contact with colonized or infected humans.

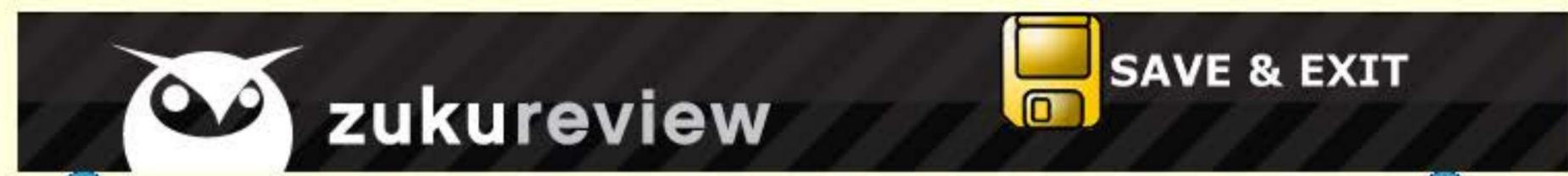
Once colonized or infected, pets may transmit the disease to other pets or to humans.

Most pets eliminate the organism within a few weeks unless recolonization occurs.

Refs: [MRSA info at AVMA Backgrounders](#) reference website. Interesting MRSA blogsite: Weese, [I have MRSA...should my pet be tested?](#), Ontario Veterinary College's Centre for Public Health and Zoonoses, 2011

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Which pair of neonatal calf diarrheas both have public health/zoonotic significance?

<i>Salmonella, Coccidiosis</i>	HIDE
<i>Cryptosporidiosis, Salmonella</i>	HIDE
<i>Clostridium perfringens, Coronavirus</i>	HIDE
<i>Colibacillosis, Rotavirus</i>	HIDE
<i>Colibacillosis, Ostertagiasis</i>	HIDE

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Correct:

**Cryptosporidiosis, Salmonella.**

Cryptosporidiosis is caused by a protozoa implicated in drinking water-associated outbreaks of diarrhea in humans; Salmonellae can infect humans from a number of different sources (turtles, chickens, eggs).

E. coli can cause human disease, but Ostertagia and bovine rotavirus do not. (There IS a human version of rotavirus, however)

C. perfringens can be found in soil and in the normal gut flora and is not contagious.

Eimeria spp. (the causative agent of coccidiosis) are host-specific. Therefore, cattle Eimeria spp. cannot infect humans, sheep, etc.

- Salmonella
- Cryptosporidiosis
- Clostridium
- Colibacillus
- Colibacillus, Ostertagia

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You serologically test 100 Siberian box turtles for galloping halitosis. 27 turtles test seropositive and 73 test seronegative.

However, molecular testing reveals 3/27 of the seropositive turtles are disease free and 10/73 of the seronegative turtles are diseased.

The entire fur-bearing turtle industry depends on your answer: What is the Predictive Value Positive (PVP) of your serologic test?

89%	HIDE
73%	HIDE
70%	HIDE
86%	HIDE
95%	HIDE



PREV

11

Correct:

It is 89%. Remember - you are **comparing TWO TESTS** here. PVP means "Of the turtles **my test** says are positive (27), how many are **truly** positive?" (27-3=24, this # goes in the "a" box)

You sero  
27 turtle

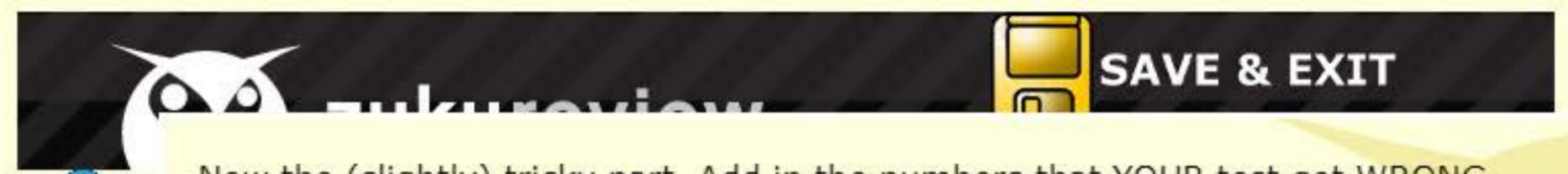
Here is how you do it: First, draw a 2x2 table, and label the boxes a,b,c,d. PVP =  $a/(a+b)$ . Click here to see a [Basic 2X2 table](#). Now, add in the TOTAL number of animals (100), the total positive by YOUR test (27) and the total negative by YOUR test (73), like this diagram: [2x2 with totals](#).

However  
10/73 of

The entire  
Positive

Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test. (3 false pos in box b, 10 false neg in box c): Click here to see [2x2 with b and c cells](#).

89%	
73%	HIDE
70%	HIDE
86%	HIDE
95%	HIDE



PREV

11

You sero  
27 turtle

However  
10/73 of

The entire  
Positive

Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test. (3 false pos in box b, 10 false neg in box c): Click here to see [2x2 with b and c cells](#).

Last, subtract to fill in your "d" box (73-10=63) and do the math to calculate PVP =  $a/(a+b) = 24/27 = 0.89$  or 89% : Click here to see the final [2x2 with all cells filled](#) and PVP calculated.

FYI: You can calculate sensitivity  $a/(a+c)$ , specificity  $d/(b+d)$ , Predictive Value POS (PVP)  $a/(a+b)$  and Predictive Value NEG (PVN)  $d/(c+d)$  with the same 2x2 table.

Refs: Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-9.

89%	
73%	HIDE
70%	HIDE
86%	HIDE
95%	HIDE

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Which one of the following diseases/syndromes is **NOT** reportable?

Any vesicular disease of livestock	HIDE
Avian psittacosis ( <i>Chlamydia psittaci</i> )	HIDE
Pthirus pubis infestation	HIDE
Johne's disease	HIDE

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11

Which or

Any ves

Avian ps

Pthiris p

Johne's

**Correct:**

Although the presence of **Pthiris pubis** (Human pubic lice) on a pet may be alarming to the owner, human pubic lice are **NOT reportable**. **Psittacosis** IS reportable because it is infectious and a serious cause of zoonotic respiratory disease in birds and humans.

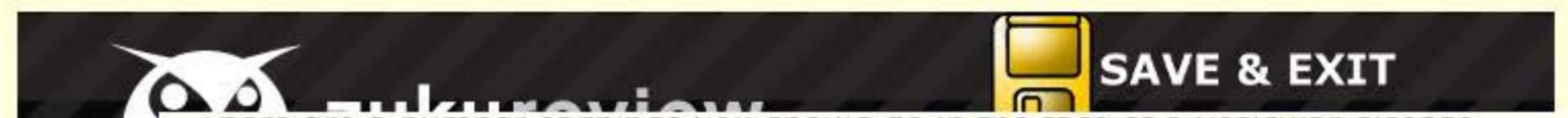
**Johne's disease** IS reportable in cattle. **Brucellosis** IS REPORTABLE. Basically, **ANY vesicular disease of livestock IS REPORTABLE**.

There are a number of things you should do in the face of a vesicular disease outbreak, but the most important is to report the incident to the state vet/federal authorities.

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11

Which or

Any ves

Avian ps

Pthiris p

Johne's

There are a number of things you should do in the face of a vesicular disease outbreak, but the most important is to report the incident to the state vet/federal authorities.

The most important rule out is Foot and Mouth disease, which is difficult to distinguish from Swine vesicular disease, Vesicular exanthema of swine, and Vesicular stomatitis.

Because FMD is NOT present in the US, suspicion of it in a domestic swine herd is cause for state/federal government concern because of the potential agro-economic consequences. DDX via blood tests, primarily PCR and biopsy.

Refs: Merck Veterinary Manual online edition.

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 **zukunft**  **SAVE & EXIT**

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A mixed-gender group of ten female and two male llamas urinate and defecate habitually in the same pile near the entryway to the barn. What does this behavior indicate?

Too many females in group	HIDE
Too much time indoors	HIDE
Overcrowding	HIDE
Urge incontinence associated with fear	HIDE
Normal behavior	HIDE

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**Correct:**

It is **normal for South American camelids** to urinate and defecate on a communal dung pile. The entry to a barn is a typical (and inconvenient) location. Llamas and alpacas will not graze near or downstream from dung piles, unless forage is very limited.

Trivia note: **Urination takes much longer in South American camelids** than in other animals, because their **urethral diameter is small in both sexes.**

Refs: The Merck Veterinary Manual online edition.

Normal

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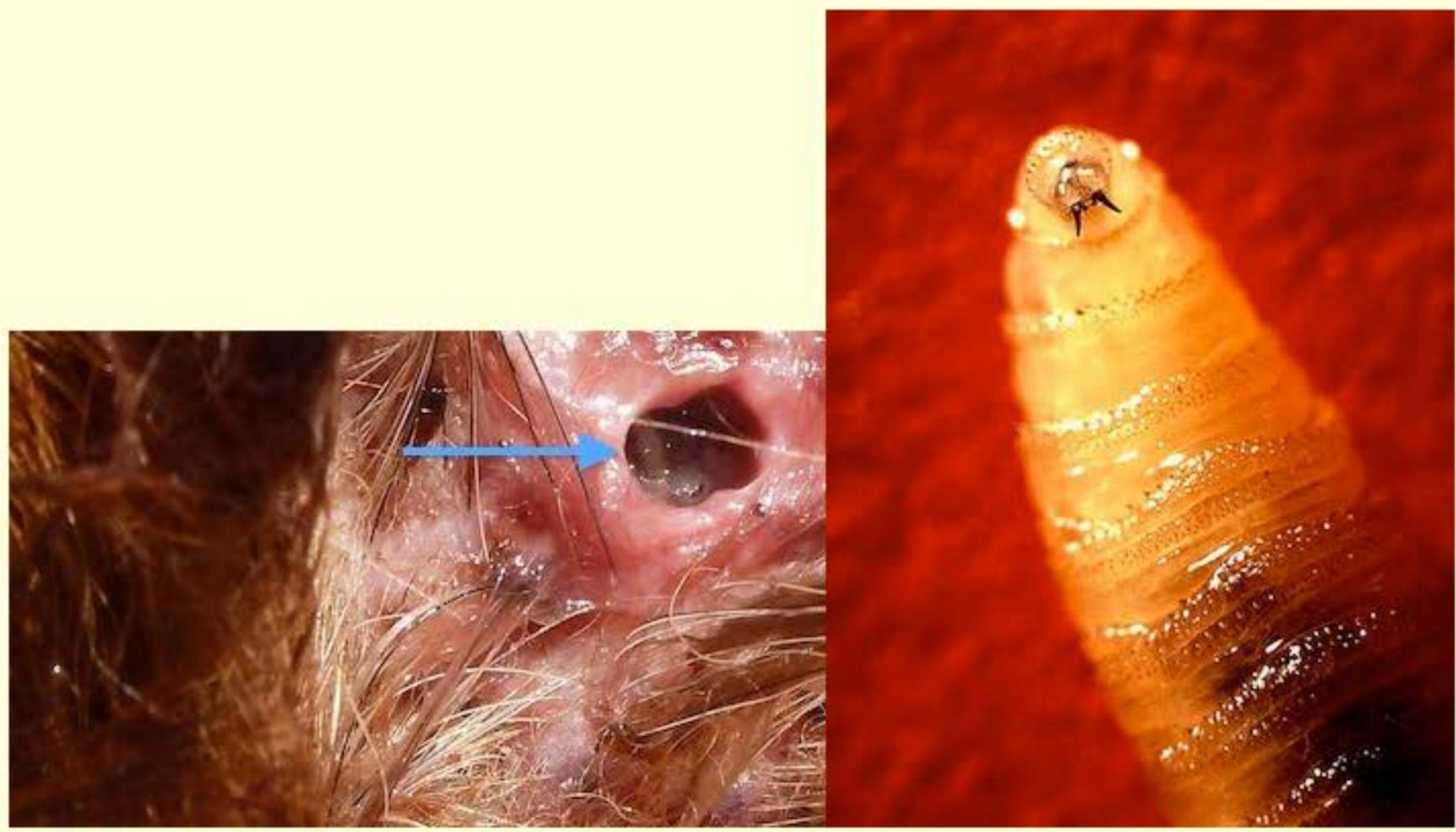
[Change My Background Colors](#)

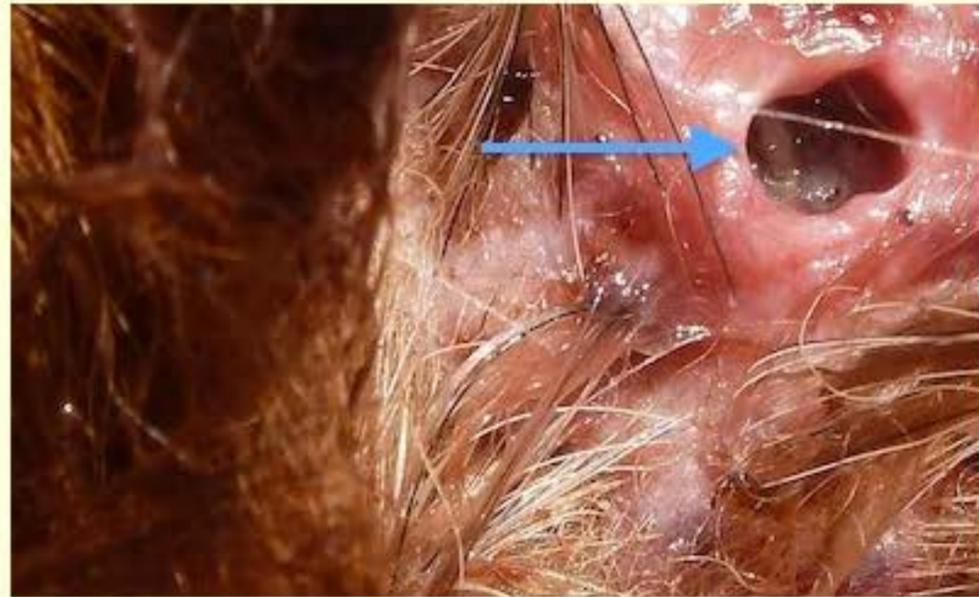
 **zukureview**  **SAVE & EXIT**

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What **organism** is depicted in the images below?





<i>Onchocerca cervicalis</i>	HIDE
<i>Cuterebra</i> spp.	HIDE
<i>Cochliomyia hominivorax</i>	HIDE
<i>Coenurus cerebralis</i>	HIDE
<i>Dermatobia hominis</i>	HIDE



**Correct:**

This is screwworm myiasis caused by Cochliomyia hominivorax in the New World (North, Central, South America) and Chrysomya bezziana in the Old World (Asia, Africa).

**Adult screwworm flies** lay eggs on host and the larvae enter via small skin wounds or mucous membranes. Note the tusk-like mandibles on the larva.

**REPORTABLE.** Screwworm has been eliminated in North America - it is still found in South America and Caribbean countries.

Occasional cases are sometimes detected as animals enter the U.S. through airports or border areas, like this 2016 report of screwworm in Florida deer.

Onchoce

Cuterebra spp.

HIDE

**Cochliomyia hominivorax**

HIDE

Coenurus cerebralis

HIDE

Dermatobia hominis

HIDE



REPORTABLE. Screwworm has been eliminated in North America - it is still found in South America and Caribbean countries.

Occasional cases are sometimes detected as animals enter the U.S. through airports or border areas, like this 2016 report of screwworm in Florida deer.

Cuterebra spp. fly larvae also cause myiasis, but look very different than the larva pictured above.

Click here and scroll down to see a video of a live, squirming cuterebra larva, courtesy of the Companion Animal Parasite Council.

Refs: The USDA APHIS program and the Merck Veterinary Manual online edition. Images courtesy, Alan R Walker, USDA, Astridlorena.



