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1	2	3	4	5	6	7	8	9	10
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140 wallabies are serologically tested for a disease.  
35 wallabies test seropositive and 105 test seronegative.  
However, postmortem data reveals 5/35 of the seropositive wallabies are disease free and 4/105 of the seronegative wallabies are diseased.  
What is the predictive value positive of this serologic test?

Hint: If you have no idea how to start, pick any answer and follow the calculation steps given in the explanation.

95%	HIDE
86%	HIDE
88%	HIDE
96%	HIDE
77%	HIDE

NEXT LEAVE BLANK

PREV NEXT

1 ✓ 2 M ✓ 3 ✓ 4 ✓ 5 M ✓ 6 ✓ 7 ✓ 8 ✓ 9 ✓ 10 ✓

140 wall

35 walla

However

4/105 of

What is t

Hint: If y

given in

77%

88%

95%

96%

86%



**Correct:**

It is **86%**. Remember-you are **comparing TWO TESTS** when you calculate Sens, Spec, PVP, PVN. You **compare your test** (serologic in this case) to a gold standard (necropsy). Predictive value positive (PVP) means, "of the wallabies **my test** says are positive (35), how many are **truly** positive?" ( $35-5=30$ , this # goes in the "a" box).

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 (140), the total positive by YOUR test (35) and the total negative by YOUR test (105), like this diagram: [2x2 with totals](#).

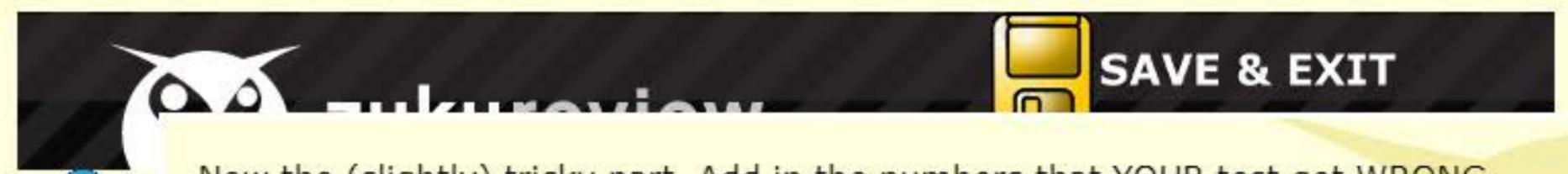
Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test (5 false pos in box b, 4 false neg in box c). Click

HIDE

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PREV  
1  
140 wall  
35 walla  
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4/105 of  
What is t  
Hint: If y  
given in

Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test. (5 false pos in box b, 4 false neg in box c): Click here to see [2x2 with b and c cells](#).

Last, subtract to fill in your last 2 boxes and do the math to calculate  $PVP = a/(a+b) = 30/35 = 0.86$  or **86%**: 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.

95%	HIDE
<b>86%</b>	HIDE
88%	HIDE
96%	HIDE



1 ✓	2	3	4	5	6	7	8	9	10
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A twenty-month old calf is presented that has a high fever (~107°F [41-42°C] [N=101.5-103.5 F, N=37.8-39.7 C ]), dehydration, oral ulcerations, eruptive lesions of the coronary band and interdigital cleft, and diarrhea. There are a mild amount of petechial hemorrhages in the conjunctiva, nictitating membrane of the eyes, and along the surface of the vulva.

Blood work reveals leukopenia and thrombocytopenia.

Bovine viral diarrhea (BVD) is on the differential list. However, BVD must be distinguished from other viral diseases that produce diarrhea and mucosal lesions.

What other diseases are on the top of the differential list?

Foot and Mouth, Cryptosporidiosis	HIDE
ETEC Colibacillosis, Foot and Mouth	HIDE
IBR, Enterotoxemia	HIDE
Enterotoxemia, Toxicoinfectious botulism	HIDE
Rinderpest, Malignant Catarrhal Fever	HIDE

103.5 F, N=37.8-39.7 C ] ), dehydration, oral ulcerations, eruptive lesions of the coronary band and interdental cleft, and diarrhea. There are a mild amount of petechial hemorrhages in the conjunctiva, nictitating membrane of the eyes, and along the surface of the vulva.

Blood wc

**Correct:**

Bovine v from oth

With BVD think DIARRHEA and ORAL EROSIONS. Rinderpest and Malignant Catarrhal Fever (MCF) are **both on your DDX.**

What oth

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.

Foot and

The classic vesicular disease DDX includes 3 common domestic diseases:

ETEC Co

IBR, Ent

- BVD,
  - IBR,
  - Bovine papular stomatitis
- (Remember "**BIB**" ~~Bvd~~ ~~Ibr~~ ~~Bps~~)

Enteroto

Rinderp

BACK

NEXT



103.5 F, N=37.8-39.7 C ] ), dehydration, oral ulcerations, eruptive lesions of the coronary band and interdigital cleft, and diarrhea. There are a mild amount of petechial hemorrhages in the conjunctiva, nictitating membrane of the eyes, and along the surface of the vulva.

Blood wc (Remember "BIB" Bvd-Ibr-Bps)

Bovine v and 5 serious REPORTABLE diseases:

- MCF,
- Bluetongue (more a sheep disease),
- Foot and Mouth (FMD),
- Vesicular STOMatitis (VS), and

Rinderpest (Remember "MALIGNANT BLUE FOOT STOMps on a PEST" )

Refs: Pasquini's Guide to Bovine Clinics, 4<sup>th</sup> ed. pp. 8-11 and the Merck Veterinary Manual online edition.

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Most people are aware that West Nile virus is transmitted by infected mosquitoes to horses and humans.

Which animal can have efficient oral transmission of West Nile Virus?

Cats	HIDE
Sheep	HIDE
Horses	HIDE
Pigs	HIDE
Alpacas	HIDE

BACK    NEXT    LEAVE BLANK



Most pec  
and hum  
Which ar

- Cats
- Sheep
- Horses

Pigs	HIDE
Alpacas	HIDE

BACK NEXT



**Correct:**

Cats (and alligators!). Since introduction to the U.S. in 1999, [West Nile Virus \(WNV\)](#) has been seen mainly in horses, corvid birds (crows), and humans.

WNV is most commonly spread by the bite of an infected mosquito. [Cats can be infected](#) by eating infected prey (small mammals, birds).

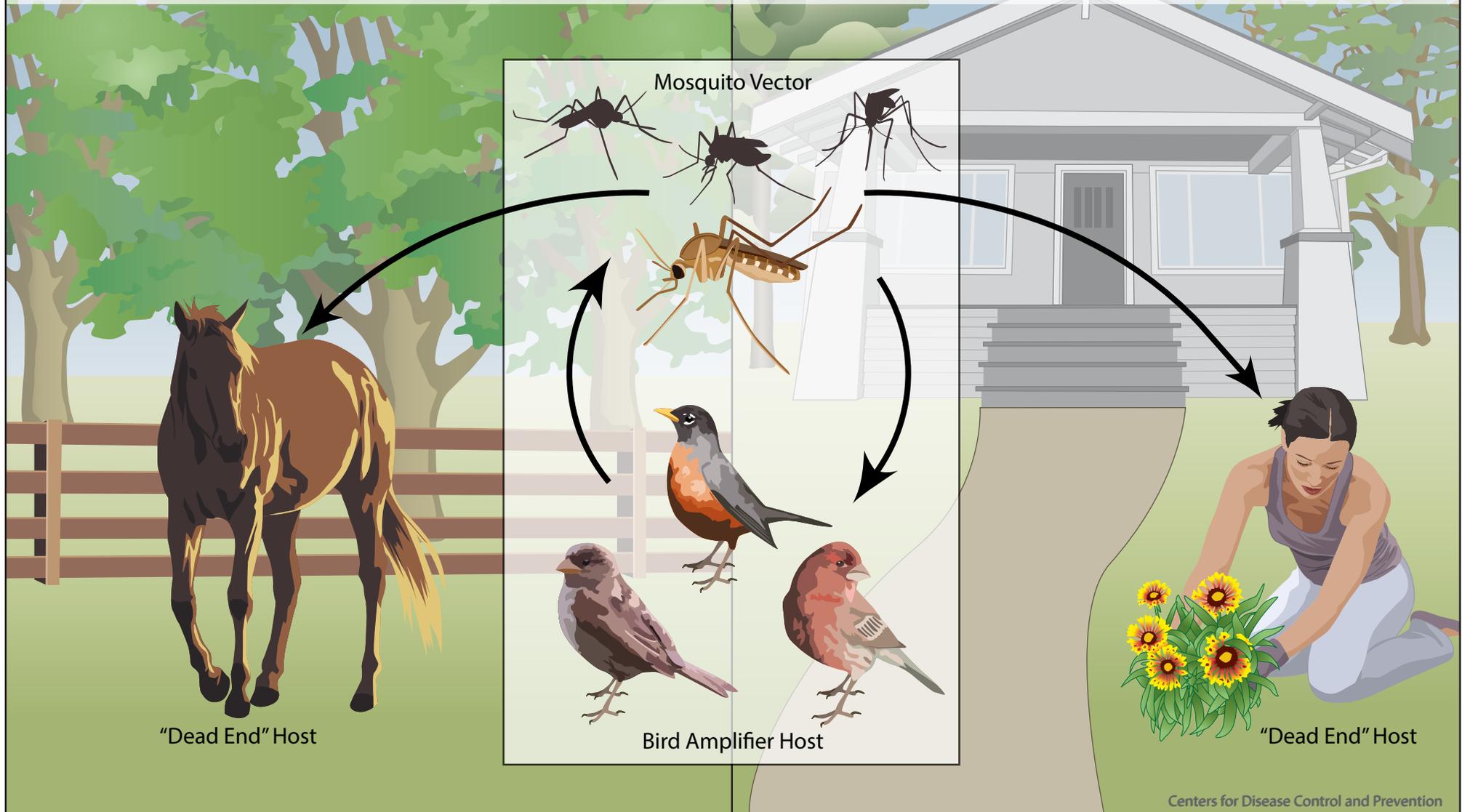
Horses, humans, and most other mammals are considered "dead-end" hosts - i.e., they do NOT develop sufficient viremia to pass the infection back to another mosquito. The CDC has a nice image of the [transmission cycle of WNV](#).