Onchoce

<i>Cuterebra spp.</i>	HIDE
<i>Cochliomyia hominivorax</i>	HIDE
<i>Coenurus cerebralis</i>	HIDE
<i>Dermatobia hominis</i>	HIDE

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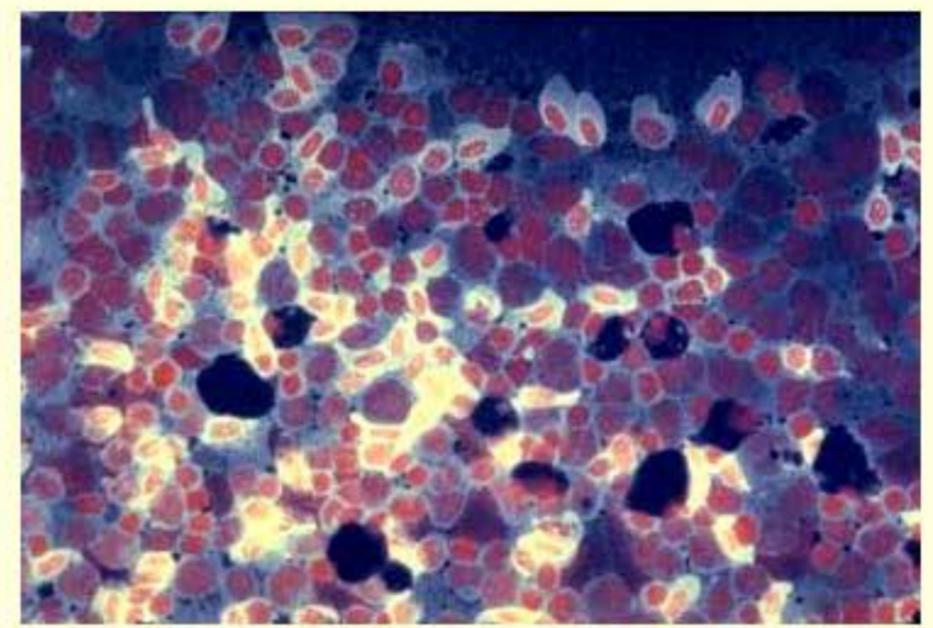
11 ✓	12 ✓	13 M ✓	14 ✓	15 ✓	16 ✗	17 ✓	18 ✓	19	20
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There is an outbreak of lethargic and anemic salmon at a farm. Mortality is high.

Moribund fish lying on the bottom are pulled out for examination. The gills are pale and there is hemorrhage in the anterior chambers.

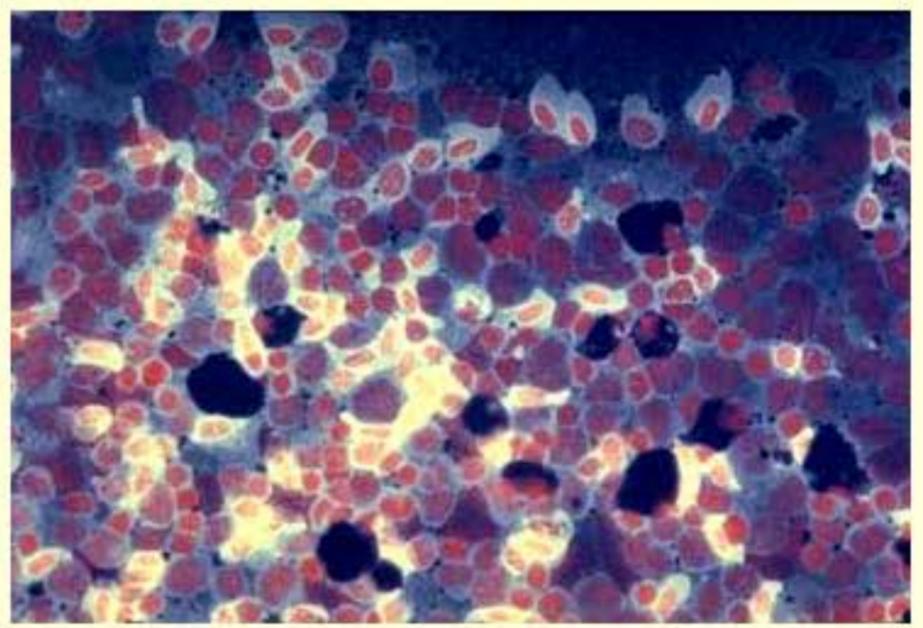
PCV averages 6%. On necropsy, the livers are dark and hemorrhagic, and a few fish have ascites. Immunofluorescent antibody testing shows virus-infected kidney cells (image below).

Which one of the following choices is the most likely diagnosis?



below).

Which one of the following choices is the most likely diagnosis?

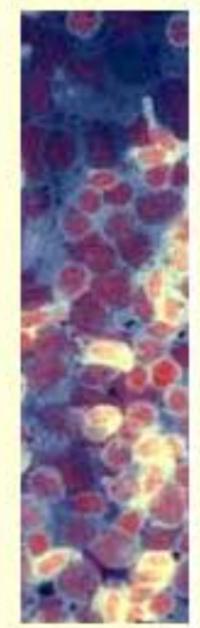


Infectious salmon anemia	HIDE
Infectious hematopoietic necrosis	HIDE
Viral erythrocyte necrosis	HIDE
Epizootic erythropoietic necrosis	HIDE
Spring viremia	HIDE

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below).

Which one of the following choices is the most likely diagnosis?



**Correct:**

The clinical and necropsy findings are classic for infectious salmon anemia. It is a federally reportable disease in the USA.

The causative agent is an orthomyxovirus. The image depicts an indirect fluorescent antibody test for ISA virus in the kidney cells of an Atlantic salmon.

Infectious hematopoietic necrosis is also a disease of salmonids. It is endemic in the Pacific Northwest and Alaska.

Fish less than 2 months of age are most susceptible. Sick fish have distended abdomens, exophthalmia, and pale gills.

Infectio  
Infectio

Viral erythrocyte necrosis	HIDE
Epizootic erythropoietic necrosis	HIDE
Spring viremia	HIDE

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A four-year old male neutered domestic shorthair cat is presented that was bitten by a raccoon in a fight.

The owner has documentation of a rabies vaccination two years ago, but the cat is overdue for a booster vaccination.

What are the correct actions to take?

Keep under owner control 45 days; Booster on 46th day	HIDE
Immediate booster; Keep under owner control; Observe 45 days	HIDE
Booster on days one, three, seven; Confine at home; 60 days observation	HIDE
Confine at clinic; ten days observation; Vaccinate on 11th day if no behavioral changes	HIDE
Confine at clinic; ten days observation; Euthanize if behavior changes	HIDE

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Correct:

Immediate booster; Keep under owner control; Observe 45 days.

According to the [2016 Compendium for Rabies Control](#), Dogs and cats that are **OVERDUE** for a rabies booster **BUT HAVE DOCUMENTATION** of previous vaccination should be **revaccinated immediately**, kept under the owner's control, and **observed for 45 days**.

**Any illness in an** isolated or confined animal should be reported immediately to the local health department. **If signs suggestive of rabies develop**, the animal should be  **euthanized and the head shipped for testing**.

In general, both Canadian and U.S. guidance on rabies post exposure management conforms with Compendium guidelines.

Confine at clinic; ten days observation; Vaccinate on 11th day if no behavioral changes	HIDE
Confine at clinic; ten days observation; Euthanize if behavior changes	HIDE

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References:

**United States guidelines**

[2016 Compendium for Rabies Prevention and Control](#), JAVMA, Vol 248, No. 5., 505-517, courtesy, Natl. Assoc. State Public Health Veterinarians ([NASPHV compendia](#)). For information on post-exposure prophylaxis in people see: [Human Rabies Prevention-US](#), 2008 ACIP Reccs: May 23, 2008 / 57(RR03);1-26,28.

**Canadian guidelines**

Canadian Food Inspection Agency (CFIA) [rabies home page](#) and [rabies testing summary](#).  
The Canadian Veterinary Medical Association (CVMA) on [rabies guidance homepage](#).  
Click here for a [CVMA post-exposure management summary](#).  
Click here for [CVMA post-exposure management presentation](#).

Global guidelines WHO OIE [World Health Organization Expert Consultation on Rabies \(2nd Report 2013\)](#)

A four-year raccoon

The owner for a box

What are

Keep un

Immedi

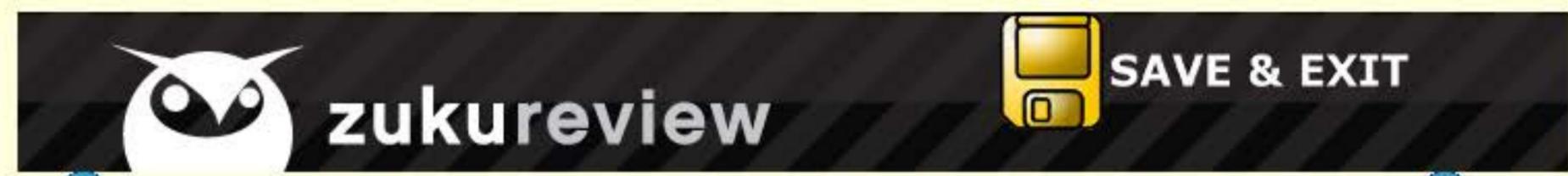
Booster

Confine at clinic; ten days observation; Vaccinate on 11th day if no behavioral changes	HIDE
Confine at clinic; ten days observation; Euthanize if behavior changes	HIDE

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Prior to the 1950s, heat pasteurization of milk was done principally to prevent transmission of one organism to people.

Today, that organism is re-emerging in bi-national communities with ties to Mexico who consume unpasteurized milk products.

What is the organism?

mycobacterium bovis vs is TB in Bovine  
mycobacterium tuberculosis is TB in Human

<i>Mycobacterium bovis</i>	HIDE
<i>Mycobacterium avium</i>	HIDE
Enterotoxigenic <i>Escherichia coli</i> O157:H7	HIDE
<i>Mycobacterium tuberculosis</i>	HIDE
<i>Mycobacterium avium</i> subspecies <i>paratuberculosis</i>	HIDE

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Correct:

A century ago, *Mycobacterium bovis* (bovine tuberculosis) used to be a common zoonotic health threat, transmitted through milk to children through their emerging teeth at the gums.

Today, human cases of *M. bovis* are emerging more in bi-national communities with ties to Mexico who consume unpasteurized milk products (like fresh queso).

Temperature of pasteurization is set by the toughest, most heat-resistant organism, which is *Coxiella burnetii*, the cause of Q fever. If the temperature is high enough, for long enough to kill *Coxiella*, it will also kill the other organisms.

*Brucella* and *Listeria* can also be transmitted in milk.

*E. coli* is typically a contaminant from unsanitary milking conditions.

<i>Mycobacterium avium</i>	HIDE
Enterotoxigenic <i>Escherichia coli</i> O157:H7	HIDE
<i>Mycobacterium tuberculosis</i>	HIDE
<i>Mycobacterium avium subspecies paratuberculosis</i>	HIDE

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Which organism determines the **minimum temperature needed to pasteurize milk** in the United States?

<i>Brucella abortus</i>	HIDE
<i>Escherichia coli</i>	HIDE
<i>Mycobacterium bovis</i>	HIDE
<i>Listeria monocytogenes</i>	HIDE
<i>Coxiella burnetii</i>	HIDE

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**CONTEXT**

Temperature of pasteurization is set by the toughest, most heat-resistant organism, which is Coxiella burnetii, the cause of Q fever.

If the temperature is high enough, for long enough to kill *Coxiella*, it will also kill the other organisms.

Basically, the higher the temp, the shorter the pasteurization time needed. ie: 90 C (194 F) for 0.5 seconds, or 100 C (212 F) for 0.01 seconds.

*Brucella* and *Listeria* can also be transmitted in milk.

*E. coli* is typically a contaminant from unsanitary milking conditions.

The Cornell Milk Facts page is a useful resource. Click here for the Canadian Dairy Code.

*Coxiella burnetii* HIDE

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Feline injection site **sarcomas** are primarily **linked with** which **two vaccines**?

FeLV and rabies vaccines	HIDE
Rabies and feline panleukopenia vaccines	HIDE
FeLV and feline calici/herpes vaccines	HIDE
Feline calici/herpes and panleukopenia vaccines	HIDE
Feline panleukopenia and FIV vaccines	HIDE

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- 21 ✓
- Feline in:
- FeLV an
- Rabies a
- FeLV an
- Feline c
- Feline panleukopenia and FIV vaccines

Correct:

FeLV and Rabies vaccines.

An estimated 1 to 10 in 10,000 cats develop [injection site sarcomas](#) following vaccination with [FeLV and Rabies vaccines](#).

Click here to see a [cat with an injection site sarcoma](#).

Click here to see the Vaccine-Associated Feline Sarcoma Task Force Guidelines for [Diagnosis and Management of Suspected Sarcomas](#).

Refs: [Vaccine-associated feline sarcomas task force report](#), Morrison and Starr JAVMA, Vol 218, No. 5, March 1, 2001 and the Merck Veterinary Manual online edition.

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A rapid ELISA test kit for psittacine beak and feather disease (PBFD) is being tested. Here are simulated test results, compared to a gold standard test for PBFD.

What is the specificity of the new ELISA test for PBFD?

	PBFD_pos	PBFD_neg	Total
ELISA positive	111	132	243
ELISA negative	21	1736	1757
Total	132	1868	2000

- 1736/1757 HIDE
- 111/132 HIDE
- 1736/1868 HIDE
- 111/243 HIDE
- 132/1868 HIDE

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A rapid ELISA test kit for psittacine beak and feather disease (PBFD) is being tested. Here are simulated test results, compared to a gold standard test for PBFD.

What is the specificity of the test?

Specificity =  $\frac{1736}{1868} \times 100$  (93%)

Start by drawing a 2x2 table, and label the boxes a,b,c,d. Specificity =  $\frac{d}{b+d}$  Click here to see a [Basic 2X2 table](#).

Psittacine beak and feather disease (PBFD) is caused by a psittacine circovirus.

The name is misleading, because typical presentations do not have beak malformations and nowadays are less likely to show the severe feather abnormalities that were seen in *Cacatua* spp.(cockatoos) when PBFD first emerged.

Click here to see a [sulfur-crested cockatoo with PBFD](#).

PCR screening has decreased prevalence of PFBD virus in cockatoos, though the disease can be seen in other old world psittacines as well, like Eclectus and African Gray parrots and lovebirds.

111/132

132/186

1736/1868

111/243

1736/1757

HIDE

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Courtesy of Dr. Louise Bauck.

Psittacine beak and feather disease (circovirus) in a lesser sulfur-crested cockatoo showing a general loss of feathers on the trunk and neck. The pin feathers on the neck are not emerging.

 **zukureview**  **SAVE & EXIT**

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Which one of the following choices is a proven biologic **vector of vesicular stomatitis** virus?

<i>Culex tarsalis</i> (mosquito)	HIDE
<i>Culicoides</i> spp. (biting midges)	HIDE
<i>Lutzomyia</i> spp. (sand flies)	HIDE
<i>Amblyomma americanum</i> (Lone Star tick)	HIDE
<i>Ixodes scapularis</i> (deer tick)	HIDE

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Correct:

*Lutzomyia* spp. (sand flies) are proven biologic vectors of vesicular stomatitis virus in endemic areas.

Which of the following is the most likely biologic insect vector in the southwestern USA?

*Simulidae* (black flies) are the most likely biologic insect vectors in the southwestern USA.

*Culex tarsalis*

*Culicoides* spp. are vectors of African horse sickness and bluetongue virus.

*Culicoides*

*Culex tarsalis* is an important vector of western equine encephalitis.

*Lutzomyia*

*Ixodes scapularis* is a tick vector of Lyme disease, human babesiosis, and granulocytic ehrlichiosis.

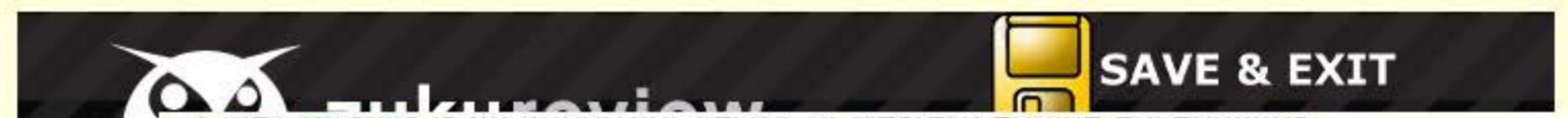
*Amblyomma*

*Ixodes scapularis* (deer tick)

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*Culex tarsalis* is an important vector of western equine encephalitis.

*Ixodes scapularis* is a tick vector of Lyme disease, human babesiosis, and granulocytic ehrlichiosis.

*Amblyomma americanum* is a tick vector for several diseases, including tularemia and southern tick-associated rash illness (STARI). STARI causes a rash similar to Lyme disease, but is generally less severe.