There have been a limited number of reported cases of WNV in dogs, camelids, sheep, farmed alligators, and wild squirrels. Interestingly, alligators are susceptible to oral transmission and develop a sufficient viremia to amplify the virus and serve as reservoir hosts.

# West Nile Virus Transmission Cycle

In nature, West Nile virus cycles between mosquitoes (especially *Culex* species) and birds. Some infected birds, can develop high levels of the virus in their bloodstream and mosquitoes can become infected by biting these infected birds. After about a week, infected mosquitoes can pass the virus to more birds when they bite.

Mosquitoes with West Nile virus also bite and infect people, horses and other mammals. However, humans, horses and other mammals are 'dead end' hosts. This means that they do not develop high levels of virus in their bloodstream, and cannot pass the virus on to other biting mosquitoes.



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Which one of the following choices will help to prevent Berserk Llama syndrome?

Removing locoweed from pasture	HIDE
Minimizing human contact with orphaned crias	HIDE
Socializing llamas with humans soon after birth	HIDE
Avoid use of nonprotein nitrogen in feed (Urea, Ammonia, Ammonium sulfates)	HIDE
Avoid use of coccidiostats in feed (Amprolium, Monensin, Lasalocid)	HIDE

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- 1  Correct
- Which or
- Removin
- Minimizi
- Socializi
- Avoid us
- sulfates

**Correct:**  
**Minimizing human contact with orphaned crias** (bottle feeding, petting etc) will help.

Berserk llama syndrome occurs when orphaned crias (young camelids), usually male, imprint with human handlers and then treat them as another llama.

Llamas are very aggressive among themselves and will head butt and bite to establish dominance. If they imprint on humans, they will do this to humans.

Refs: McCurnin and Bassert, Clin Textbook for Vet Technicians, 7<sup>th</sup> ed pp. 760-62.

Avoid use of coccidiostats in feed (Amprolium, Monensin, Lasalocid) HIDE

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1 <input checked="" type="checkbox"/>	2 <input checked="" type="checkbox"/>	3 <input checked="" type="checkbox"/>	4 <input checked="" type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>	10 <input type="checkbox"/>
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What is the most common etiology of cataracts in adult horses?

Recurrent uveitis	HIDE
Equine Cushing's disease	HIDE
Trauma	HIDE
Diabetes mellitus	HIDE
Congenital	HIDE

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 **SAVE & EXIT**

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1 

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Diabete

Congenit

The most common etiology of cataracts, or lens opacity, in adult horses is [recurrent uveitis](#).

Most horses with recurrent uveitis develop some degree of cataracts.

[Signs of uveitis](#) (previous or ongoing) include aqueous flare, corpora nigra atrophy, fibropupillary membranes, and posterior synechia.

[In foals](#), cataracts are most often developmental or [congenital](#).

[Congenital cataracts](#) are the most common congenital abnormality in foals.

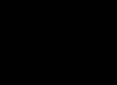
The only **Rx** for cataracts is [surgical removal](#) (e.g., phacoemulsification) - this can be done if there's visual impairment in cases not secondary to uveitis.

Check out this great slide show with lots of images on [Equine Lens Problems](#), courtesy of Dr. Dennis Brooks at the University of Florida.

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Synthetic pheromones are used to treat feline elimination disorders.

Which one of the following types of pheromones do they mimic in the cat?

Urine	HIDE
Facial	HIDE
Tarsal	HIDE
Mammary	HIDE
Paw	HIDE

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PREV

1

Synthetic

Which of

Urine

Facial

Tarsal

Mamma,

Paw

HIDE

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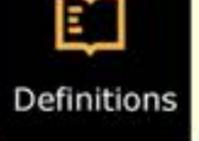
Mark this Question



Lab Values



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**Correct:**

**Facial pheromones** are thought to act at the level of the hypothalamus to decrease anxiety and effectively decrease urine spraying. Feliway and Felifriend are brand names of products containing synthetic feline facial hormones.

However, some cats may not respond well to pheromones or may even become worse. The best results have been seen when the underlying anxiety disorder is treated with management changes, behavior modification, and medication.

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

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

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1 ✓	2 ✗	3 ✓	4 ✓	5 ✗	6 ✓	7	8	9	10
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Which statement about bovine brucellosis is correct?

Affects cattle and horses, but not pigs	HIDE
<i>Brucella</i> milk ring test has high false negatives	HIDE
Infected cows abort only once	HIDE
Serum agglutination at dilution 1:50 means cow is a reactor	HIDE
Causes abortion in the first trimester	HIDE

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PREV 1

Correct

A cow infected with Brucellosis typically aborts only once after exposure, in the second half of the gestation; later pregnancies and lactations appear normal.

Which st

The *Brucella* milk ring test is used to identify affected herds but has high false positives.

Affects c

Serum agglutination at dilutions of 1:100 or more in nonvaccinated animals and of 1:200 in animals vaccinated between 4 and 12 months old are considered positive (reactors).

*Brucella*

Infected

Serum a

Brucellosis affects all the domestic animals including pigs, which have their own brucellosis organism, *Brucella suis*.

Causes abortion in the first trimester

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1 ✓	2 ✗	3 ✓	4 ✓	5 ✗	6 ✓	7 ✓	8	9	10
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140 wallabies are serologically tested for a disease.

35 wallabies test seropositive and 105 test seronegative.

However, postmortem data reveals 5/35 of the seropositive wallabies are disease free and 4/105 of the seronegative wallabies are diseased.

What is the predictive value negative (PVN) of this serologic test?

88%	HIDE
96%	HIDE
86%	HIDE
95%	HIDE
77%	HIDE

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1	2	3	4	5	6	7	8	9	10
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**Correct:**

It is **96%**. Remember-you are **comparing TWO TESTS** when you calculate Sens, Spec, PVP, PVN. You **compare your test** (serologic in this case) to a gold standard (necropsy). Predictive value negative (PVN) means, "of the wallabies **my test** says are negative (105), how many are **truly** negative?" (105-4=**101**, this # goes in the "d" box)

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 (140), the total positive by YOUR test (35) and the total negative by YOUR test (105), like this diagram: [2x2 with totals](#).

Now the (slightly) trickier part. Add in the numbers that YOUR test got WRONG

88%

**96%**

86%

95%

77%

HIDE

HIDE

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1 ✓	2 ✗	3 ✓	4 ✓	5 ✗	6 ✓	7 ✓	8 ✓	9	10
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140 wall  
35 walla  
However  
4/105 of  
What is t

according to the gold standard test. (5 false pos in box b, 4 false neg in box c): Click here to see [2x2 with b and c cells](#). (Note: you can calculate Predictive value positive once you fill the a and b boxes-see link).