*Borrelia burgdorferi* has occasionally been isolated from lone star ticks, but vector competency tests have shown that the ticks not likely to be able to transmit Lyme disease.

Refs: Smith, Large Animal Internal Medicine, 3<sup>rd</sup> ed. pp. 716-8 and the Merck Veterinary Manual online edition.

Which of the following is a vector of Lyme disease?

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- Culex tarsalis
  - Culicoides
  - Lutzomyia
  - Amblyomma americanum
  - Ixodes scapularis (deer tick)
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Which animal is the **definitive host** associated with zoonotic transmission of *Echinococcus granulosus* to intermediate hosts such as humans?

Sheep	HIDE
Cats	HIDE
Pigs	HIDE
Dogs	HIDE
Opossums	HIDE

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**Correct:**

**Dogs.** The definitive host of *Echinococcus granulosus* is the dog and other canids. They pass eggs in the feces.

Which are *granulos* **Intermediate hosts** include omnivores and herbivores such as humans, sheep, goats, deer, moose, kangaroos, and wallabies. Humans can also be infected by the ingestion of food contaminated with dog feces.

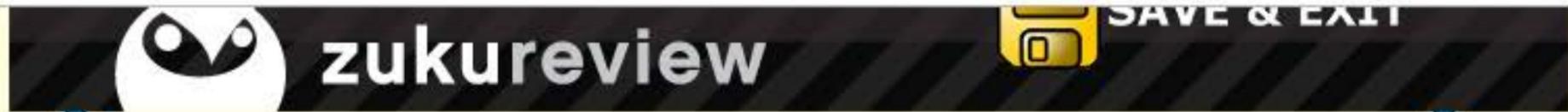
**Sheep** In the intermediate host, ingested eggs hatch into larvae that travel via the circulation to form hydatid cysts in organs such as the liver, brain, and lungs.

**Echinococcosis** is more common in rural populations that raise sheep. It is endemic in parts of South America, east Africa, central Asia, and China.

Opossums HIDE

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A 5-year-old Thoroughbred mare is presented for evaluation of a gurgling noise heard during expiration at the end of a cross-country course.

She also seems to lose speed when this happens. Physical examination does not reveal any significant findings.

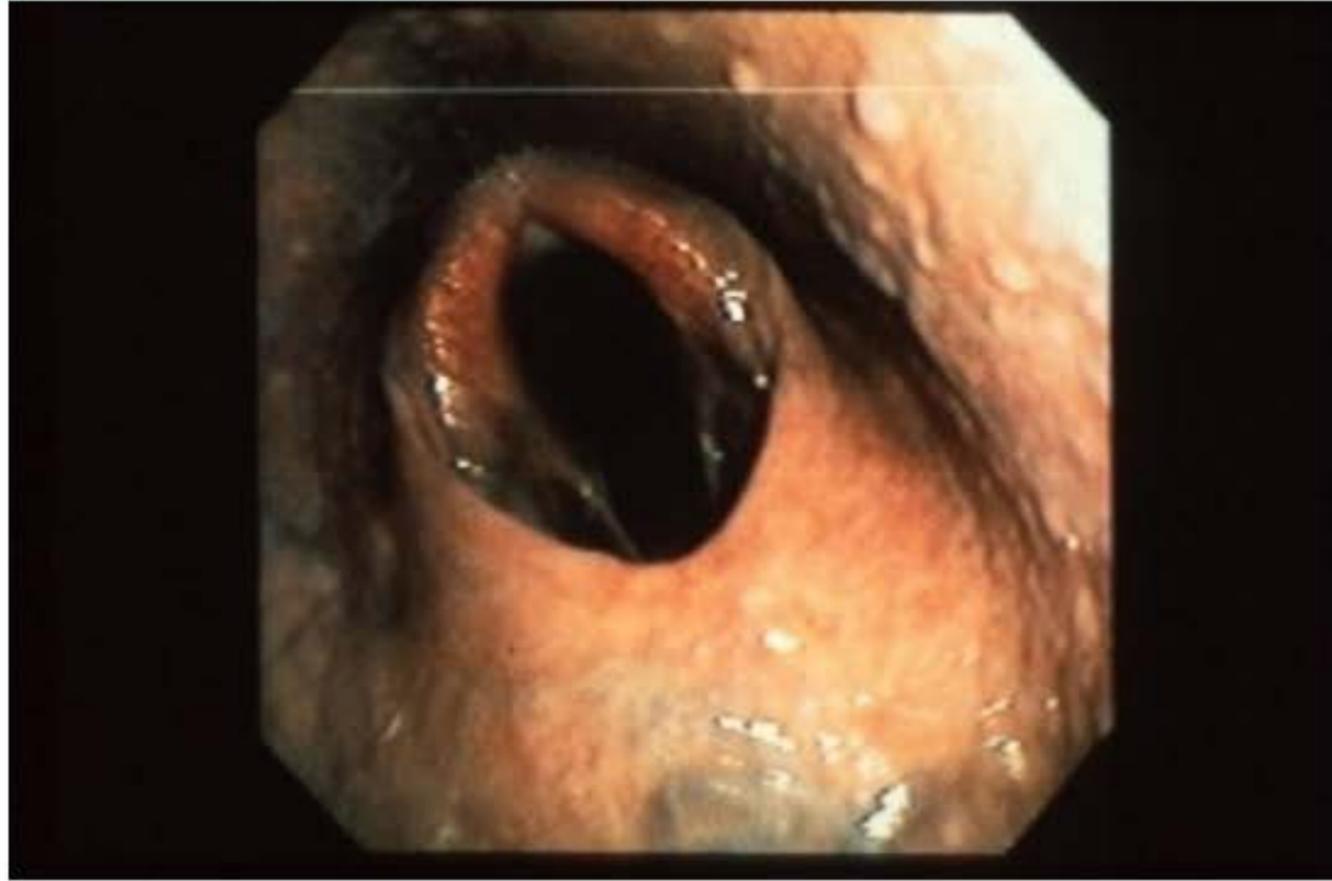
Dynamic upper airway endoscopy is performed without sedation and reveals the following.

Which one of the following choices is an appropriate treatment for this condition?

[Click here to see image](#)

Throat spray (DMSO, dexamethasone), complete rest	HIDE
Unilateral arytenoidectomy	HIDE
Laser axial division of the aryepiglottic fold	HIDE
Prosthetic laryngoplasty and ventriculectomy	HIDE
Laryngeal advancement (tie-forward) procedure	HIDE

THE MERCK VETERINARY MANUAL **Multimedia**



Courtesy of Dr. Bonnie R. Rush.

21	22	23	24	25 <sup>M</sup>	26	27	28	29	30
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A 5-year  
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significat  
Dynamic  
Which or  
Click her  
Throat s  
Unilater  
Laser ax

**Correct: Laryngeal advancement (tie-forward) procedure**

This horse has dorsal displacement of the soft palate (DDSP) and the **tie-forward procedure** is the most appropriate therapy.

**Additional Rx** include **palatoplasty** to **stiffen up the soft palate** and **epiglottic augmentation** to **stiffen up the epiglottis**.

**Non-surgical management includes** using a **"tongue tie"** or **figure-of-8 noseband** during work to keep the tongue forward and palate in place.

**In young horses with DDSP** caused by upper respiratory tract inflammation, **rest and antiinflammatories may be enough**.

Prosthetic laryngoplasty and ventriculectomy	HIDE
Laryngeal advancement (tie-forward) procedure	HIDE

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A 5-year  
during e:  
She also  
significar  
Dynamic  
Which or  
[Click her](#)  
Throat s  
Unilater  
Laser ax

DDSP is a pretty common cause of poor performance in horses.

A functional obstruction of the pharynx occurs when the caudal free margin of the soft palate moves dorsal to the epiglottis.

It can be intermittent or persistent. Clinical presentation varies from cough during exercise, poor performance, "choking" during exercise, or a gurgling sound during exercise.

Dx involves upper airway endoscopy - standing and/or dynamic.

Most cases of intermittent DDSP require dynamic endoscopy to Dx.

Check out this great [overview of DDSP](#), courtesy of the American College of Veterinary Surgeons.

Prosthetic laryngoplasty and ventriculectomy	HIDE
Laryngeal advancement (tie-forward) procedure	HIDE

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21	22	23	24	25 <sup>M</sup>	26	27	28	29	30
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What **behavior** is the mare displaying in the image below?



Lignophagia	HIDE
Aggression	HIDE
Cribbing	HIDE
Flehmen	HIDE
Windsucking	HIDE

21	22	23	24	25 <sup>M</sup>	26	27	28	29	30
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What be



**Correct:**  
**Flehmen.**

This is a behavior seen in the following circumstances: normal stallion **response** to **pheromones**, normal response of all horses to new smells (even foals do it!), **sign of colic**, or associated with granulosa cell tumors in mares.

Refs: The Merck Veterinary Manual online edition. Image courtesy, Waugenberg.

Lignophagia	HIDE
Aggression	HIDE
Cribbing	HIDE
<b>Flehmen</b>	<b>HIDE</b>
Windsucking	HIDE



**zukunft**



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A two year old **ferret** is presented after being **bitten** by a **bat that was** found flopping around on the porch this morning.  
**balcony**

The vaccination history is uncertain, but the **owner is concerned about rabies** and **does not want to euthanize her pet.**

What recommendation should be made?

Must euthanize; Send head to state lab for testing	HIDE
You must immediately vaccinate; Confine 10 days for observation	HIDE
Confine 10 days for observation; Vaccinate on days 1,3,7	HIDE
Immediate vaccination; Strict isolation for 5 months	HIDE
Strict isolation, observation 6 months; immediate vaccination.	HIDE

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Correct:

Strict isolation and observation for 6 months and vaccinate immediately. Be aware that bite exposure from a bat, especially a bat acting strangely is a HIGH-risk exposure.

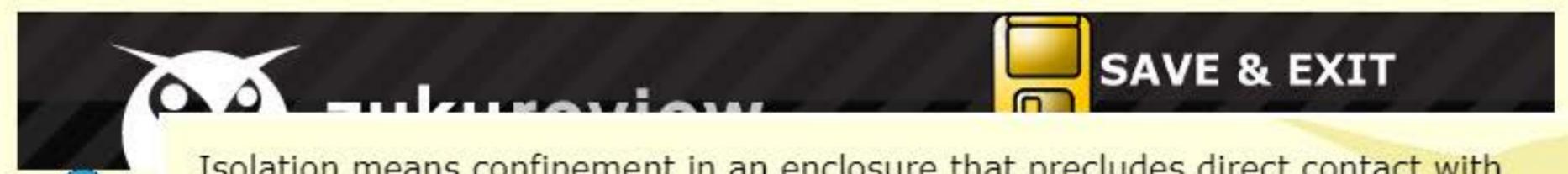
According to the 2016 Compendium for Rabies Control, UNVACCINATED dogs, cats, and ferrets exposed to a rabid animal should be euthanized immediately.

But if the owner is unwilling to euthanize:

1. The animal should be placed in strict isolation for 6 months (ferrets) or 4 months (dogs and cats)
2. Rabies vaccine should be administered upon entry into isolation.

You must immediately vaccinate; Confine 10 days for observation	HIDE
Confine 10 days for observation; Vaccinate on days 1,3,7	HIDE
Immediate vaccination; Strict isolation for 5 months	HIDE
Strict isolation, observation 6 months; immediate vaccination.	HIDE

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Isolation means confinement in an enclosure that precludes direct contact with people and other animals.

Any illness in an isolated or confined animal should be reported immediately to the local health department.

If signs suggestive of rabies develop, the animal should be euthanized and the head shipped for testing.

In general, both Canadian and U.S. guidance on rabies post exposure management conforms with Compendium guidelines.

References:

**United States guidelines**

[2016 Compendium for Rabies Prevention and Control](#), JAVMA, Vol 248, No. 5., 505-517, courtesy, Natl. Assoc. State Public Health Veterinarians ([NASPHV compendia](#)).

For information on post-exposure prophylaxis in people see: [Human Rabies](#)

You must immediately vaccinate; Confine 10 days for observation	HIDE
Confine 10 days for observation; Vaccinate on days 1,3,7	HIDE
Immediate vaccination; Strict isolation for 5 months	HIDE
Strict isolation, observation 6 months; immediate vaccination.	HIDE

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For information on post-exposure prophylaxis in people see: [Human Rabies Prevention-US](#), 2008 ACIP Reccs: May 23, 2008 / 57(RR03);1-26,28.

**Canadian guidelines**  
 Canadian Food Inspection Agency (CFIA) [rabies home page](#) and [rabies testing summary](#).  
 The Canadian Veterinary Medical Association (CVMA) on [rabies guidance homepage](#).  
 Click here for a [CVMA post-exposure management summary](#).  
 Click here for [CVMA post-exposure management presentation](#).

**Global guidelines**  
 WHO OIE [World Health Organization Expert Consultation on Rabies](#) (2nd Report, 2013).

Must eu

You must immediately vaccinate; Confine 10 days for observation	HIDE
Confine 10 days for observation; Vaccinate on days 1,3,7	HIDE
Immediate vaccination; Strict isolation for 5 months	HIDE
Strict isolation, observation 6 months; immediate vaccination.	HIDE

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Under what conditions is a very specific test used?

Lethal disease, low disease prevalence	HIDE
Rare disease, early diagnosis improves prognosis	HIDE
Highly prevalent disease, treatment does not affect prognosis	HIDE
Zoonoses, infectious diseases	HIDE
Common disease, non-infectious diseases	HIDE

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**Correct: Highly prevalent disease, treatment does not affect prognosis**

You need a very specific test if:

1. Disease is highly prevalent (e.g.: kennel cough) *or*
2. Early diagnosis or treatment does NOT improve prognosis (e.g.: Johne's).

Remember that a **HIGHLY SPECIFIC** test will have very **FEW** false positives. That means if a test is highly specific, you can **TRUST** a POSITIVE TEST. This sounds contradictory, but it makes more sense if you review this [specificity diagram](#).

Specificity =  $d / (b + d)$ . "d" are true negatives. "b" are false positives. If specificity is HIGH then "b" (FALSE pos) must be small. Therefore, high Specificity means you can really trust a POSITIVE result to be correct.

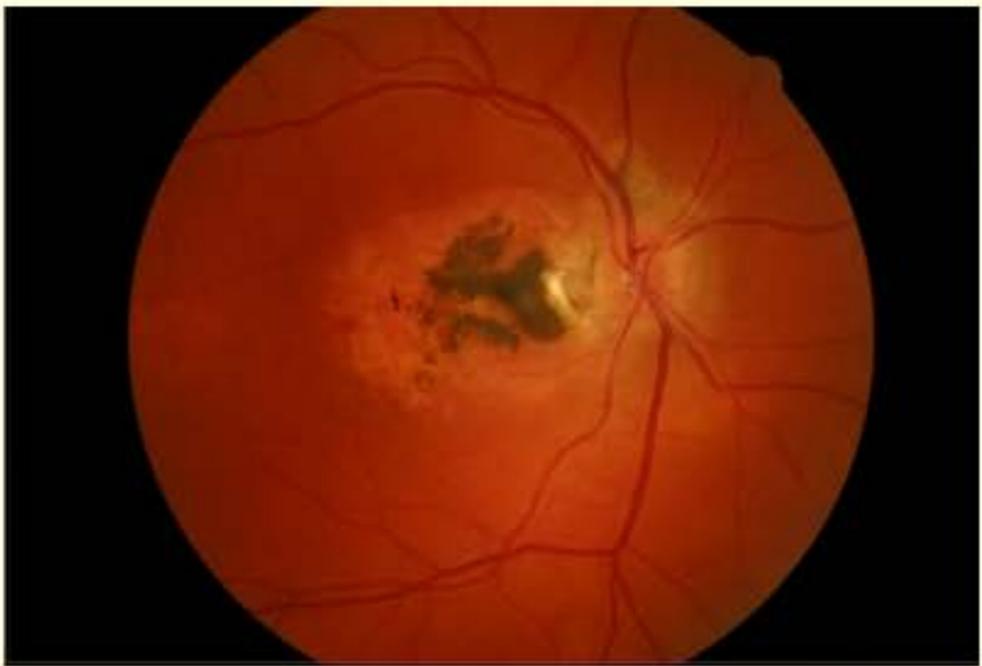
Refs: Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-9.

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What **zoonotic animal parasite** can cause the **human retinal abnormality** seen here in people who swallow its infective eggs?



<i>Ancylostoma braziliense</i>	HIDE
<i>Parelaphostrongylus tenuis</i>	HIDE
<i>Spirocerca lupi</i>	HIDE
<i>Trichinella spiralis</i>	HIDE
<i>Toxocara canis</i>	HIDE

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who swa



**Correct:**

This is a human retina with ocular larval migrans due to *Toxocara canis* ingestion. When people ingest *T. canis* eggs, infections are usually asymptomatic, but cases of ocular and visceral larval migrans do sometimes occur.

When adult non-pregnant dogs eat *T. canis* eggs, there is arrested development in the tissues. But when pregnant bitches eat *T. canis* eggs, infection can lead to transplacental transfer of infection to fetal puppies or transmammary transfer to nursing pups.

Clinical signs of *T. canis* infection in puppies include failure to thrive, pot-bellied appearance, dull coat, and mucoid diarrhea. Puppies with eosinophilic pneumonia will cough.

<i>Ancylostoma braziliense</i>	HIDE
<i>Parelaphostrongylus tenuis</i>	HIDE
<i>Spirocerca lupi</i>	HIDE
<i>Trichinella spiralis</i>	HIDE
<i>Toxocara canis</i>	HIDE

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What zoonotic parasite is most commonly found in dogs and cats who swallow their own feces?

Dx: Sometimes worms are seen in vomit or feces. Definitive Dx involves identifying the spherical, pitted-shelled eggs of *Toxocara* spp. (*T. canis* and *T. cati*) from the oval, smooth-shelled eggs of *Toxascaris leonina*.  
 Click here to [compare both types of eggs](#) under the microscope. This is important because of the public health significance of *T. canis* and *T. cati*, which can cause visceral and ocular larva migrans.

You should advise owner on zoonotic nature of the parasite! Click here to see a [great resource from the CDC](#).

**Rx:** A wide range of anthelmintics are effective (e.g., *fenbendazole*, pyrantel, milbemycin, ivermectin).

**Prevention:** Treat bitches with one of the recommended therapeutic regimens to minimize transplacental or transmammary transfer. Otherwise, treat pups starting ~2 weeks after birth, every 2 weeks until 2 months of age.

<i>Ancylostoma braziliense</i>	HIDE
<i>Parelaphostrongylus tenuis</i>	HIDE
<i>Spirocerca lupi</i>	HIDE
<i>Trichinella spiralis</i>	HIDE
<i>Toxocara canis</i>	HIDE

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What zoc  
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Rx: A wide range of anthelmintics are effective (e.g., fenbendazole, pyrantel, milbemycin, ivermectin).

**Prevention:** Treat bitches with one of the recommended therapeutic regimens to minimize transplacental or transmammary transfer. Otherwise, treat pups starting ~2 weeks after birth, every 2 weeks until 2 months of age, and then monthly until 6 months of age.

Refs: Bowman and Georgi, Parasitology for Vets, 9th ed., CDC Guidelines for Vets: Prevention of Zoonotic Transmission of Ascarids and Hookworms of Dogs and Cats, Coté, Clinical Vet Advisor - Dogs and Cats, 3<sup>rd</sup> ed. and the Merck Vet Manual online. Image courtesy of [enableuser](#).

<i>Ancylostoma braziliense</i>	HIDE
<i>Parelaphostrongylus tenuis</i>	HIDE
<i>Spirocerca lupi</i>	HIDE
<i>Trichinella spiralis</i>	HIDE
<i>Toxocara canis</i>	HIDE



Courtesy of Dr. Andrew Peregrine and Ontario Veterinary College.

Toxocara egg (left) and Toxascaris egg (right).

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What is the most common means of **transmission** of the **CAE virus in goats**?

Direct goat-to-goat contact	HIDE
Inhalation of infected respiratory droplets	HIDE
Contact with infected placenta and birth fluids at birth	HIDE
Vertical transmission in-utero	HIDE
Ingestion of infected colostrum or milk	HIDE

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Correct:

Caprine Arthritis Encephalitis (CAE) is transmitted primarily in COLOSTRUM or milk. Most goats are infected early in life (and will be seropositive) but only about 30% ever develop clinical signs.

What is t

Direct g

Inhalati

Contact

Vertical

Ingestio

See a **NEUROLOGICAL** presentation in **kids 2-4 mos** (encephalomyelitis- lameness, ataxia, hindlimb deficits, hypertonia, paraparesis, +/- head tilt, opisthotonos, circling). In **ADULTS**, CAE classically presents as a LAMENESS

CAE is ENDEMIC in US, Canadian, European dairy goats, yet NOT common in developing world. REPORTABLE in SOME states (ie: Michigan) but not others (Minn, GA).

Ingestion of infected colostrum or milk

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Abortions due to brucellosis tend to occur at what stage of pregnancy?

At any time during pregnancy	HIDE
Last half of pregnancy	HIDE
Typically an early embryonic loss, prior to pregnancy detection	HIDE
Second trimester	HIDE
First trimester	HIDE

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- Abortion
- Typically
- Last hal
- First trir
- At any t
- Second trimester

Correct:

Typically, brucellosis causes abortion in the **LAST HALF of pregnancy**, from **the 5th month onwards**. You might remember "Bruce is usually late."

Expect **STILLBORN calves**. **Cows only abort ONCE**.

Brucellosis is REPORTABLE.

The vaccines used are the *Brucella abortus* strain 19 vaccine or the RB51 vaccine, given to heifer calves 4-12 months old, along with a USDA tattoo in the right ear. Remember: "The right ear is the RIGHT EAR."

Trichomoniasis typically causes **early abortion** in cows and neosporosis typically causes **mid-term abortion**, but MOST things cause abortion late (3rd trimester) or have variable timing. The common abortion timelines are guidelines only - they help with boards questions but it's not always so cut and dry in practice.

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A client has just adopted a second cat and the introduction is not going smoothly.

After a period of separation during which the cats can settle down, which type of behavioral modification would be the best to apply in this situation?



Flooding	HIDE
Positive punishment and continuous reinforcement	HIDE
Desensitization and counter-conditioning	HIDE
Reassurance for new cat balanced with a squirt bottle to discourage original cat	HIDE
Negative reinforcement using a clicker	HIDE

A client has just adopted a second cat and the introduction is not going smoothly.

After a period of separation during which the cats can settle down, which type of behavioral modification would be the best to apply in this situation?



X

Correct

Desensitization and counter-conditioning should be used. Aggression towards a new cat is most often based on fear and territorial behavior. The cat on the right in this image is showing aggression and the cat on the left is in a submissive pose.

The cats should be separated and then gradually reintroduced using desensitization and counter-conditioning.

Desensitization would involve slowly introducing each others' smells and feeding near each other but with a physical barrier in place. Rewards such as playing with toys or giving treats should be used for counter-conditioning. This will be time-consuming over the course of several weeks at best.

Flooding

Positive

Desensi

Reassur

cat

HIDE

Negative reinforcement using a clicker

HIDE

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A client has just adopted a second cat and the introduction is not going smoothly.

After a period of separation during which the cats can settle down, which type of behavioral modification would be the best to apply in this situation?



Negative reinforcement (i.e., removal of the unpleasant interaction) will only strengthen the aggressive and submissive behavior.

Positive punishment (i.e., squirting with water, yelling, or hitting) should NEVER be used as it will increase anxiety and worsen the situation.

Reassurance only tends to "kindle" the hypothalamus in these situations.

Flooding involves exposing an animal to a fearful stimulus until the animal is no longer fearful. The use of crates would constitute flooding. This is almost always traumatic and is NOT an appropriate way to handle intercat aggression.

Flooding

Positive

Desensit

Reassur

cat

Refs: Landsberg, Handbook of Behavior Problems of the Dog and Cat, 2<sup>nd</sup> ed., Côté, Clinical Veterinary Advisor: Dogs and Cats, 3<sup>rd</sup> ed., and the Merck Veterinary Manual online,

Image courtesy of [Mikael Restoux](#)

Reassurance cat HIDE

Negative reinforcement using a clicker HIDE

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Which parasite can cause cutaneous larva migrans in people?

<i>Habronema</i> spp.	HIDE
<i>Trichuris</i> spp.	HIDE
<i>Ancylostoma</i> spp.	HIDE
<i>Spirocerca</i> sp.	HIDE
<i>Trichostrongylus</i> spp.	HIDE

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Correct

Hookworms (*Ancylostoma* spp.) may cause cutaneous larva migrans in people.

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Note that roundworms (*Toxocara* spp., *Toxascaris* spp.) are also zoonotic, causing visceral and ocular larva migrans in people.

In dogs, whipworms, *Trichuris* spp. are associated with a hypoadrenocorticism-like syndrome (hyponatremia, hyperkalemia, azotemia, metabolic acidosis).

- Habronema
- Trichuris
- Ancylostoma
- Spirocerca
- Trichostrongylus spp.

Whipworm infection has been suggested as one cause of cecocolic intussusception.

Habronema spp. in horses can cause tumorlike stomach nodules and sometimes cutaneous lesions.

Trichostrongylus spp. cause parasitic gastritis and enteritis in sheep, goats, and cattle.

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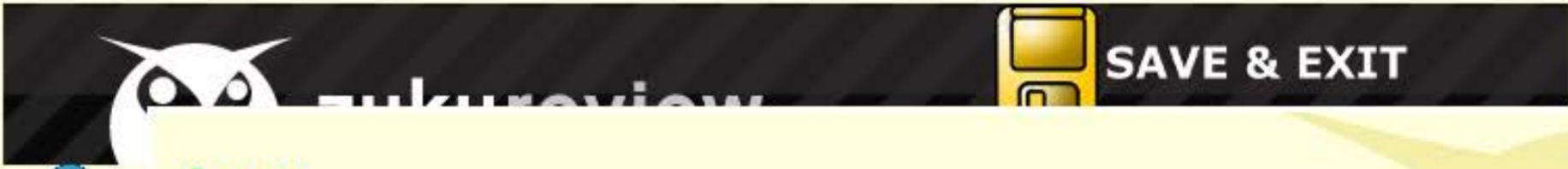
31 ✓	32 ✗	33 ✓	34 ✗	35 ✓	36	37	38	39	40
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Which one of the following diseases/syndromes is **NOT** reportable?

Vesicular Exanthema of Swine	HIDE
Infectious Bovine Rhinotracheitis (Bov herpes virus 1)	HIDE
Swine Vesicular disease	HIDE
West Nile Virus (Equine)	HIDE
Equine encephalomyelitis (EEE,WEE,VEE)	HIDE

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Which or

Vesicula

Infectio

Swine V

West Nil

Equine Encephalomyelitis (EEE, WEE, VEE)

Correct:

Infectious Bovine Rhinotracheitis is the one that is **NOT** reportable.

West Nile Virus infection and suspected cases of Equine encephalomyelitis (EEE, WEE, VEE) are REPORTABLE.

Basically, ANY vesicular disease of livestock IS REPORTABLE.

The most important rule out is Foot and Mouth disease, which is difficult to distinguish from Swine vesicular disease, Vesicular exanthema of swine, and Vesicular stomatitis. Because FMD is NOT present in the US, suspicion of it in a domestic swine herd is cause for state/federal government concern because of the potential agro-economic consequences. DDX via blood tests, primarily PCR and biopsy.

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Vesicular stomatitis virus primarily affects which of the following three animals?

- Sheep, alpacas, horses HIDE
- Horses, pigs, cattle HIDE
- Horses, cattle, dogs HIDE
- Cattle, sheep, goats HIDE
- Cattle, sheep, pigs HIDE

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Correct

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Vesicular stomatitis (VS) occurs primarily in **horses, pigs, and cattle** and very rarely in sheep, camelids, and goats. It is a potential zoonosis. VS DOES occur in the U.S. and it is one of the big rule-outs among vesicular diseases (remember the big 8: BVD, IBR, BPS, MCF, Bluetongue, VS, FMD, Rinderpest)

Vesicular

Bluetongue is almost exclusively a **sheep** disease (but cattle and deer can get it).

Sheep, s

Horses,

Rinderpest mainly affects **cattle**. In 2011, the United Nations Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (OIE) officially declared that rinderpest was eradicated globally. But because it is a classic, severe, reportable, stomatitis-type disease, it's unlikely that vets will be allowed to forget rinderpest on DDXs for years.

Horses,

Cattle, s

Pseudorabies is basically a **pig** pathogen. Can affect cows, but horses (and humans) are resistant

Cattle, sheep, pigs

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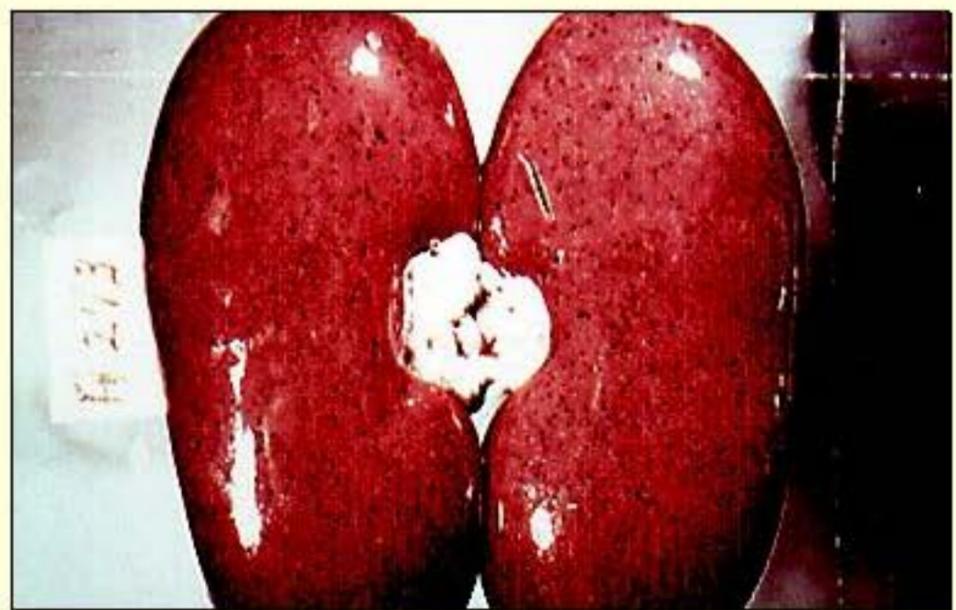
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A pig farm has several sick and dying adult pigs. Affected animals are febrile and depressed. Some seem constipated and others have diarrhea. A few are ataxic.

A necropsy on one of the dead pigs shows widespread petechial and ecchymotic hemorrhages in the kidneys ("turkey egg kidneys"), bladder, spleen, and larynx.

Which one of the following choices is the most likely diagnosis?



Hemagglutinating encephalomyelitis	HIDE
Classical swine fever	HIDE
<i>Haemophilus parasuis</i>	HIDE
Postweaning multisystemic wasting syndrome	HIDE
Anthrax	HIDE

A pig farm has several sick and dying adult pigs. Affected animals are febrile and depressed. Some seem constipated and others have diarrhea. A few are ataxic.

A necrop  
hemorrh



Which or

**Correct: Classical swine fever**

Hemorrhages on the kidneys and other organs are characteristic of both classical swine fever (CSF, also called "hog cholera") and African swine fever (ASF).

African swine fever cannot be differentiated from classical swine fever based on clinical and postmortem signs alone.

Confirmation is based on either PCR or ELISA antigen testing.

Both are reportable diseases. Classical swine fever was last reported in North America in the 1970s.

Click here to see [more images of CSF.](#)



Hemagglutinating encephalomyelitis	HIDE
<b>Classical swine fever</b>	HIDE
<i>Haemophilus parasuis</i>	HIDE
Postweaning multisystemic wasting syndrome	HIDE
Anthrax	HIDE

A pig farm has several sick and dying adult pigs. Affected animals are febrile and depressed. Some seem constipated and others have diarrhea. A few are ataxic.

A necrop  
hemorrh  
Which or

Click here to see [more images of CSF](#).

[Erysipelas](#) is characterized by fever, **painful joints**, and sometimes, urticarial diamond-shaped skin lesions.

[Hemagglutinating encephalomyelitis](#) (**vomiting and wasting disease**) and [Haemophilus parasuis](#) (Glasser's disease) both occur mainly **in young piglets**.

Pigs with [postweaning multisystemic wasting syndrome \(PMWS\)](#) typically have **enlarged, pale lymph nodes**, growth retardation, wasting, and dyspnea.