Last, subtract to fill in your last box "a"=(35-5)=30.

Now do the math to calculate  $PVN = d/(c+d) = 101/105 = 0.96$  or 96% : Click here to see the final [2x2 with all cells filled](#) and PVN 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.

88%	
96%	
86%	
95%	HIDE
77%	HIDE

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A hemagglutination test kit for detection of highly pathogenic avian influenza (HPAI) is being tested by the USDA in poultry farms throughout South Carolina.

Here are simulated test results, compared to a gold standard virus isolation test for HPAI.

	HPAI pos	HPAI neg	Total
Test kit positive	4	6	10
Test kit negative	27	9963	9990
total	31	9969	10,000

How many false negatives have been detected by the hemagglutination test kit?

27	HIDE
31	HIDE
9969	HIDE
6	HIDE
9990	HIDE



A hemagglutination test kit for detection of highly pathogenic avian influenza (HPAI) is being test...

Correct:

Here are False negatives=27. False positives=6. Total true negatives as identified by the gold standard test are 9969. True negatives correctly identified by the hemagglutination test=9963.

Avian influenza (AI) viruses vary in pathogenicity. In general, see nothing with subclinical infections. If clinical signs appear, may see sinusitis and respiratory signs in low pathogenicity strains, and fulminating multisystemic, hemorrhagic signs with highly pathogenic strains.

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

How many Follow these links to see hemorrhagic facial skin lesions and leg hemorrhages on a chicken with AI.

27	HIDE
31	HIDE
9969	HIDE
6	HIDE
9990	HIDE

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

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1 ✓	2 ✗	3 ✓	4 ✓	5 ✗	6 ✓	7 ✓	8 ✓	9 ✓	10
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Which one of the following choices describes the best method to prevent aggression between new cats in a household?

Add another pet to the household	HIDE
Let the cats fight it out	HIDE
Ensure adequate adult socialization	HIDE
Gradual introduction of new pets	HIDE
Hold them during the first meeting	HIDE

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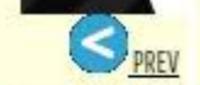
Correct

Gradual introduction of a new pet is the best way to prevent the development of aggression. The goal is to prevent the development of anxiety and a stress response when new members are present.

For example, new cats should be kept in separate rooms and gradually rotated throughout all the rooms of the house to add their scent to these areas. Cats should only be allowed in the same room together for positive experiences such as feeding or treats.

The use of pheromones may also help in some circumstances.

Refs: Landsberg, Handbook of Behavior Problems of the Dog and Cat, 2nd ed. p. 448, Cote, Clinical Veterinary Advisor-Dogs and Cats, 3rd ed. pp. 39-40 and the Merck Veterinary Manual online edition.



Which or between

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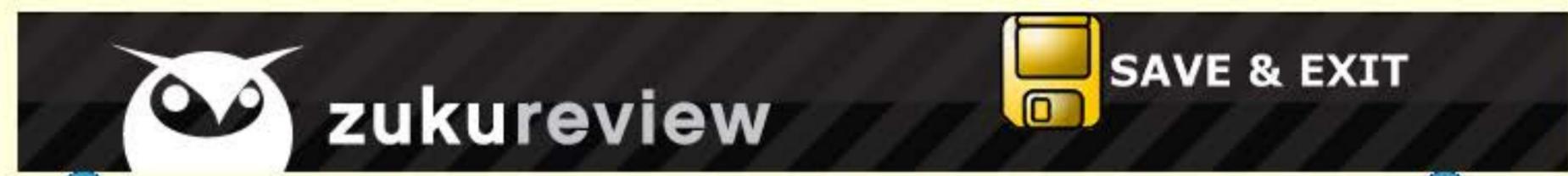
Gradual

Hold them during the first meeting HIDE

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A 7-year-old female spayed DSH cat is presented with lacerations and bite wounds on her extremities. The owner saw a raccoon attack her cat in broad daylight.

This patient was seen 4 weeks ago when she received her annual booster shot for rabies.

What are the correct actions to take?

Immediate booster; observe for 60 days; confine at home	HIDE
Immediate booster; confine at clinic; 10 days observation	HIDE
Booster on days 1, 3, 7; confine at home; 60 days observation	HIDE
Immediate booster; keep under owner control; observe 45 days	HIDE
Keep under owner control 45 days; booster on 46th day	HIDE

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A 7-year  
extremi

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**CORRECT:**

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

This cat is CURRENTLY vaccinated (remember: any rabies booster is considered IMMEDIATELY effective because of rapid anamnestic response).

According to the 2016 Compendium for Rabies Control, **Dogs, cats, and ferrets** that are **currently vaccinated** 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.

Booster on days 1, 3, 7; confine at home; 60 days observation	HIDE
Immediate booster; confine at clinic; 10 days observation	HIDE
Immediate booster; observe for 60 days; confine at home	HIDE

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PREV

11

A 7-year  
extremi

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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](#)

Booster on days 1, 3, 7; confine at home; 60 days observation	HIDE
Immediate booster; confine at clinic; 10 days observation	HIDE
Immediate booster; observe for 60 days; confine at home	HIDE

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Which one of the following is the best sample to submit for antemortem diagnostic testing for scrapie in sheep?

Whole blood	HIDE
Serum or CSF	HIDE
Brainstem, obex or brain	HIDE
Skin biopsy at oral mucocutaneous junction	HIDE
Rectoanal lymphoid tissue	HIDE

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11

Which or for scrap

Whole b

Serum c

Brainste

Skin bio

**Correct: Rectoanal lymphoid t issue**

A rectal mucosa biopsy test was approved by USDA APHIS in 2008 which is less time-consuming to perform than other biopsies (3rd eyelid, tonsils) and can be repeated. It yields positive diagnoses in roughly 55%–65% of positive sheep.

**Immuno-blot testing of biopsied tonsils** may detect prion proteins in **subclinically-infected sheep less than one-year-old**. Antibodies against scrapie/prions are NOT produced.

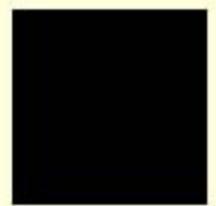
**Immunohistochemistry** on a sample of **obex tissue** is the **POST-mortem test** of choice for scrapie.

Immunohistochemistry of lymph follicles of the nictitating membrane can detect

Rectoanal lymphoid tissue HIDE

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- 11
- Which or for scrap
- Whole b
- Serum c
- Brainste
- Skin bio

Immunohistochemistry of lymph follicles of the nictitating membrane can detect scrapie in live animals but it has some issues.

The problem is there are many unreadable samples due to lack of lymph follicles in the tissue sample in up to 40%-60% of adult sheep.

Click here and scroll down to see [videos of animals affected by scrapie](#) courtesy of USDA-APHIS.

When you think of scrapie, remember also [bovine spongiform encephalopathy](#) (BSE - cows) and [chronic wasting disease](#) (CWD - deer, elk).

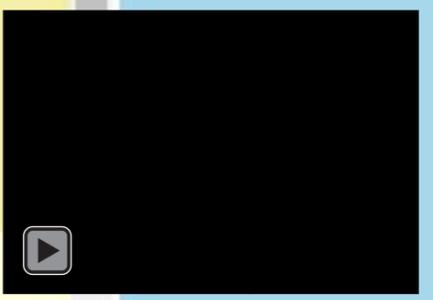
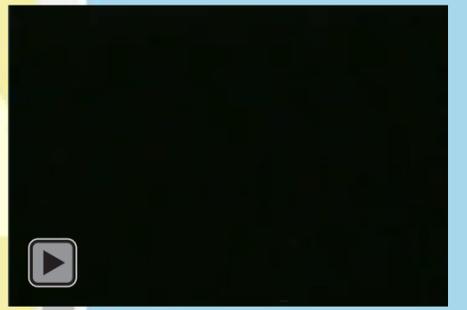
All of these are REPORTABLE.

Refs: Mayhew, Large Animal Neurology 2<sup>nd</sup>ed, pp. 258-9, [USDA-APHIS National Scrapie Eradication Program](#), the Merck Veterinary Manual online edition.

Rectoanal lymphoid tissue HIDE

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Which group oversees the care and use of laboratory animals for research and instructional purposes in the United States?

- Department of Health and Human Services HIDE
- American Veterinary Medical Association (AVMA) HIDE
- Food and Drug Administration HIDE
- Institutional Animal Care and Use Committee (IACUC) HIDE
- American College of Laboratory Animal Medicine (ACLAM) HIDE

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PREV

11

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Instituti

**Correct:**

An Institutional Animal Care and Use Committee (IACUC) is a self-regulating entity that, according to U.S. federal law (the Animal Welfare Act, USDA APHIS), must be established by institutions that use laboratory animals for research or instructional purposes to oversee and evaluate all aspects of the institution's animal care and use program.

At least one licensed veterinarian must be on this committee.

Refs: Bassert and Thomas, McCurnin's Clinical Textbook for Veterinary Technicians, 8<sup>th</sup> ed. p. 35, Animal and Plant Health Inspection Service (USDA APHIS and the Merck Veterinary Manual online.

American College of Laboratory Animal Medicine (ACLAM) HIDE

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Which one of the following choices would be the first step to take when presented with a herd of alpacas with ulcers on their lips and teats?

Perform diagnostic testing	HIDE
Monitor herd	HIDE
Treat herd with feed-thru antibiotics	HIDE
Vaccinate herd for Clostridium toxins	HIDE
Notify authorities	HIDE

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- 11
- Which or herd of a
- Perform
- Monitor
- Treat he
- Vaccinat

Correct:

Notify the authorities.

The vesicular disease of most importance in camelids is foot and mouth disease because of the risk of widespread disease in livestock (except horses) and wildlife.

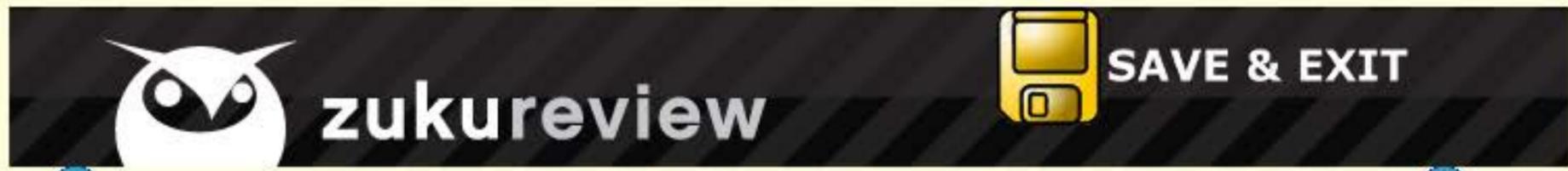
Animals with oral and coronary band vesicles should be reported to the state or federal regulatory veterinarians and the herd quarantined. Foot and mouth disease must be differentiated from vesicular stomatitis.

Refs: Fowler's Medicine and Surgery of South American Camelids, 3rd ed. pp. 179-81 and the Merck Veterinary Manual online edition.

Notify authorities HIDE

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Several cows were found dead on a farm with no warning. Anthrax is highly suspected. What is the first thing that should be done?

Notify the area federal veterinarian	HIDE
Administer anthrax vaccine to remaining cows	HIDE
Perform necropsies to submit necessary tissue samples	HIDE
Treat remaining cows with penicillin	HIDE
Administer anthrax antiserum to remaining cows	HIDE

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If anthrax is suspected, **the area federal veterinarian should be notified immediately.**

**Anthrax** is caused by *Bacillus anthracis* and causes sudden death in animals and HUMANS. The disease is zoonotic.

**Necropsies should NOT be performed** because of the risk of human infection and contamination of the surrounding environment. Carcasses should be buried with lime or incinerated.

**The vaccine should be administered in high-risk areas** but is not something that would be done before notifying the federal area veterinarian.

**Penicillin can be used in animals with the disease that are not yet dead;** usually there is not time.

**There is no anthrax anti-serum.**

Treat remaining cows with penicillin HIDE

---

Administer anthrax antiserum to remaining cows HIDE

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Which one of the following diseases can be spread in aerosol form for long distances by the wind, without the aid of insect vectors?

Foot-and-mouth disease	HIDE
Contagious bovine pleuropneumonia	HIDE
African horse sickness	HIDE
African swine fever	HIDE
Bursal disease	HIDE

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11

Correct:

**Aerosolized Foot-and-mouth disease** virus can spread a **long distance** as a plume with the wind direction. It is also spread by fomites and via secretions of infected animals.

Which of the following can be spread by wind, with the exception of:

**Foot-and-Mouth Disease** can **infect** most cloven-hoofed animals and typical signs are fever and vesicles on the mouth, teats, and feet.

Foot-and-mouth disease

**African horse sickness** is mainly spread by **Culicoides** mosquitos.

Contagious equine arteriovenular disease

It is characterized by a **respiratory or cardiac form** of the disease, including coughing, dyspnea, and dilated nostrils. The disease is endemic to Africa.

African swine fever

**African swine fever** is **spread by ticks**.

African trypanosomiasis

Bursal disease HIDE

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In the treatment of cats with inter-cat aggression in a multiple cat household, which one of the following choices can AGGRAVATE aggressive behavior?

Put a bell on the most aggressive of the cats	HIDE
Providing more 3-dimensional space	HIDE
Desensitization	HIDE
Punishment-based negative reinforcement	HIDE
Anxiolytic medication	HIDE

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In the treatment of the following conditions, which of the following is the most appropriate?

Put a beak in the mouth

Providing a safe environment

Desensitization

Punishment

**Correct:**

**Punishment-based negative reinforcement** may INCREASE fear and anxiety in cats and make aggression among cats WORSE. Treatment can include all of the other choices.

**Examples of anxiolytic medication include-**

Tricyclic antidepressants (**TCAs**) such as amitriptyline or clomipramine

Selective serotonin reuptake inhibitors (**SSRIs**) such as fluoxetine or paroxetine (for the aggressor) or

Benzodiazepines such as diazepam, which can help some timid cats that are victims of aggression.

Some medications may take up to 1-2 months to reach therapeutic levels. Treatment for up to a year or more is often necessary.

Anxiolytic medication HIDE

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A stray cat bit a person's hand this morning, and drew blood.

What is the correct action to take?

Euthanize; Send head to state/provincial lab for testing	HIDE
Confine 10 days for observation; Vaccinate after 10 days	HIDE
Immediate vaccination; Keep under control & observation 60 days	HIDE
Immediate vaccination; Confine, observe 45 days; Euthanize if behavior changes	HIDE
Immediate vaccination; Confine 10 days for observation	HIDE

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**Correct:**  
**Euthanize cat; Send head to state lab for testing.**

Euthanize

Confine

Immedi

Immedi

changes

Immedi

According to the [2016 Compendium for Rabies Control](#), "Any stray or unwanted dog, cat, or ferret that exposes a person may be euthanized immediately, and the head or entire brain (including brainstem) should be submitted 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-

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**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).

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What is the primary clinical presentation in chickens infected with *Campylobacter jejuni*?

Hemorrhagic diathesis	HIDE
Diphtheritic tracheitis	HIDE
Depression, anorexia, lethargy	HIDE
Nothing	HIDE
Enterocolitis	HIDE

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What is t

Hemorrh

Diphthe

Depress

Nothing

Enterocolitis

**Correct:**  
The preferred answer is "nothing". *Campylobacter jejuni* from contaminated chicken is one of the leading causes of enterocolitis IN HUMANS, but the chickens themselves are asymptomatic. Click for more on [avian campylobacter](#).

Refs: The Merck Veterinary Manual online edition.

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*Burkholderia mallei*, a highly contagious disease of equids is characterized by ulcerative nodules of the skin and upper respiratory tract.  
What is the **common name** of this reportable disease?

Q-fever	HIDE
Dourine	HIDE
Glanders	HIDE
Sleeping sickness	HIDE
East Coast Fever	HIDE

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- Burkholderia
- nodules
- What is t
- Q-fever
- Dourine
- Glander
- Sleeping sickness
- East Coast Fever

**Glanders**, caused by *Burkholderia mallei*, is a highly contagious, often fatal disease of equids characterized by high fever, thick mucopurulent nasal discharge, ulcerative nodules of the skin and upper respiratory tract.

Humans, felids, and other animals are also susceptible. This disease is now exotic to the USA.

*Trypanosoma equiperdium* is the cause of **dourine**, a chronic venereal disease of horses recognized in Africa, the Middle East, and South America.

*Theileria parva* is an important **tickborne hemoparasitic cause of disease in cattle** in central and eastern Africa known as **East Coast Fever**.

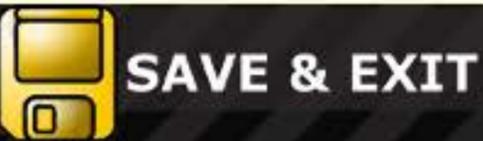
**Clinical signs of the disease** include high fever, lymphadenopathy, dyspnea, and death.