Refs: Jackson and Cockcroft, Handbook of Pig Medicine, pp. 182-4 and the Merck Veterinary Manual online edition.

Images courtesy, [USDA](#) and the [Center for Food Security and Public Health](#).



Hemagglutinating encephalomyelitis	HIDE
<b>Classical swine fever</b>	HIDE
<i>Haemophilus parasuis</i>	HIDE
Postweaning multisystemic wasting syndrome	HIDE
Anthrax	HIDE



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Which disease is also known as **Fowl Plague**?

High pathogenicity avian influenza (HPAI)	HIDE
Viscerotropic velogenic Newcastle disease (VVND)	HIDE
Infectious Bronchitis	HIDE
Infectious Coryza	HIDE
Infectious Laryngotracheitis	HIDE

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Which di

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Viscerot

Infectio

Infectio

Infectious



Correct:

High pathogenicity avian influenza (HPAI) is also known as Fowl Plague.

Avian flu viruses vary in pathogenicity, In general, see nothing with subclinical infections, to sinusitis/respiratory signs in low path strains, and fulminating multisystemic, hemorrhagic signs with high path strains.

Think-edema, cyanosis of head, wattle, and comb; hemorrhagic discoloration of feet and legs, and petechial hemorrhages on visceral organs on necropsy.

Follow these links to see HEMORRHAGIC SKIN lesions on face and on legs of a chicken with AI

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High mortality, respiratory signs, diarrhea, and neurologic signs may mimic Exotic Newcastle Disease (END). Avian influenza is isolated readily from tracheal or cloacal swabs.

Think acute respiratory disease with nasal discharge, sneezing, and SWELLING UNDER THE EYES, with Infectious Coryza.

With Infectious Laryngotracheitis (ILT) look for gasping, coughing, blood stained beaks, **blood occluding trachea on necropsy**. Follow this link to [see an image of ILT](#).

Remember wrinkled eggs with Infectious Bronchitis.

Refs: The Merck Veterinary Manual online edition.

Infectious Laryngotracheitis

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**HEMORRHAGIC SKIN lesions on legs of a chicken with AI (avian influenza)**

Courtesy of Dr. David E. Swayne.

Hemorrhagic skin visible on the feet of a chicken with [avian influenza](#).



**HEMORRHAGIC SKIN lesions on face of a chicken with AI**





### Infectious laryngotracheitis, chicken



Courtesy of Dr. Jean Sander.

Hemorrhagic tracheitis due to infectious laryngotracheitis in a chicken.



**zukunft**



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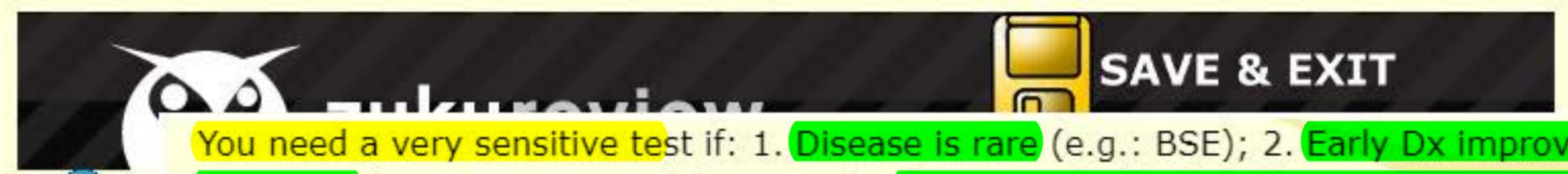
31 ✓	32 ✗	33 ✓	34 ✗	35 ✓	36 ✗	37 ✓	38 ✓	39 M ✓	40
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Under what conditions is a **very sensitive test** used?

Lethal disease, Highly prevalent disease	HIDE
Zoonoses, untreatable diseases	HIDE
Common disease, infectious diseases	HIDE
Treatment does not affect prognosis, Non-infectious diseases	HIDE
Rare disease, Early diagnosis improves prognosis	HIDE

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Rare disease, early diagnosis improves prognosis

You need a very sensitive test if: 1. Disease is rare (e.g.: BSE); 2. Early Dx improves prognosis (e.g.: HIV in people); or 3. The disease is highly lethal or consequences of missing a case are severe (e.g.: Rabies, Brucellosis, BSE, screw-worm, FMD, EIA).

Remember that a HIGHLY SENSITIVE test will have very FEW false negatives.

That means if a test is highly sensitive, you can TRUST a NEGATIVE TEST.

This sounds contradictory, but it makes more sense if you review this [sensitivity diagram](#).

Sensitivity =  $a / (a + c)$ . "a" are true positives. "c" are false negatives.

If sensitivity is HIGH then "c" (FALSE negs) must be small.

Therefore, high sensitivity means you can really trust a NEGATIVE result to be correct

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# The only epi table that matters: **The 2 x 2**

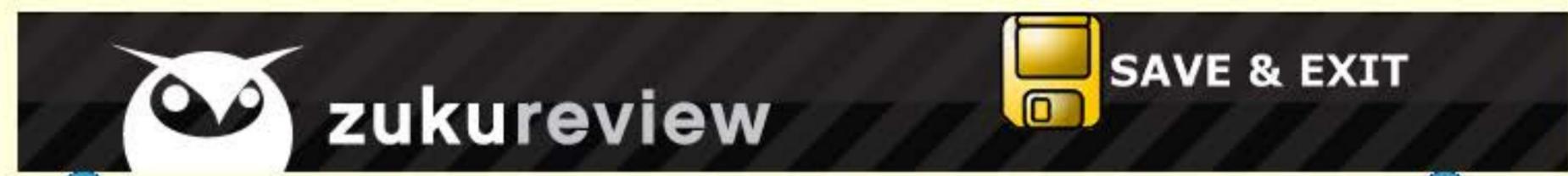
“Truth” or “Gold Std” test

	Pos	Neg	
<b>Your test</b> Pos	a	b	a+b
Neg	c	d	c+d
	a+c	b+d	Total a+b+c+d

**SENS** ↑  
Sens =  $\frac{a}{a+c}$

↓  
Spec =  $\frac{d}{b+d}$





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A SLAP® heartworm antigen test with a reported sensitivity 96% and specificity of 98% is being used.

Assuming the prevalence of heartworm in the area is 10%, what is the predictive value positive (PVP) of the test?

92%	HIDE
88%	HIDE
80%	HIDE
84%	HIDE
99%	HIDE

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**Correct:**  
PVP is 84%.

The trick with this kind of question is to pick an imaginary number of animals that you test, like 1000, and fill out your 2x2 table from there.

Follow the links to see diagrams step by step.

If prev is 10% then there must be 100/1000 dogs with heartworm and 900 dogs that are disease-free.

A 96% sensitive test will correctly call 96/100 positive (box "a"), and **IN-correctly** call 4/100 negative, (box "c": these are the false negs).

A SLAP@ being us

Assumin positive

- 92%
- 88%
- 80%
- 84%**
- 99%

HIDE  
HIDE  
HIDE

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are disease-free.

A 96% sensitive test will correctly call 96/100 positive (box "a"), and **IN-correctly** call 4/100 negative, (box "c": these are the false negs).

If 100/1000 animals are infected, then 900/1000 are disease-free. Your 98% specific test will correctly call 882/900 disease-free (box "d": 0.98 X 900=882) and **IN-correctly** call 18/900 positive, (box "b": these are the false pos).

Now your a,b,c,d boxes are all filled, it is easy to calculate  
 $PVP = a / (a + b) = 96 / (96 + 18) = 84\%$

Refs: Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-9.

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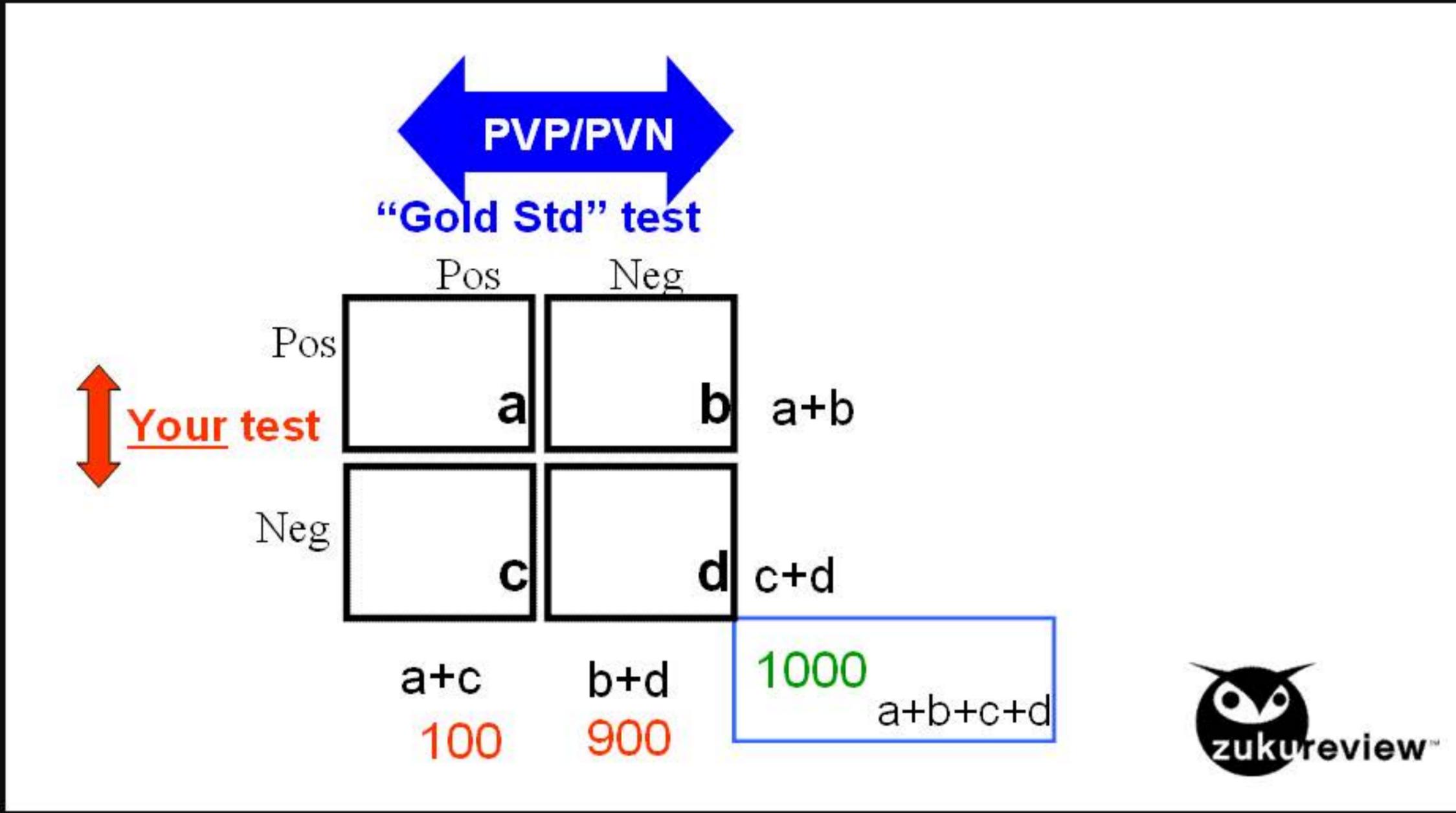
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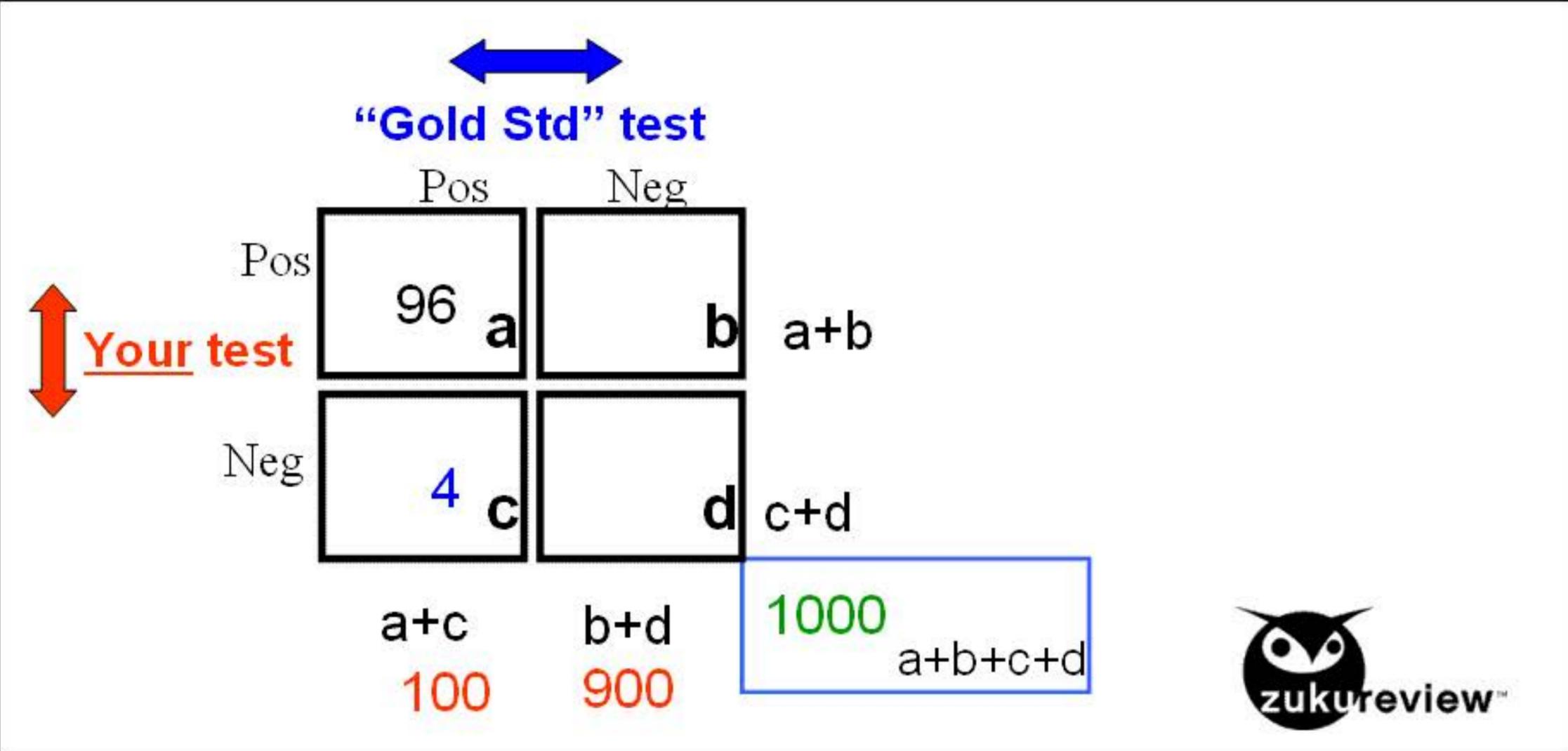
Assumin positive

92%	HIDE
88%	
80%	
84%	HIDE
99%	HIDE

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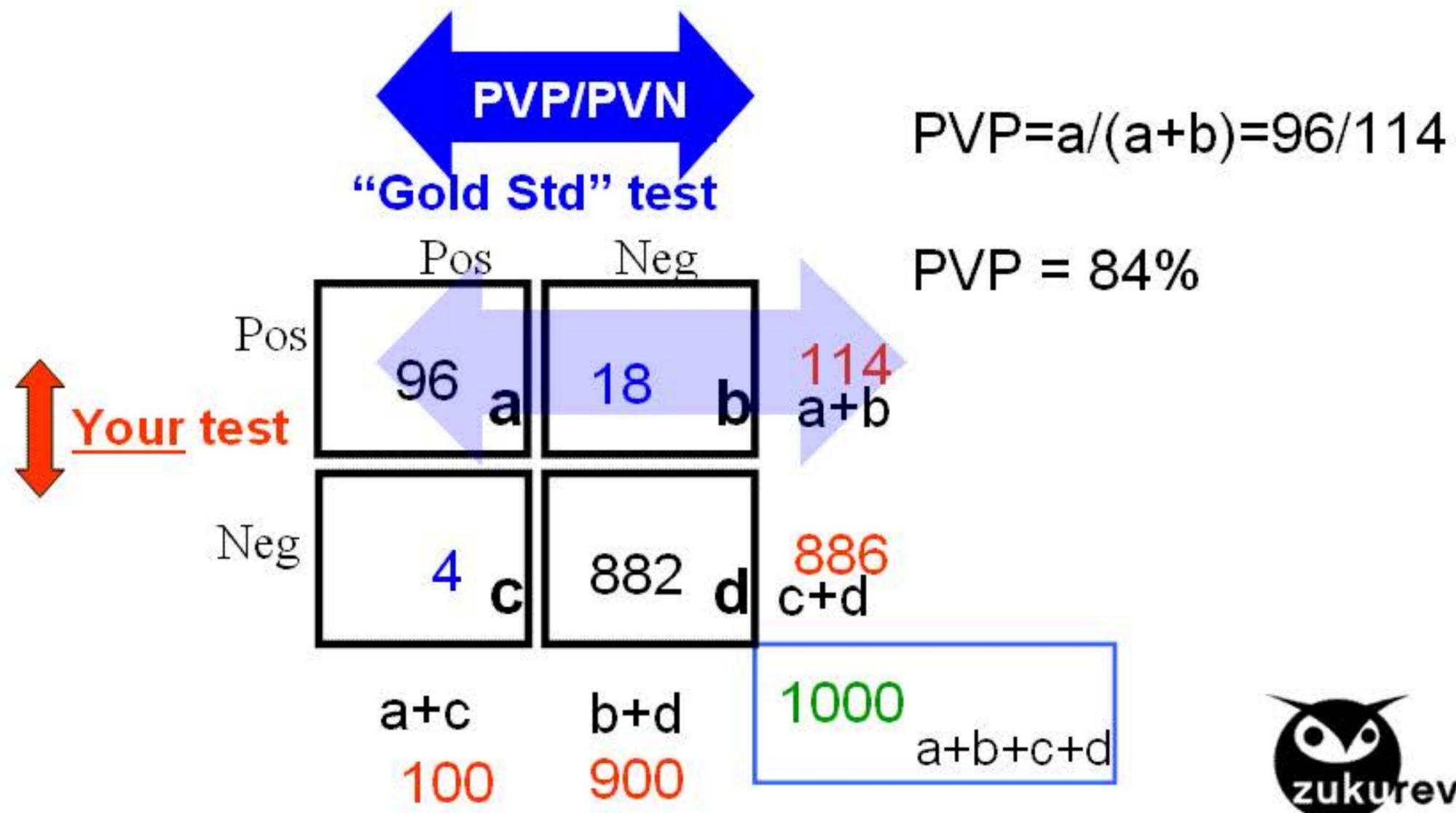
**PVP/PVN**

**“Gold Std” test**

	Pos	Neg	
Pos	96 <b>a</b>	18 <b>b</b>	a+b
Neg	4 <b>c</b>	882 <b>d</b>	c+d
	a+c 100	b+d 900	1000 a+b+c+d

**Your test**







**zukunft**



**SAVE & EXIT**

PREV

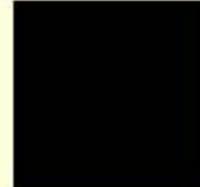
NEXT

41 ✓	42	43	44	45	46	47	48	49	50
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In direct sunlight, *Brucella abortus* survives:

Weeks	HIDE
Minutes	HIDE
Hours	HIDE
Days	HIDE

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41

Correct:

*Brucella abortus* can only survive a few hours in direct sunlight.

In direct

Refs: The Merck Veterinary Manual online edition.

- Weeks
- Minutes
- Hours
- Days

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Report a Problem

A 27-year-old pony with chronic equine recurrent uveitis is presented with a very cloudy right eye (OD).

The owner thinks it is having another flareup of the uveitis and would like more medication.

Ophthalmic exam findings: Left eye (OS): Appears quiet with signs of chronic recurrent uveitis - corpora nigra atrophy, few posterior synechiae to a cataractous lens, iridal hyperpigmentation, mild aqueous flare.

Right eye (OD): Mild blepharospasm and epiphora. Conjunctival hyperemia and episcleral injection present. Cornea is diffusely mildly edematous and can just make out a mydriatic pupil.

Superficial perilimbal corneal vascularization seen.

What diagnostic test should be performed to confirm the presumptive diagnosis in the right eye, and what specific initial therapy would be recommended for the right eye?

None needed; recommend steroid ointment OD TID	HIDE
Ultrasound; cyclophotocoagulation (laser ablation of the ciliary body epithelium)	HIDE
Tonometry; topical timolol and dorzolamide	HIDE
Fluorescein stain; ophthalmic triple antibiotic and atropine	HIDE
Rose Bengal stain; hypertonic saline eye drops and protect from light	HIDE

Right eye (OD): Mild blepharospasm and epiphora. Conjunctival hyperemia and episcleral injection present. Cornea is diffusely mildly edematous and can just make out a mydriatic pupil.

Superficial

Correct:

What diagnosis of the eye, and

Tonometry; topical timolol and dorzolamide.

None ne

This history and exam is consistent with glaucoma secondary to chronic equine recurrent uveitis - should perform tonometry to confirm and first-line therapies include timolol and dorzolamide.

Ultrasound of the eye, and

Remember horses with active glaucoma have mydriatic pupils and horses with uveitis have miotic pupils!

Tonometry

Glaucoma is increased intraocular pressure (IOP) that is painful and can lead to optic nerve damage and blindness.

Fluorescein angiography

Rose Bengal

Primary glaucoma is UNcommon in horses (more common in small animals).

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Right eye (OD): Mild blepharospasm and epiphora. Conjunctival hyperemia and episcleral injection present. Cornea is diffusely mildly edematous and can just make out a mydriatic pupil.

Superficial

The ciliary body (posterior to the iris) produces aqueous humor, which moves from the posterior chamber through the pupil to the anterior chamber.

What diameter of the eye, and

There, it drains out of the eye through the uveoscleral (up to 50% in horses - UNIQUE!) or iridocorneal outflow pathways.

None ne

Goal is to maintain IOP at <25 mmHg. Drugs that decrease aqueous humor production include beta-blockers (e.g., timolol) and carbonic anhydrase inhibitors (e.g., dorzolamide).

Ultrasound epitheli

Prostaglandin analogues (e.g., lantanoprost) increase aqueous humor outflow.

Tonome

Cyclophotocoagulation (surgical therapy; laser ablation of the ciliary body epithelium) has greater risks (e.g., corneal ulceration, uveitis, cataract, retinal detachment) and topical therapies are often still indicated after the procedure.

Fluoresc

Rose Be

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Report a Problem

epithelium)	HIDE
Tonometry; topical timolol and dorzolamide	HIDE

**Fluorescein** has greater risks (e.g., corneal ulceration, uveitis, cataract, retinal detachment) and topical therapies are often still indicated after the procedure.

Rose Bengal is Not usually first-line therapy.

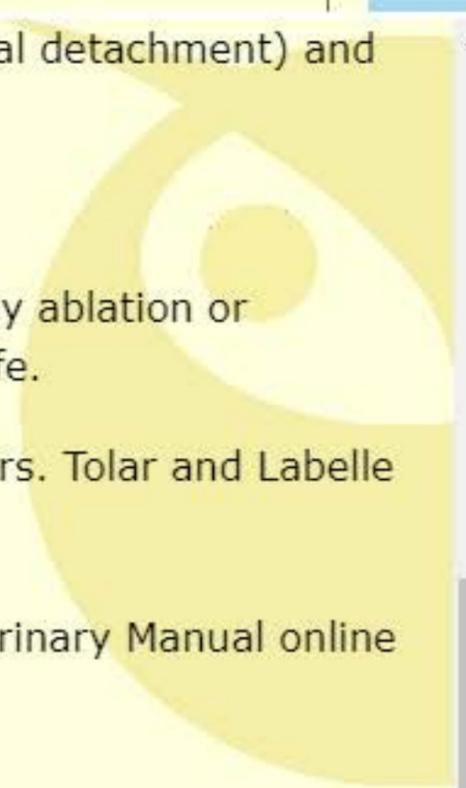
**BACK**

Once medical therapy is not longer effective, chemical ciliary body ablation or enucleation is recommended to improve comfort and quality of life.

Check out this great article on [glaucoma in horses](#), courtesy of Drs. Tolar and Labelle and the AAEP.

Refs: Gilger's Equine Ophthalmology, 2<sup>nd</sup> ed. and the Merck Veterinary Manual online edition.

[Change My Bar](#)





**zukureview**



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A cat-lover comes to a practice with one hand covered in bandages. She tried to separate her two female cats from fighting, and the dominant one turned and attacked her.

Which type aggression is this most likely to be?

Maternal	HIDE
Play	HIDE
Assertion	HIDE
Fear-induced	HIDE
Redirected	HIDE

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A cat-lover has her two cats fight. Which type of aggression is this?

Maternal aggression

Play aggression

Assertive aggression

Fear-induced aggression

Redirected aggression

CORRECT

This is probably re-directed aggression, where interruption of an aggressive event between two animals results in re-direction of the aggression to the one who intervened, or to a third, uninvolved animal.

Rx usually involves behavioral modification, socialization. For serious aggression issues, regardless of type, if you are asked what meds to use, think of Tri-cyclic anti-depressants (TCAs- ie: Amitriptyline, Clomipramine) or Selective serotonin re-uptake inhibitors (SSRIs- ie: Fluoxetine, Paroxetine)

Follow this link to see a Merck table of Behavioral modification meds. Do not memorize: just note the weird names. If you see these, then the question may be about behavior-mod.

The two big behavioral issues in cats are Feline aggression and inappropriate elimination.

Fear-induced	HIDE
Redirected	HIDE

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An immunochromatographic test kit for detection of fecal canine parvoviruses (CPV) antigen is being tested in a local cat shelter where as many as 10% of the cats there may have panleukopenia secondary to infection with the canine parvovirus.

Here are simulated test results, compared to a gold standard test for CPV.

	CPV pos	CPV neg	Total
Test kit positive	128	734	862
Test kit negative	63	1575	1638
Total	191	2309	2500

What is the specificity of this test kit?

- 734/862 HIDE

---

- 1575/2309 HIDE

---

- 1575/1638 HIDE

---

- 128/734 HIDE

---

- 128/191 HIDE

41 ✓	42 ✓	43 ✗	44 ✓	45 ✓	46	47	48	49	50
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An immu  
is being  
panleukc  
Here are

**Correct!**

Specificity =  $1575/2309$  (68%)  $d/(b+d)$ .

This is a classic example of a 2x2 table in epidemiology, used to compare a new test (the immunochromatographic test kit) to a gold standard test (the CPV test).

Draw a 2x2 table, and label the boxes a,b,c,d. Specificity =  $d/(b+d)$ . Click here to see a [Basic 2X2 table](#).

[Feline panleukopenia virus](#) (FPV) is closely related to [type 2 canine parvoviruses](#) (CPV-2, CPV-2a, CPV-2b). CPV-2a and CPV-2b have been shown to cause a panleukopenia-like illness in domestic cats.

Click here for a PDF summary on [Canine and Feline Parvovirus in Animal Shelters](#) (may take a minute to load) by Dr. Cynda Crawford, Maddie's Shelter Medicine Program, Univ. Florida College Vet Med.

734/862	HIDE
1575/2309	HIDE
1575/1638	HIDE
128/734	HIDE
128/191	HIDE

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A Thoroughbred racing stable imported a three-year-old mare from the United Arab Emirates two weeks ago.

The horse has a mucopurulent nasal discharge with ulcerated nodules in the mucosa of the nasal septum.

What disease is of greatest concern?

Equine granulocytic ehrlichiosis	HIDE
Glanders	HIDE
African horse sickness	HIDE
Q fever	HIDE
Melioidosis	HIDE

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41	42	43	44	45	46	47	48	49	50
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**CULL**

This could be **GLANDERS** caused by **Burkholderia (Pseudomonas) mallei**. Glanders is **REPORTABLE and ZOONOTIC** - eliminated from U.S. in 1937. Has been reported in recent years from Iraq, Turkey, Pakistan, India, Mongolia, China, Brazil, and the UNITED ARAB EMIRATES.

The horse nasal secretions **Don't treat** Confirm diagnosis (culture, ELISA, mallein test) then CULL and REPORT if positive!

What disease? Best prevention is detect early, eliminate affecteds, complete quarantine and rigorous disinfection of area. **NO vaccine** available.

Equine Glanders: If you get a question with a horse that came from a foreign location with **'NODULES OOZING PUS'** think **GLANDERS/Farcy**.

African horse sickness  
Q fever

Melioidosis HIDE

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41 ✓ 42 ✓ 43 ✗ 44 ✓ 45 ✓ 46 ✓ 47 ✓ 48 ✓ 49 ✗ 50 M ✓

A new cowside AGID test kit for enzootic bovine leukosis (BLV) is being tested. Here are simulated test results, compared to a gold standard PCR test for BLV.

	BLV pos	BLV neg	Total
AGID positive	39	61	100
AGID negative	19	881	900
Total	53	942	1000

How many true positives were identified with the new AGID test for BLV?

- 39 HIDE
- 61 HIDE
- 58 HIDE
- 100 HIDE
- 19 HIDE

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A new co

Here are

How ma




How ma

19

61

100

39

58

DACV

NCVT

**Correct:**

True positives, correctly identified by **AGID = 39**. True negatives identified by AGID=881.

If you have trouble remembering what goes where, draw a basic 2X2 table, and label the boxes a,b,c,d.

True pos by AGID, verified by gold std in box a.  
True negs by AGID, verified by gold std in box d.

Here are the 4 basic epi calculations, all based on the same 2x2 table

Sensitivity= $a/(a+c)$   
Specificity= $d/(b+d)$   
Predictive value pos (PVP) = $a/(a+b)$   
Predictive value neg (PVN)= $d/(c+d)$

19	
61	HIDE
100	HIDE
39	HIDE
58	HIDE

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Predictive value neg (PVN) =  $d/(c+d)$

A new cc  
Here are

Enzootic bovine leukosis (BLV) is **caused by** a **retrovirus**, and exposed animals may **have 4 outcomes**:

- 1) failure to become infected (probably via genetic resistance)
- 2) Permanent infection, detectable antibody levels (latent carriers)
- 3) Permanent infection, persistent benign lymphocytosis
- 4) Malignant lymphosarcoma, +/- persistent lymphocytosis.

Refs: Pasquini's Guide to Bov Clin, 4<sup>th</sup> ed. pp. 268-269, Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-9 and the Merck Veterinary Manual online edition.

How ma

19	
61	HIDE
100	HIDE
39	HIDE
58	HIDE

DACV NCVT

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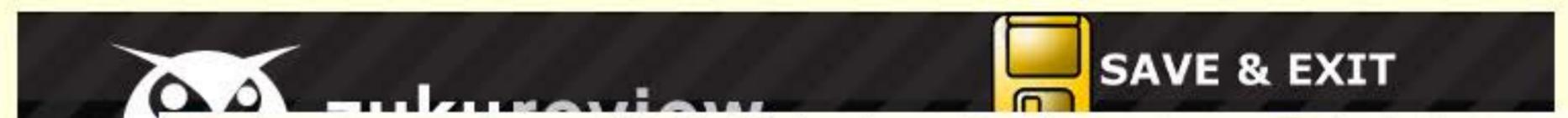
41 ✓	42 ✓	43 ✗	44 ✓	45 ✓	46 ✓	47 ✓	48	49	50
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Which of the following **species** are most severely **affected** by foot and mouth disease (**FMD**)?

Llamas, Cape buffalo	HIDE
Bison, goat	HIDE
Horses, small ruminants	HIDE
Pigs, cows	HIDE
Deer, Old World camels	HIDE

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PREV

41

Which of

Llamas,

Bison, g

Horses,

Pigs, co

Deer, Old world camels

Foot and mouth disease (FMD) affects **pigs and cattle** most severely, but all cloven hoofed animals can be infected. Rats, mice, and guinea pigs have been infected experimentally.

Rinderpest mainly affects **cattle**. In 2011, the United Nations Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (OIE) officially declared that rinderpest was eradicated globally. But because it is a classic, severe, reportable, stomatitis-type disease, it's unlikely that vets will be allowed to forget rinderpest on DDXs for years.

Bluetongue is almost exclusively a **sheep** disease (but cattle and deer can get it).

Look for anthrax mainly in **cattle, sheep**. Can occur in horse, goat. Rarely seen in pigs and humans.

Vesicular stomatitis (VS) can occur in **horses, pigs, cows**.