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Which one of the following is TRUE about *Brucella* vaccination in cattle?

Increases resistance to infection, but doesn't protect 100%	HIDE
Should not be given to heifer calves between 4-12 month old	HIDE
Should only be given to bull calves less than 8 mos	HIDE
Should be performed on all calves less than 3 months of age	HIDE

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Increase

Should

Should

Should

**Correct: Increases resistance to infection, but doesn't protect 100%**

Vaccination against brucellosis with strain 19 or RB51 vaccines should be done on ALL HEIFER calves between 4-12 months of age. Vaccination INCREASES resistance but DOES NOT PROTECT 100%.

Typically don't vaccinate males- can't tattoo them or put in official ear tags like with females.

(Example of state brucellosis regs, PA).

Refs: The Merck Veterinary Manual online edition.

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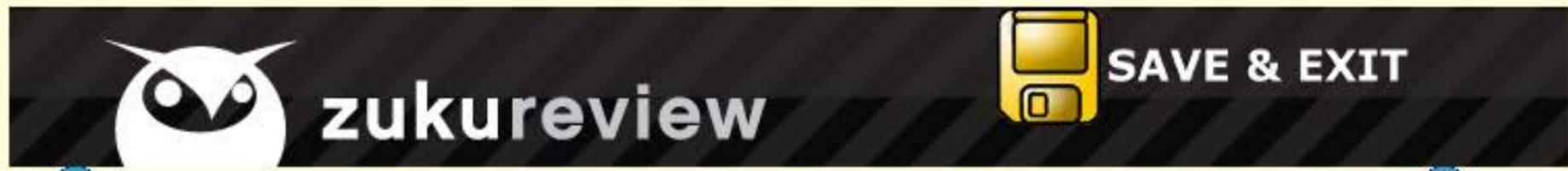
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A kitten that is hand-raised and weaned early is most likely to exhibit which problem?

Compulsive grooming	HIDE
Submissive urination	HIDE
Inappropriate predatory behavior	HIDE
Excessive play aggression	HIDE
Coprophagy	HIDE

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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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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 positive (PVP) of the test?

55%	HIDE
48%	HIDE
45%	HIDE
90%	HIDE
88%	HIDE

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A practic  
Assumin  
positive

- 55%
- 48%
- 45%
- 90%
- 88%

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**Correct:**  
It is 48%.

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).



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21

A practic  
Assumin  
positive

55%  
48%  
45%

90%	HIDE
88%	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 PVP  
 $= a / (a + b) = 45 / (45 + 48) = 48\%$ .

Refs: Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-39.



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What is the most effective means of eliminating CAE from a dairy goat herd?

Isolate kids from does at birth and feed only pasteurized milk	HIDE
Cull symptomatic seropositive adult goats and all symptomatic kids	HIDE
Quarantine and test all new additions to herd	HIDE
Use only seronegative bucks for natural service	HIDE
Whole-herd vaccination	HIDE

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Correct:

Isolate kids from does at birth and feed only pasteurized milk. Caprine arthritis encephalitis (CAE) is transmitted primarily in COLOSTRUM or milk. Separating kids from seropositive does at birth and feeding heat-treated colostrum and pasteurized milk or milk replacer can eventually eradicate the disease from herd.

What is t

Most goats are infected early in life (and will be seropositive) but only about 30% ever develop clinical signs. CAE is NOT treatable.

Isolate l

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

Cull sym

Quarant

Refs: Smith and Sherman, Goat Medicine 1<sup>st</sup> ed. pp. 73-77 and the Merck Veterinary Manual online edition.

Use only

Whole-herd vaccination

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Pregnant women should not clean a cat's litter box, should wash raw vegetables thoroughly and should only eat well cooked meats to avoid which organism?

<i>Microsporium spp</i>	HIDE
<i>Trichinella spp</i>	HIDE
<i>Chlamydomphila abortus</i>	HIDE
<i>Tritrichomonas (Trichomonas) foetus</i>	HIDE
<i>Toxoplasma gondii</i>	HIDE

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- 21
- Pregnant and should
- Microsp
- Trichine
- Chlamy
- Tritrich

Correct:

*Toxoplasma gondii*, is the agent of toxoplasmosis.

Toxoplasmosis is a zoonotic disease with part of its life cycle in cats.

Eggs of *Toxoplasma gondii* can be found in garden dirt, cat litter and meat.

The organism causes birth defects in a developing fetus.

Refs: Bassert and Thomas, McCurnin's Clinical Textbook for Veterinary Technicians, 8<sup>th</sup> ed. pp. 124-5 and the Merck Veterinary Manual online edition.

*Toxoplasma gondii* 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 sensitivity of this test kit?

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

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An immu  
is being  
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Here are

**CORRECT:**  
Sensitivity =  $\frac{128}{191}$  (67%)  $a/(a+c)$

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. Sensitivity =  $a/(a+c)$ . 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 half minute to load) by Dr. Cynda Crawford, Maddie's Shelter Medicine Program, Univ. Florida College Vet Med.

1575/23

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

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What statement is most correct regarding a highly sensitive test?

- Expect high false negatives HIDE
- Better test for high prevalence diseases HIDE
- You can trust a positive test HIDE
- You can trust a negative test HIDE
- Expect high false positives HIDE

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**Correct: You can trust a negative test**

A highly sensitive test will have FEW FALSE NEGATIVES. So the few negatives you DO see, you can probably trust. Remember that  $SENS = a / (a + c)$  and that the number in the "c" cell is the number of FALSE NEGATIVES.

For sensitivity to be HIGH, the number of false negs in "c" must be very SMALL. Like all of epidemiology, it is "a little" confusing, so a picture may help. Follow this link to see [diagram of false negatives](#) and false positives are in a classic 2x2 table.

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

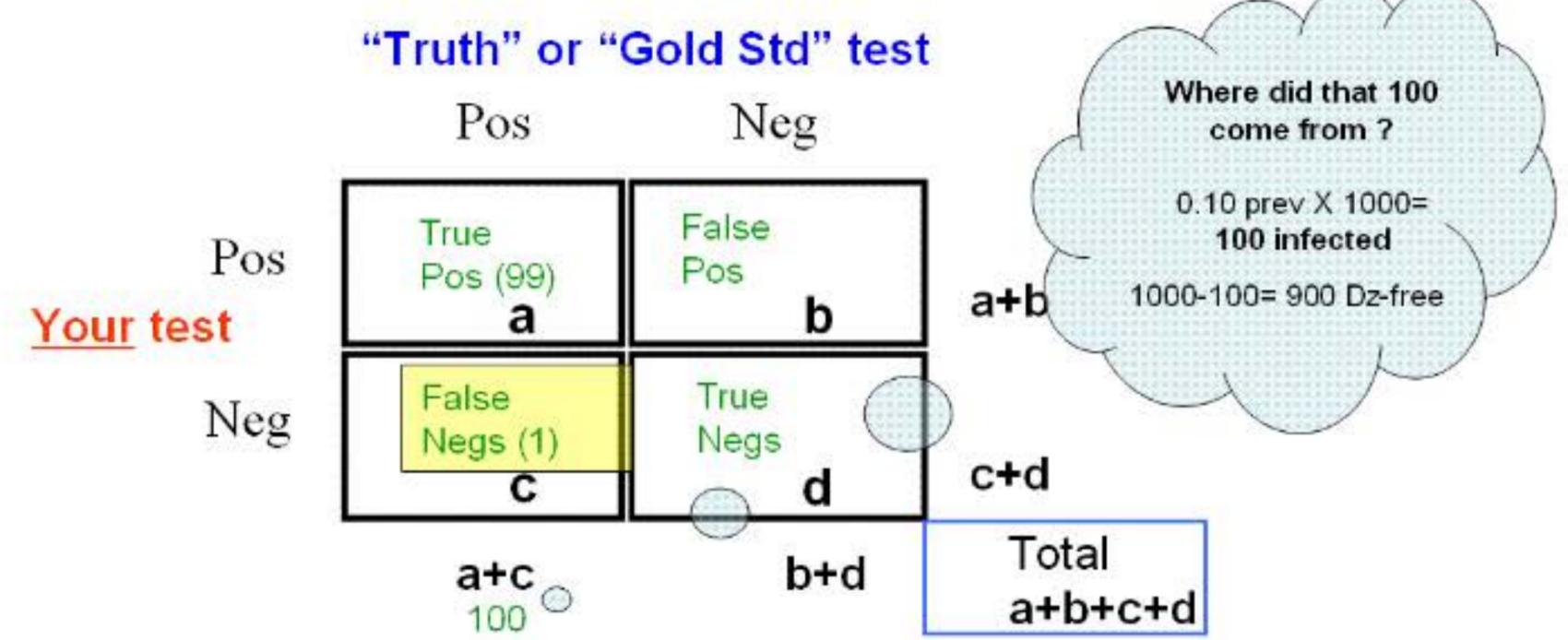
What sta  
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You can  
You can

Expect high false positives

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# Why high sensitivity means you can trust a NEGATIVE test result



**SENS**

**Sens =  $\frac{a}{a+c}$**

**Spec =  $\frac{d}{b+d}$**

If **Sens = 99%**; Prev = 10%  
 and test 1000 animals  
 $\text{Sens} = a/(a+b) = 99/(100)$

**Only 1 False Neg**  
**A negative result by your test is likely correct**



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140 wallabies are serologically tested for a disease.

35 wallabies test seropositive and 105 test seronegative.

However, postmortem data reveals 5/35 of the seropositive wallabies are disease free and 4/105 of the seronegative wallabies are diseased.

What is the sensitivity of this serologic test?

96%	HIDE
95%	HIDE
86%	HIDE
88%	HIDE
77 %	HIDE

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**Correct:**

140 wallabies  
 35 wallabies  
 However 4/105 of  
 What is the

It is **88%**. Remember-You are **comparing TWO TESTS** when you calculate Sens, Spec, PVP, PVN. You **compare your test** (serologic in this case) to a gold standard (necropsy).

Sensitivity means, "What percentage of the TRUE positives were CORRECTLY IDENTIFIED by my test?" Of the 35 wallabies **my test** says are positive, how many are **truly** positive?" (35-5=30, this # goes in the "a" box)

Here is how you do it: First, draw a 2x2 table, and label the boxes a,b,c,d. Sens =  $a/(a+c)$ . Click here to see a [Basic 2X2 table](#). Now, add in the TOTAL number of animals (140), the total positive by YOUR test (35) and the total negative by YOUR test (105), like this diagram: [2x2 with totals](#).

- 96%
- 95%
- 86%
- 88%**
- 77 %

HIDE  
 HIDE

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Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test. (5 false pos in box b, 4 false neg in box c): Click here to see [2x2 with b and c cells](#).

Last, subtract to fill in your "d" box (105-4=101) and do the math to calculate Sensitivity =  $a/(a+c) = 30/34 = 0.88$  or 88% : 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.

- 96%
- 95%
- 86%
- 88%** HIDE
- 77 % HIDE

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What statement is most correct regarding a highly specific test?

Expect low false negatives	HIDE
Expect high false positives	HIDE
Predictive value positive is intermediate	HIDE
You can trust a negative test	HIDE
You can trust a positive test	HIDE

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What sta

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You can

You can

**Correct: You can trust a positive test**

A highly specific test will have FEW FALSE POSITIVES. So the few positives you DO see, you can probably trust. Remember that  $SPEC = d / (b + d)$  and that the number in the "b" cell is the number of FALSE POSITIVES.

For specificity to be HIGH, the number of false pos in "b" must be very SMALL. Like all of epidemiology, it is "a little" confusing, so a picture may help.

Follow this link to see a [diagram of false positives](#) and false negatives in a classic 2x2 table.

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

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For the last 10 years, your state has had a mandatory vaccination program against "pedunculated giblet disease" in fur-bearing turtles and the prevalence of this terrible disease has decreased markedly.

How does this decrease in prevalence affect the predictive value positive (PVP) of the best serologic test for pedunculated giblet disease?

PVP is affected by specificity, not prevalence	HIDE
PVP increases as prevalence decreases	HIDE
PVP stays the same as prevalence decreases	HIDE
PVP depends on the number tested, not prevalence	HIDE
PVP decreases as prevalence decreases	HIDE

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21

**Correct: PVP decreases as prevalence decreases**

Don't think too hard on this: As prevalence of a disease goes DOWN, PVP of your serologic test also goes DOWN.

That is, as your disease becomes more and more rare, the predictive value of your same old test gets WORSE.

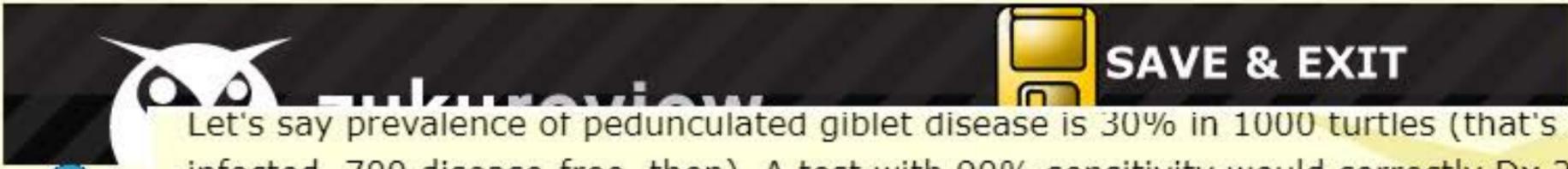
That is all you need to know. Read more only if you want to see the math (but you don't need it).

Let's say prevalence of pedunculated giblet disease is 30% in 1000 turtles (that's 300 infected, 700 disease-free, then). A test with 90% sensitivity would correctly Dx 270 (cell "a") with the disease (true pos) and correctly say 30 were negative (cell

For the l  
"pedunc  
disease l  
  
How doe  
serologic  
  
PVP is a  
PVP incr

PVP stays the same as prevalence decreases	HIDE
PVP depends on the number tested, not prevalence	HIDE
PVP decreases as prevalence decreases	HIDE

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PREV

21

Let's say prevalence of pedunculated gilet disease is 30% in 1000 turtles (that's 300 infected, 700 disease-free, then). A test with 90% sensitivity would correctly Dx 270 (cell "a") with the disease (true pos) and correctly say 30 were negative (cell "c"). A test with 90% specificity would correctly Dx 630 (cell "d") as disease-free (true negs) and correctly say 70 were positive (cell "b"):  
 $PVP = a / (a + b) = 270 / (270 + 70) = 79\%$ .

Follow this link to [See a PVP Diagram](#).

Now, do the same math on 1000 turtles, but assume prevalence is now only 1% (0.01) after your vaccination program. You will see PVP goes down to 47%.

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

For the l  
 "pedunc  
 disease l  
 How doe  
 serologic

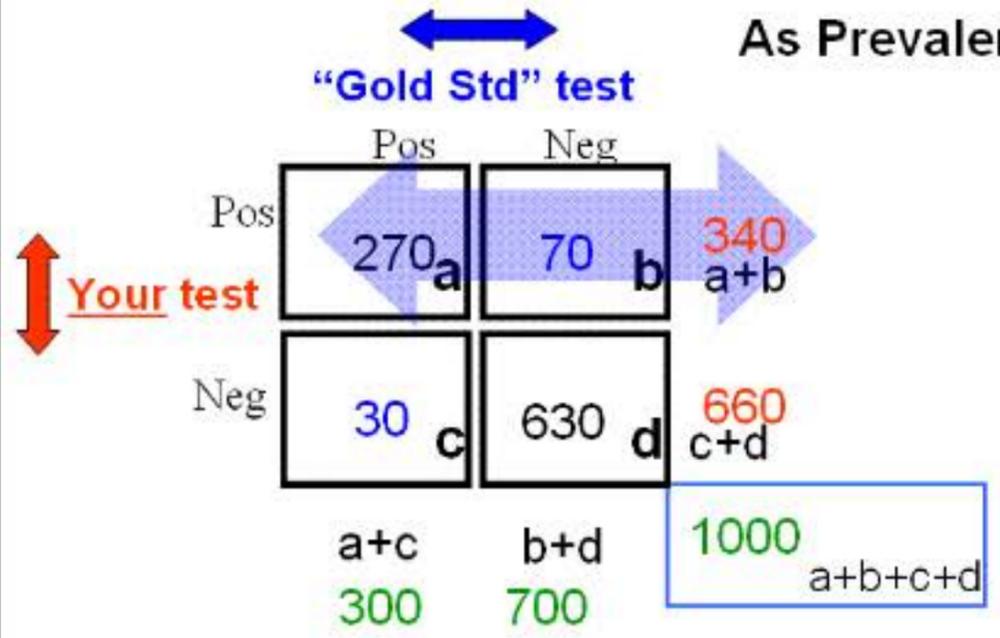
PVP is a

PVP incr

PVP stays the same as prevalence decreases	HIDE
PVP depends on the number tested, not prevalence	HIDE
PVP decreases as prevalence decreases	HIDE