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Which of the following causes pneumonia, endometritis, and mastitis in horses, and also causes illness in cattle, humans, guinea pigs, camelids, and poultry?

<i>Brucella abortus</i>	HIDE
<i>Mycoplasma mycoides mycoides</i>	HIDE
<i>Salmonella typhimurium</i>	HIDE
<i>Streptococcus zooepidemicus</i>	HIDE
<i>Yersinia pseudotuberculosis</i>	HIDE

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**Correct: Streptococcus zooepidemicus**

When you see the name **zooepidemicus**, think of ZONOTIC.

Which of the following causes ill effects in horses? *Streptococcus equi zooepidemicus*, a cause of endometritis/infertility/mastitis or pneumonia in horses, also causes cervical lymphadenitis in guinea pigs, mortality in poultry and disease in other animals like cattle and humans.

Refs: Pasquini's Guide to Equine Clinics, 3<sup>rd</sup> ed. pp. 96, 112-115 and the Merck Veterinary Manual online.

- Brucella
- Mycoplasma**
- Salmonella
- Streptococcus

*Yersinia pseudotuberculosis* HIDE

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Efficient oral transmission of West Nile virus is a concern in which animal?

Dogs	HIDE
Squirrels	HIDE
Camelids	HIDE
Sheep	HIDE
Cats	HIDE

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- 41
- Efficient
- Dogs
- Squirrel
- Camelid
- Sheep
- Cats

Correct:

Cats. Since introduction to the U.S. in 1999, West Nile virus (WNV) has been seen mainly in horses, corvid birds (crows), and humans. Oral transmission has been shown to be efficient in CATS who ate infected prey (like birds sick with WNV).

There have been a limited number of reported cases of WNV in dogs, camelids, sheep, farmed alligators, and wild squirrels. Interestingly, alligators are also susceptible to oral infection and can produce a high viremia. They can become reservoir hosts and transmit virus back to mosquitoes.

Refs: Austgen LE, et al., Experimental infection of cats and dogs with West Nile virus. Emerg Infect Dis. 2004 Jan;10(1):82-6 The Merck Veterinary Manual online edition.

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51	52	53	54	55	56	57	58	59	60
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A resident cat vocalizes, chases, and bites a new cat in the household.

Which one of the following choices correctly describes the type of aggression displayed by the resident cat?

- Covert, active, and defensive HIDE
- Covert, active, and offensive HIDE
- Overt, passive, and offensive HIDE
- Overt, active and offensive HIDE
- Overt, active, and defensive HIDE

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Correct:

Vocalization, chasing, attacking, and biting a new cat in the house is considered an act of **overt, active, and offensive aggression** on the part of the resident cat.

Blackwell's 5-Min. Vet Consult Canine-Feline, 4<sup>th</sup> ed. pp. 46-7, Cote, Clinical Veterinary Advisor-Dogs and Cats, 3<sup>rd</sup> ed. pp. 39-40, and the Merck Veterinary Manual online edition.

A resident  
Which of  
the resident

- Covert,
- Covert,
- Overt, p

Overt, active and offensive	HIDE
Overt, active, and defensive	HIDE

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51 ✓	52	53	54	55	56	57	58	59	60
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A 7-year-old mare is presented with acute blepharospasm, mild chemosis, and epiphora OS.

The mare is painful in the eye but tractable. The mare is sedated with 150 mg xylazine and 5 mg butorphanol IV.

Auriculopalpebral nerve block is performed to facilitate full ophthalmic examination.

There is mild hyperemia of the superior palpebral conjunctiva.

No foreign debris is visible in the conjunctival fornices. The pupil is miotic.

There is an approximately 1-cm area of mild corneal edema in the ventrolateral aspect of the cornea with a centralized area of superficial fluorescein stain uptake.

There is no corneal blood vessel ingrowth.

No ophthalmic abnormalities are identified in the right eye.

What is an appropriate initial management plan for this case?





Triple antibiotic ointment OS TID, 1% atropine OS SID, autologous serum OS TID, flunixin meglumine PO BID	HIDE
Conjunctival culture and cytology, topical anesthesia with proparacaine, grid keratectomy; tramadol PO TID until culture and cytology results are available	HIDE
Subconjunctival penicillin and flurbiprophen OS, tarsorrhaphy OS, recheck in 7 days	HIDE
Refer for conjunctival flap immediately	HIDE
Place subpalpebral lavage system and administer OS every 2 hours: ofloxacin, voriconazole, N-acetyl cysteine + hypertonic saline; firocoxib PO SID	HIDE



**Correct:**

Triple antibiotic ointment OS TID to QID, 1% atropine OS SID, autologous serum OS TID, flunixin meglumine PO BID. This is a routine, acute, superficial, relatively small corneal ulcer.

Most ulcers of this type are due to presumed trauma (i.e., not due to recurrent uveitis) and readily heal within several days (depending on the size).

The antibiotic addresses bacterial infection; atropine dilates the pupil to minimize pain of iridocyclitis, decrease synechia risk, and stabilize the blood-aqueous barrier; serum is an antiproteinase to prevent keratomalacia (corneal "melting") and flunixin meglumine is analgesic and anti-inflammatory.

Triple ar  
TID, flun

Conjunc  
keratect  
available

Subconj  
in 7 day

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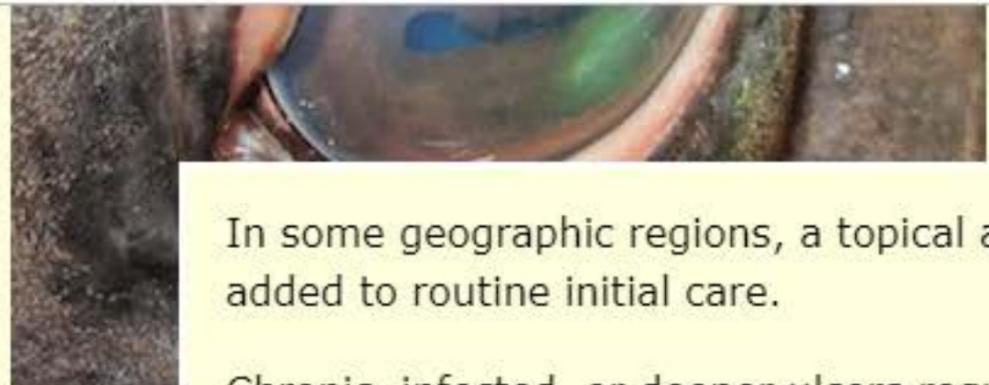
Place subpalpebral lavage system and administer OS every 2 hours: ofloxacin, voriconazole, N-acetyl cysteine + hypertonic saline; firocoxib PO SID

HIDE

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In some geographic regions, a topical anti-fungal (e.g., natamycin or itraconazole) is added to routine initial care.

Chronic, infected, or deeper ulcers require more diagnostics including corneal cytology and culture.

Triple ant  
TID, fluo

Non-healing ulcers (e.g., indolent ulcers or infected ulcers), [descemetocoeles](#), [stromal abscesses](#), and horses that do not tolerate ophthalmic topical treatments several times daily require more aggressive therapy, often including subpalpebral lavage systems or conjunctival flaps.

Conjunct  
keratect  
available

Subconj  
in 7 day

Refs: Gilger's Equine Ophthalmology, 2<sup>nd</sup> ed. and the Merck Veterinary Manual online edition. Image courtesy of Nora Grenager, VMD, DACVIM.

Refer fo

Place subpalpebral lavage system and administer OS every 2 hours: ofloxacin, voriconazole, N-acetyl cysteine + hypertonic saline; firocoxib PO SID

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Which reportable disease has an identical clinical presentation to vesicular stomatitis (VS)?

Bovine Viral Diarrhea (BVD)	HIDE
Bluetongue	HIDE
Foot and Mouth disease	HIDE
Bovine papular stomatitis	HIDE
Rinderpest	HIDE

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**Correct: Foot and Mouth disease**

Vesicular stomatitis (VS) can occur in epidemics and appear clinically identical to foot and mouth disease (FMD).

Which re Can see VS in HORSES, pigs, cows. FMD is mainly in pigs and cows.

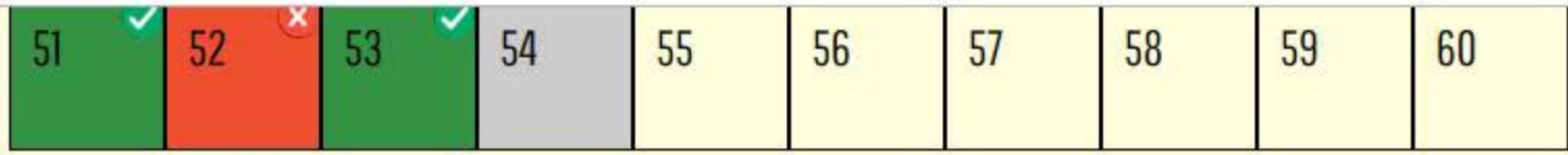
VS DOES occur in the U.S. and it is one of the big rule outs among vesicular diseases (remember the big 8: BVD, IBR, BPS, MCF, Bluetongue, VS, FMD, Rinderpest)

In 2011, the United Nations Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (OIE) officially declared that rinderpest was eradicated globally. But because it is a classic, severe, reportable, stomatitis-type disease, it's unlikely that vets will be allowed to forget rinderpest on DDXs for years.

- Bovine V
- Blueton
- Foot and
- Bovine p
- Rinderpest

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A new AGID test kit for caprine arthritis and encephalitis (CAE) is being tested. Here are simulated test results, compared to a gold standard virus isolation test for CAE.

	CAE pos	CAE neg	Total
AGID positive	32	58	90
AGID negative	23	887	910
total	55	945	1000

How many true negatives were identified with the new AGID test for CAE?

58	HIDE
910	HIDE
945	HIDE
23	HIDE
887	HIDE

51 ✓	52 ✗	53 ✓	54 ✓	55	56	57	58	59	60
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A new A simulate

**Correct:**

True negatives, correctly identified by the AGID = **887**. Total true negatives as identified by the gold standard test=945 (specificity=887/945). True positives correctly identified by the AGID test=32 (32/55 is sensitivity of the AGID test).

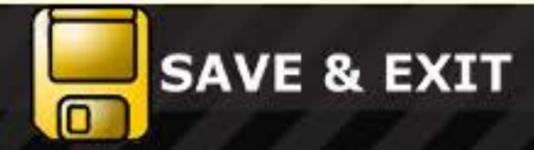
Caprine arthritis and encephalitis (CAE) is caused by a retrovirus. Presentations vary. Most commonly, it is a subclinical disease of dairy goats, leading to production losses. In adults with clinical disease, see a polyarthrits. Less commonly, see a progressive paresis in kids (leukoencephalomyelitis) . Other presentations (not as common) include interstitial pneumonia, indurative mastitis ("hard udder"), and chronic wasting.

Refs: Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-39 and the Merck Veterinary Manual online edition

58	HIDE
910	HIDE
945	HIDE
23	HIDE
<b>887</b>	HIDE



**zukureview**



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51 ✓	52 ✗	53 ✓	54 ✓	55	56	57	58	59	60
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Which two reportable diseases have a similar presentation and are caused by a closely related causative agent?

Malignant catarrhal fever, Bluetongue	HIDE
Aphthous fever, Bovine ephemeral fever	HIDE
Pseudorabies, Aujeszky's disease	HIDE
Rinderpest, Peste Des Petits Ruminants	HIDE
Foot and mouth disease (FMD), Vesicular stomatitis (VS)	HIDE

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Which ty related c

- Maligna
- Aphtho
- Pseudor
- Rinderp

Rinderpest and Peste Des Petits Ruminants are both caused by a **morbillivirus**, and cause a syndrome characterized by fever, necrotic stomatitis, gastroenteritis/diarrhea.

In 2011, the United Nations Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (OIE) officially declared that rinderpest was eradicated globally. But because it is a classic, severe, reportable, stomatitis-type disease, it's unlikely that vets will be allowed to forget rinderpest on DDXs for years.

Canine distemper and **human measles** are also caused by **morbilliviruses**.

Pseudorabies and **Aujesky's** are the same disease. **Aphthous fever is just another name for foot and mouth disease (FMD).**

Bluetongue is almost exclusively a sheep disease that is mild in cows. In contrast, malignant catarrhal fever (MCF) is almost 100% fatal once see clinical signs.

Foot and mouth disease (FMD), Vesicular stomatitis (VS) HIDE

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A practice is using an FeLV test with a sensitivity of 90% and a specificity of 95%.

Assuming the prevalence of feline leukemia in the area is 5%, what is the predictive value negative (PVN) of the test?

75%	HIDE
55%	HIDE
45%	HIDE
88%	HIDE
99%	HIDE

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**Correct:**  
PVN is 99%.

The trick with this kind of question is to pick an imaginary number of animals that you test, like 1000, and fill out your 2x2 table from there.

Follow the links to see diagrams step by step.

If prev is 5% then there must be 50/1000 cats with FeLV and 950 cats that are disease-free.

A 90% sensitive test will correctly call 45/50 positive (box "a"), and **IN-correctly** call 5/50 negative, (box "c": these are the false negs).

75%	
55%	
45%	
88%	HIDE
99%	HIDE

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A practic

Assumin

negative

75%

55%

45%

88%	HIDE
99%	HIDE

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A 90% sensitive test will correctly call 45/50 positive (box "a"), and **IN-correctly** call 5/50 negative, (box "c": these are the false negs).

If 50/1000 animals are infected, then 950/1000 are disease-free.

Your 95% specific test will correctly call 902/950 disease-free (box "d":  $0.95 \times 950 = 902$ ) and **IN-correctly** call 48/950 positive, (box "b": these are the false pos).

Now your a,b,c,d boxes are all filled, it is easy to calculate  
 $PVN = d / (c + d) = 902 / (902 + 5) = 99\%$ .

Refs: Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-9.

51 ✓ 52 ✗ 53 ✓ 54 ✓ 55 ✓ 56 ✓ 57 ✓ 58 59 60

A rapid ELISA test kit for psittacine beak and feather disease (PBFD) is being tested. Here are simulated test results, compared to a gold standard test for PBFD.

	PBFD pos	PBFD neg	Total
ELISA positive	111	132	243
ELISA negative	17	1740	1757
total	128	1872	2000

How many false positives were reported using the new ELISA test for PBFD?

132	HIDE
111	HIDE
17	HIDE
1740	HIDE
128	HIDE

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A rapid E are simu

False positives=132. Total true positives as identified by the gold standard test are 128. True positives correctly identified by the ELISA test=111 (111/128, which is sensitivity of the ELISA test).

Psittacine beak and feather disease (Pbfd) is caused by a psittacine circovirus. The name is misleading, because typical presentations do not have beak malformations and nowadays are less likely to show the severe feather abnormalities that were seen in *Cacatua* spp.(cockatoos) when Pbfd first emerged.

Click here to see a sulfur-crested cockatoo with Pbfd with typical feather loss.

Click here to see a cockatoo with severe Pbfd and beak malformation. Image courtesy, Sarah Baker.

How ma PCR screening has decreased prevalence of Pbfd virus in cockatoos, though the disease can be seen in other old world psittacines as well, like Eclectus and African

132	HIDE
111	HIDE
17	HIDE
1740	HIDE
128	HIDE

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Size of this preview: 450 × 600 pixels. Other resolutions: 180 × 240 pixels | 360 × 480 pixels | 576 × 768 pixels | 768 × 1,024 pixels | 1,704 × 2,272 pixels.

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**Description** English: A **wild Sulphur-crested Cockatoo** (*Cacatua galerita*) with **psittacine beak and feather disease**. It is perching on a balcony that overlooks Sydney, Australia. Its condition was reported to an animal welfare group, who captured it to prevent other cockatoos getting infected.

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What organism causes heartwater disease of cattle, sheep and goats?

<i>Anaplasma phagocytophila</i>	HIDE
<i>Cowdria jellisoni</i>	HIDE
<i>Burkholderia pseudomallei</i>	HIDE
<i>Histophilus somni</i>	HIDE
<i>Ehrlichia ruminantium</i>	HIDE

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What org

- Anaplas
- Cowdria
- Burkhol
- Histoph
- Ehrlichia ruminantium

**Correct:**  
**Ehrlichia ruminantium** is the organism responsible for heartwater disease of ruminants, a tick-borne foreign disease characterized by high fevers, **lung edema** and **hydropericardium**. The causative organism was **FORMERLY** classified as *Cowdria ruminantium*.