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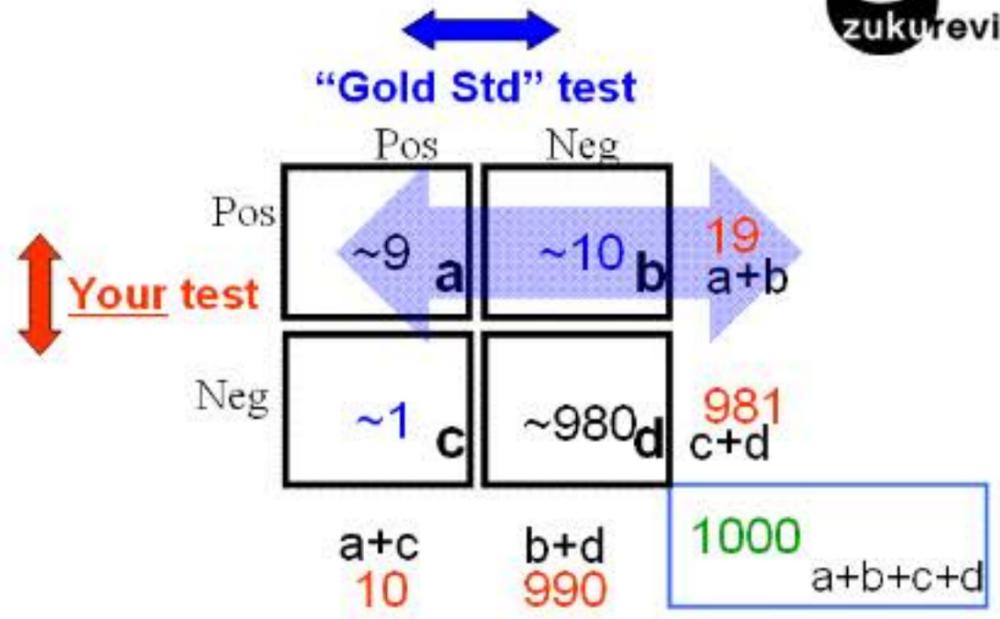
### As Prevalence decreases, PVP decreases too



If Prev=30%,  
Sens and Spec=90%, 1000 turtles  
 $PVP = a/(a+b) = 270/(270+70)$   
**PVP = 79%**



If Prev DECREASES to 1%,  
Sens and Spec=90%, 1000 turtles  
 $PVP = a/(a+b) = 9/(9+10)$   
PVP decreases to 47%



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An aborted calf fetus from a local dairy farm is presented for necropsy. The farmer is worried - fertility seems to be down and he thinks he has seen more mastitis, retained placentas and lameness this year than in the last 3 years combined. He treats the retained placentas and most of the lameness himself, but that mastitis is costing him in vet bills and lost milk.

The cow, a 3<sup>rd</sup>-calving Jersey, appears healthy, except for a stinky retained placenta. The fetus was aborted at about the 6<sup>th</sup> month of pregnancy, and does not appear to have any obvious lesions on necropsy.

A particular diagnosis is of most concern and a decision to take action is made. What should be done next?

Vaccinate the rest of the herd	HIDE
Ask farmer how he's feeling	HIDE
Report to the state vet	HIDE
Collect fetal liver biopsy for histopathology	HIDE
Draw blood for PCR	HIDE

31	32	33	34	35	36	37	38	39	40
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**Correct:**  
 Call the state vet when you suspect brucellosis, a REPORTABLE and zoonotic disease. Brucellosis causes abortion, stillborn or weak calves, retained placentas, and reduced milk yield.  
 Collecting a fetal liver biopsy is not very important when you suspect brucellosis. FYI- The best specimens to collect are fetal lung/stomach and pieces of placenta for bacterial culture.  
 You should also check vaccination status and collect blood for serology (not PCR). Serum agglutination at dilutions of 1:100 or more in nonvaccinated animals and of 1:200 in animals vaccinated between 4 and 12 months old are considered positive (reactors).

Vaccinat	
Ask farmer how he's feeling	HIDE
Report to the state vet	HIDE
Collect fetal liver biopsy for histopathology	HIDE
Draw blood for PCR	HIDE

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An abort  
worried  
placenta  
placenta  
lost milk  
  
The cow,  
fetus wa  
obvious  
  
A particu  
be done

bacterial culture.

You should also check vaccination status and collect blood for serology (not PCR). Serum agglutination at dilutions of 1:100 or more in nonvaccinated animals and of 1:200 in animals vaccinated between 4 and 12 months old are considered positive (reactors).

It would not be appropriate to vaccinate the rest of the herd. 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.

Refs: Pasquini's Guide to Bov Clin, 4<sup>th</sup> ed. pp. The Merck Veterinary Manual online edition.

Vaccinat	
Ask farmer how he's feeling	HIDE
Report to the state vet	HIDE
Collect fetal liver biopsy for histopathology	HIDE
Draw blood for PCR	HIDE

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What zoonotic bacteria is most commonly isolated from guinea pigs with cervical lymphadenitis?

<i>Francisella tularensis</i>	HIDE
<i>Bordetella bronchiseptica</i>	HIDE
<i>Yersinia pseudotuberculosis</i>	HIDE
<i>Streptococcus zooepidemicus</i>	HIDE
<i>Salmonella typhimurium</i>	HIDE

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What zoonotic lymphadenitis

Francisella

Bordetella

Yersinia

Streptococcus

Salmonella typhimurium HIDE

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Correct:

Cervical lymphadenitis (lumps) in guinea pigs is usually caused by Streptococcus zooepidemicus.

There have been documented cases of transmission of Strep. zooepidemicus between horses and people. Other streptococcal zoonotics include Strep agalactiae, Strep. canis and Strep moniliformis.

Click here for a nice summary, with images on cervical lymphadenitis in guinea pigs, courtesy of the University of Missouri's excellent Diseases of Research Animals (DORA) website.

Click here to see a Table of Zoonotic Diseases.

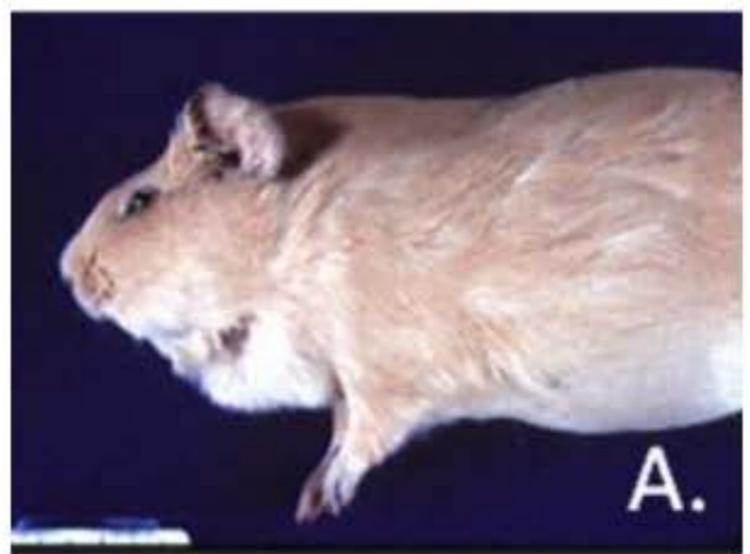
## CERVICAL LYMPHADENITIS (LUMPS)

**Etiology:** *Streptococcus equi* subsp. *zooepidemicus* is a Gram-positive, beta-hemolytic coccus that is commonly carried in the nasopharynx of guinea pigs. *Streptobacillus moniliformis* is rarely implicated.

**Incidence:** Infection is rare in laboratory guinea pigs.

**Transmission:** Bite wounds or direct contact with oral secretions are the major modes of transmission.

**Clinical Signs:** The bacterium gains access to the mucosal surfaces through abrasions in the oral cavity. Localized infection of the cervical lymph nodes occurs and they become enlarged (A.) and develop abscesses. Otitis media and retrobulbar abscesses may also occur. Abscesses may spontaneously rupture and heal with time. Affected animals may show no other signs except nonspecific symptoms of pyrexia or anorexia immediately prior to rupture. Septicemia may develop and result in suppuration in multiple viscera.