Molecular testing has led to the reclassification of several organisms that cause infectious disease:

Equine granulocytic ehrlichiosis (EGE) was originally classified as *Ehrlichia equi*, **but** is now classified as ***Anaplasma phagocytophilum***.

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now classified as *Anaplasma phagocytophilum*.

**Potomac Horse Fever** (PHF), formerly classified as *Ehrlichia risticii*, is now called **NEOrickettsia risticii**.

*Histophilus somni*, the cause of thrombotic meningoencephalitis (TEME), was formerly called *Haemophilus somnus*. Follow this link to see a [necropsy image of TEME](#).

**Mannheimia haemolytica**, a primary cause of [pneumonic pasteurellosis](#), was formerly called *Pasteurella hemolytica*.

Refs: Pasquini's Guide to Bov Clin, 4<sup>th</sup> ed. pp. 63, 254, 261, Pasquini's Guide to Equine Clinics, 3<sup>rd</sup> ed. pp. 43, 142 and the Merck Veterinary Manual online edition.

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You serologically test 100 Siberian box turtles for galloping halitosis. 27 turtles test seropositive and 73 test seronegative.

However, molecular testing reveals 3/27 of the seropositive turtles are disease free and 10/73 of the seronegative turtles are diseased.

The entire fur-bearing turtle industry depends on your answer: What is the specificity of your serologic test?

73%	HIDE
70%	HIDE
95%	HIDE
86%	HIDE
89%	HIDE

BACK NEXT LEAVE BLANK



10/73 of the seronegative turtles are diseased.

The entire fur-bearing turtle industry depends on your answer: What is the specificity of your sero

- 89%
- 86%
- 95%
- 73%**
- 70%

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**Correct:**

**It is 95%.** Remember: you are **comparing TWO TESTS** here. Here is how you do it: First, draw a 2x2 table, and label the boxes a,b,c,d. Spec =  $d/(b+d)$ . Click here to see a [Basic 2X2 table](#). Now, add in the TOTAL number of animals (100), the total positive by YOUR test (27) and the total negative by YOUR test (73), like this diagram: [2x2 with totals](#).

Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test. (3 false pos in box b, 10 false neg in box c): Click here to see [2x2 with b and c cells](#).

Last, subtract to fill in your "a" box ( $27-3=24$ ) and do the math to calculate

[Change My Background Colors](#)

85%	HIDE
95%	HIDE

73%
70%

BACK



Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test. (3 false pos in box b, 10 false neg in box c): Click here to see [2x2 with b and c cells](#).

Last, subtract to fill in your "a" box ( $27-3=24$ ) and do the math to calculate specificity =  $d/(b+d) = 63/66 = 0.95$  or 95% : Click here to see the final [2x2 with all cells filled](#) and sensitivity calculated.

FYI: You can calculate sensitivity  $a/(a+c)$ , specificity  $d/(b+d)$ , Predictive Value POS (PVP)  $a/(a+b)$  and Predictive Value NEG (PVN)  $d/(c+d)$  with the same 2x2 table.

Refs: Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-9.

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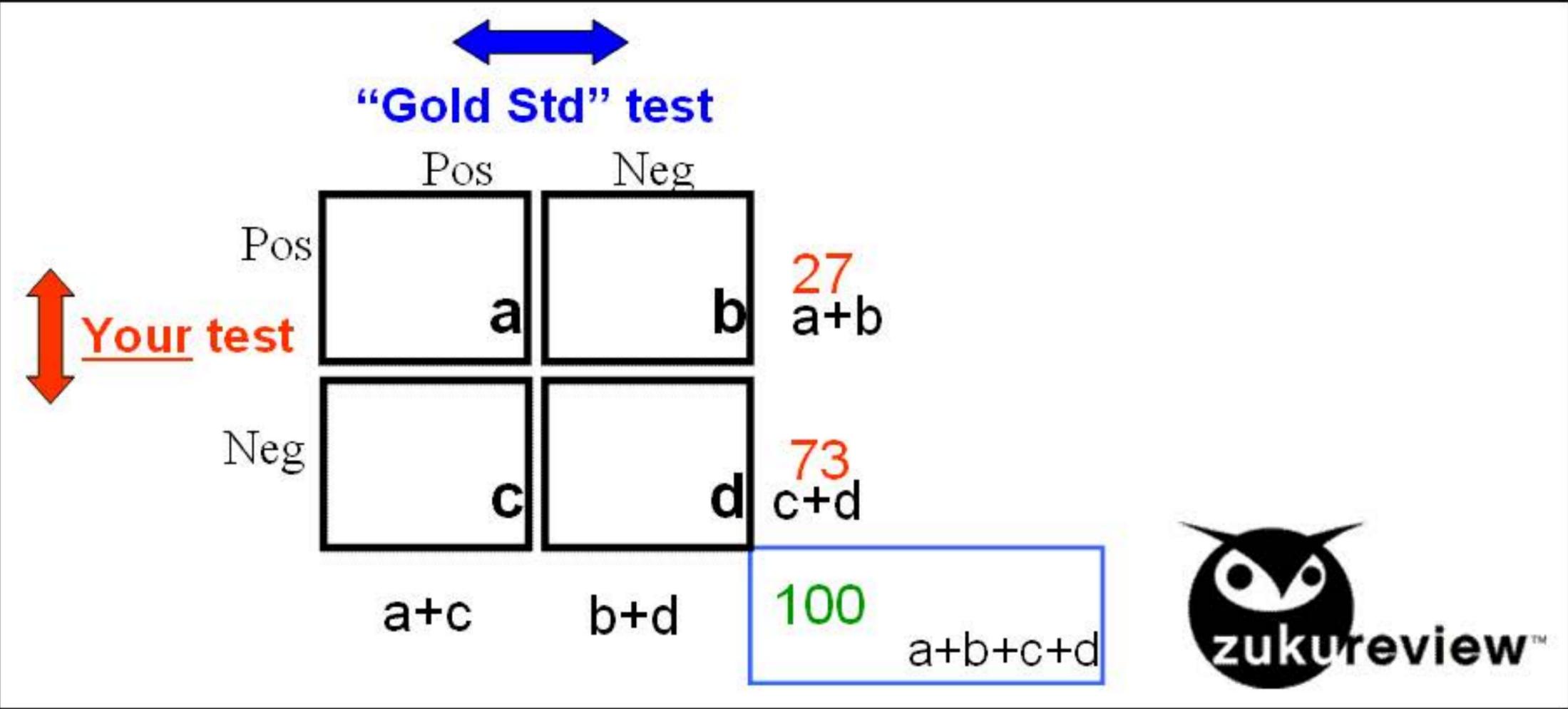
# The only epi table that matters: **The 2 x 2**

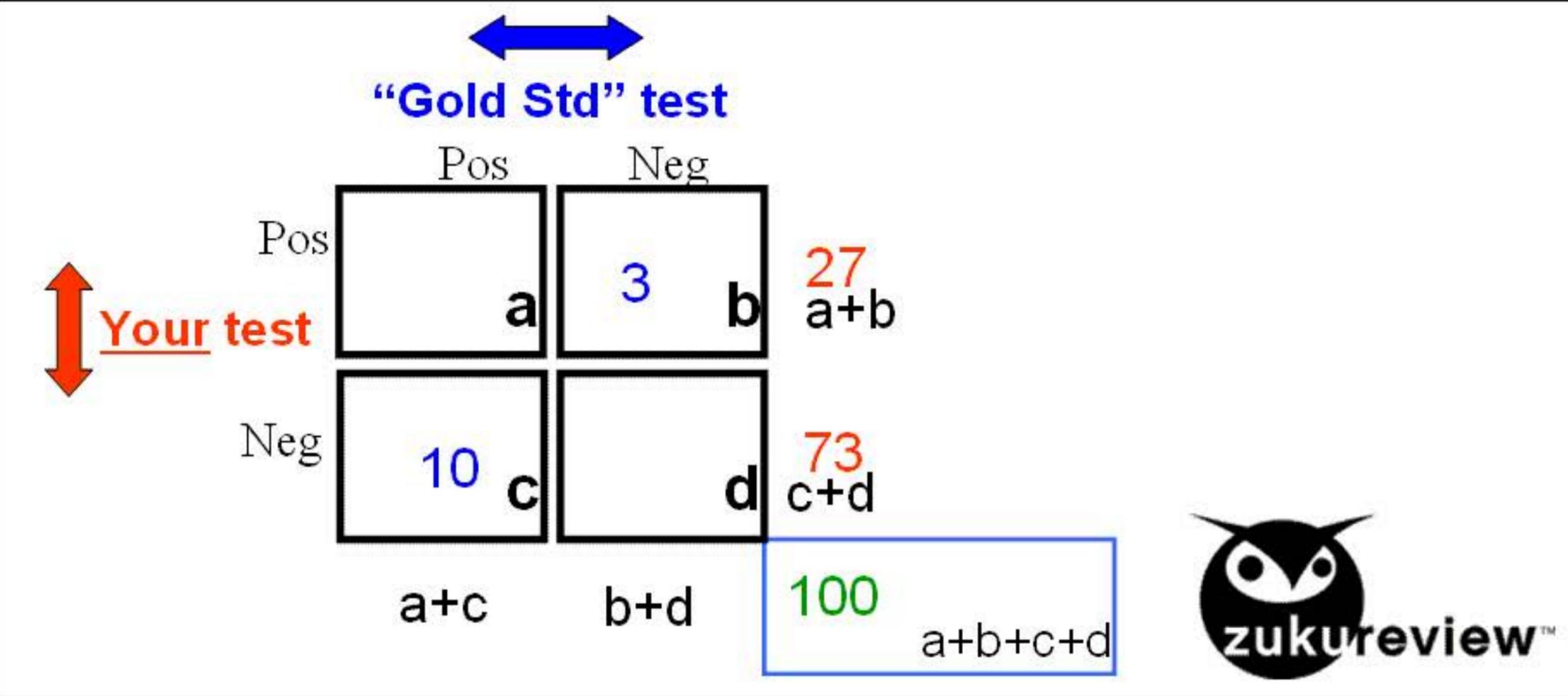
“Truth” or “Gold Std” test

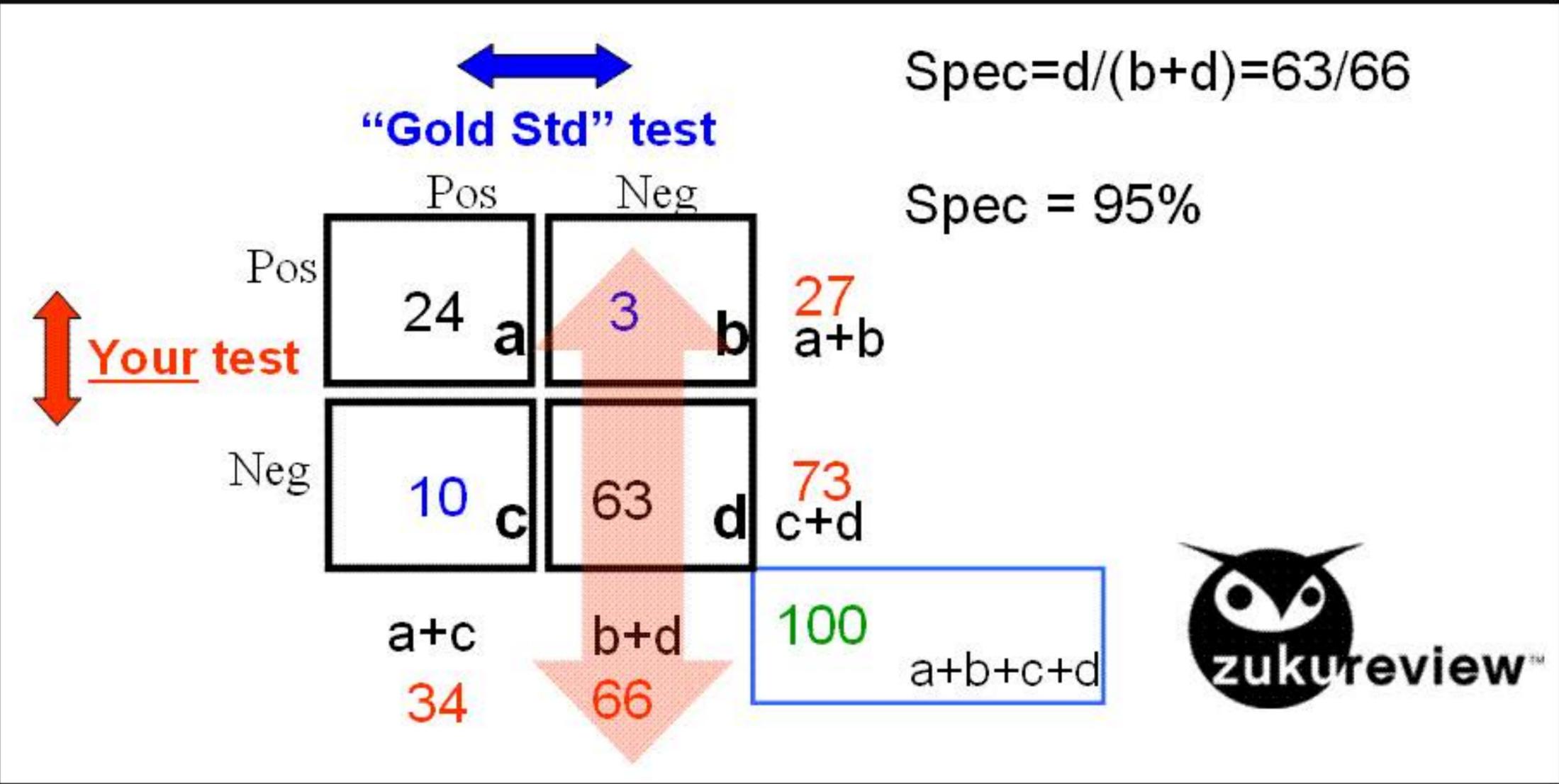
		Pos	Neg	
<u>Your test</u>	Pos	a	b	a+b
	Neg	c	d	c+d
		a+c	b+d	Total a+b+c+d

**SENS** ↑  
Sens =  $\frac{a}{a+c}$   
↓  
Spec =  $\frac{d}{b+d}$









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Which one of the following is a recognized cause of bovine respiratory disease complex that can be found in the tonsillar crypts of healthy cattle?

<i>Salmonella dublin</i>	HIDE
<i>Clostridium perfringens</i>	HIDE
<i>Streptococcus bovis</i>	HIDE
<i>Moraxella bovis</i>	HIDE
<i>Mannheimia haemolytica</i>	HIDE

BACK

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FINISH

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51 ✓

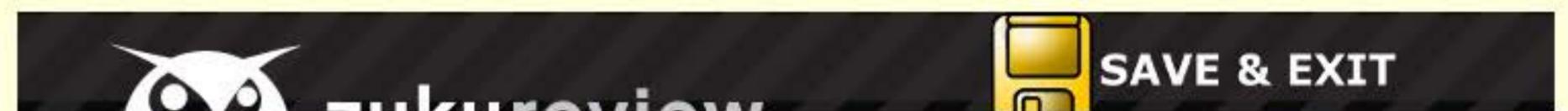
Which or  
can be fo

- Salmon
- Clostridi
- Streptoc
- Moraxel

**Correct:**  
*Mannheimia haemolytica* is a normal inhabitat of the tonsillar crypts and is the most frequently isolated bacterium from the lungs of cattle with bovine respiratory disease (BRD) complex.  
Stress or viral infection suppresses the host's immune system and allows bacterial colonization of the lungs.  
Other common bacteria associated with BRD include *Pasteurella multocida* and *Histophilus somni*.  
*Trueperella pyogenes* is frequently isolated from pulmonary abscesses.

*Mannheimia haemolytica* HIDE

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FINISH



Other common bacteria associated with BRD include *Pasteurella multocida* and *Histophilus somni*.

*Trueperella pyogenes* is frequently isolated from pulmonary abscesses.

Overgrowth of *Streptococcus bovis* in the gastrointestinal tract of cattle is associated with ruminal acidosis.

*Salmonella spp* generally cause enteric disease in cattle.

*Clostridium perfringens* causes enterotoxemia in many species.

*Moraxella bovis* is the cause of infectious bovine keratoconjunctivitis.

Refs: The Merck Veterinary Manual online edition.

- Salmonella
- Clostridium
- Streptococcus
- Moraxella

Mannheimia haemolytica HIDE

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