**Pathology:** Enlarged lymph nodes progressing to development of well encapsulated abscesses (B.) filled with a thick, yellow to white purulent exudate is characteristic of this infection. Numerous suppurative processes may be seen in multiple organ systems and may include bronchopneumonia, pleuritis and pericarditis.

**Diagnosis:** Diagnosis is based on clinical presentation and culture of the organism from lesions.



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A teenager brings in a wild fox he found with a mouth full of porcupine quills.

What is the best course of action?

- Tranquilize, then euthanize HIDE
- Report to health authorities HIDE
- Anesthetize, then remove quills HIDE
- Refer to local wildlife rehabilitator HIDE
- Hospitalize, intravenous antibiotics, quill extraction HIDE

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**31** **Correct: Report to health authorities**

The preferred answer is to **REPORT to health authorities** (also **isolate** the animal, alert client of **possible rabies** exposure).

A teenage  
What is t

**A fox with porcupine quills = RABIES until proven otherwise.** Foxes do NOT normally attack porcupines (only dogs appear to be dumb enough to do this...). What is the client doing with a fox anyway? Foxes do not normally allow themselves to be captured.

Tranquil  
**Report to**  
Anesthe  
Refer to local wildlife rehabilitator

Hospitalize, intravenous antibiotics, quill extraction HIDE

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Which animal type is most likely to contract plague?

Human	HIDE
Dog	HIDE
Cat	HIDE
Cow	HIDE
Rodent	HIDE

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**Correct: Rodent**

Plague, caused by *Yersinia pestis*, is carried by FLEAS and found in wild RODENTS (ground squirrels, wood rats) and RABBITS. Among pets, think of septic CATS with ABSCESSSES, in the WESTERN United states (and Hawaii), May-October. ZOOBOTIC and REPORTABLE.

- Cow
- Human
- Rodent**
- Cat
- Dog

About 10 cases of human plague are reported each year, most often infected via a flea bite.

Refs: U.S. Centers for Disease Control, [MMWR, Human plague](#) 4 States- Sep 1, 2006 / 55(34); 940-3, Blackwell's 5-Minute Vet Consult Canine Feline, 4<sup>th</sup> ed. p.1077 and the Merck Veterinary Manual online edition.

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Hog Cholera is also commonly known by what other name?

Porcine Dermatitis and Nephropathy Syndrome	HIDE
Border Disease	HIDE
Classical Swine fever	HIDE
Erysipelas	HIDE
Postweaning multisystemic wasting syndrome	HIDE

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Hog Cho

Porcine

Border I

Classica

Erysipel

Postwean

Correct:

Hog Cholera / Classic Swine fever is a **REPORTABLE** disease, capable of causing devastating epidemics, particularly in countries like the U.S. which are free of the disease, and do not vaccinate (so, entire population is at risk).

**HC** is characterized by **fever, septicemias, and hemorrhagic lesions**; **DDX includes** Erysipelas, Salmonella, Porcine Dermatitis and Nephropathy Syndrome (PDNS), Postweaning multisystemic wasting syndrome (PMWS). **Caused by a virus related to Bovine Viral Diarrhea (BVD)** in cows and **Border disease** (in sheep, cows, pigs).

Refs: Merck Veterinary Manual online edition.

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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

What is the predictive value positive of the new AGID test for CAE?

- 32/90 HIDE
- 55/1000 HIDE
- 90/1000 HIDE
- 32/55 HIDE
- 55/945 HIDE

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31	32	33	34 <sup>M</sup>	35	36	37	38	39	40
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A new A  
simulate

**Correct:**

Predictive value positive (PVP) =  $\frac{32}{90} \frac{a}{a+b}$  (36%, not great).

PVP is a way to state how much confidence you have in a positive result from the AGID.

It means "Of the goats my AGID says are positive (90), how many are **truly** positive? (only 32)"

Click here to see a [Basic 2X2 table](#).

What is t

[Caprine arthritis and encephalitis](#) (CAE) is caused by a retrovirus. Presentations vary.

32/90

Most commonly, it is a subclinical disease of dairy goats, leading to production losses. In adults with clinical disease, see a polyarthritis.

55/1000

90/1000

HIDE

32/55

HIDE

55/945

HIDE

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A new A simulate

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 polyarthritis.

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.

32/90

55/1000

90/1000

HIDE

32/55

HIDE

55/945

HIDE

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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 negative (PVN) of the test?

88%	HIDE
92%	HIDE
99%	HIDE
80%	HIDE
85%	HIDE

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31

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 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).

- 88%
- 92%
- 99%
- 80%
- 85%

HIDE

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A SLAP@ being us

Assumin negative

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":  $0.98 \times 900 = 882$ ) 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  
 $PVN = d / (c + d) = 882 / (882 + 4) = 99\%$

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

88%	
92%	
99%	HIDE
80%	HIDE
85%	HIDE

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A 3-year old male intact Chow-mix dog with no history of vaccinations is presented. This morning he was bitten by a raccoon that was acting strangely.

The owner is worried about rabies, but does not want to euthanize her dog.

What is the best action to take?

Immediate vaccination; Confine 10 days for observation	HIDE
Confine, observe 45 days; Vaccinate after 10th day; Euthanize if behavior changes	HIDE
Strict isolation 4 months; Vaccinate immediately	HIDE
Must euthanize; Send head to state lab for testing	HIDE
Confine 10 days for observation; Vaccinate after 10 days	HIDE

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31	32	33	34 M	35	36	37	38	39	40
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Strict isolation and observation for 4 months, vaccinate immediately

A 3-year morning  
The own  
What is t

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 4 months (dogs and cats) or 6 months (ferrets)
2. Rabies vaccine should be administered upon entry into isolation.

Immedi  
Confine,  
changes  
Strict is  
Must eu

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.

Confine 10 days for observation; Vaccinate after 10 days HIDE

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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 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](#)

Confine 10 days for observation; Vaccinate after 10 days HIDE

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140 wallabies are serologically tested for a disease.

35 wallabies test seropositive and 105 test seronegative.

However, postmortem data reveals 5/35 of the seropositive wallabies are disease free and 4/105 of the seronegative wallabies are diseased.

What is the specificity of this serologic test?

96%	HIDE
88%	HIDE
86%	HIDE
77%	HIDE
95%	HIDE

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140 wall

35 walla

However

4/105 of

What is t

96%

88%

86%

77%

95%



### Correct:

It is **95%**. Remember: you are **comparing TWO TESTS** when you calculate Sens, Spec, PVP, PVN. You **compare your test** (serologic in this case) to a gold standard (necropsy). Specificity means "What percentage of the TRUE negatives were CORRECTLY IDENTIFIED by my test?" Of the 105 wallabies **my test** says are negative, how many are **truly** negative?" ( $105 - 4 = 101$ , this # goes in the "d" box)

Here is how you do it: First, draw a 2x2 table, and label the boxes a,b,c,d. Sens =  $a/(a+c)$ . Click here to see a [Basic 2X2 table](#). Now, add in the TOTAL number of animals (140), the total positive by YOUR test (35) and the total negative by YOUR test (105), like this diagram: [2x2 with totals](#).

HIDE

HIDE

HIDE

HIDE

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Now the (slightly) tricky part. Add in the numbers that YOUR test got WRONG according to the gold standard test. (5 false pos in box b, 4 false neg in box c): Click here to see [2x2 with b and c cells](#).

140 wall

Last, subtract to fill in your "a" box (35-5=30) and do the math to calculate

35 walla

Specificity =  $d/(b+d) = 101/106 = 0.95$  or 95% : Click here to see the final [2x2 with all cells filled](#) and specificity calculated.

However

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.

What is t

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

96%

88%

HIDE

86%

HIDE

77%

HIDE

95%

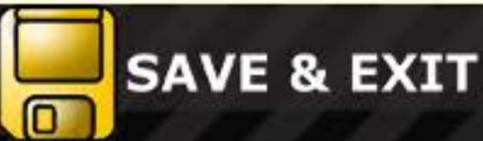
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Eating undercooked meat from which one of the following animals in North America causes trichinellosis in humans almost as often as pork consumption?

Bear	HIDE
American buffalo (Bison)	HIDE
Deer	HIDE
Cougar	HIDE
Horse	HIDE

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Eating u  
trichinell

Bear

America

Deer

Cougar

Horse

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Correct:

Reports of trichinellosis in people who ate undercooked bear occur almost as commonly as from pork.

In one recent report cougar jerky caused trichinellosis.

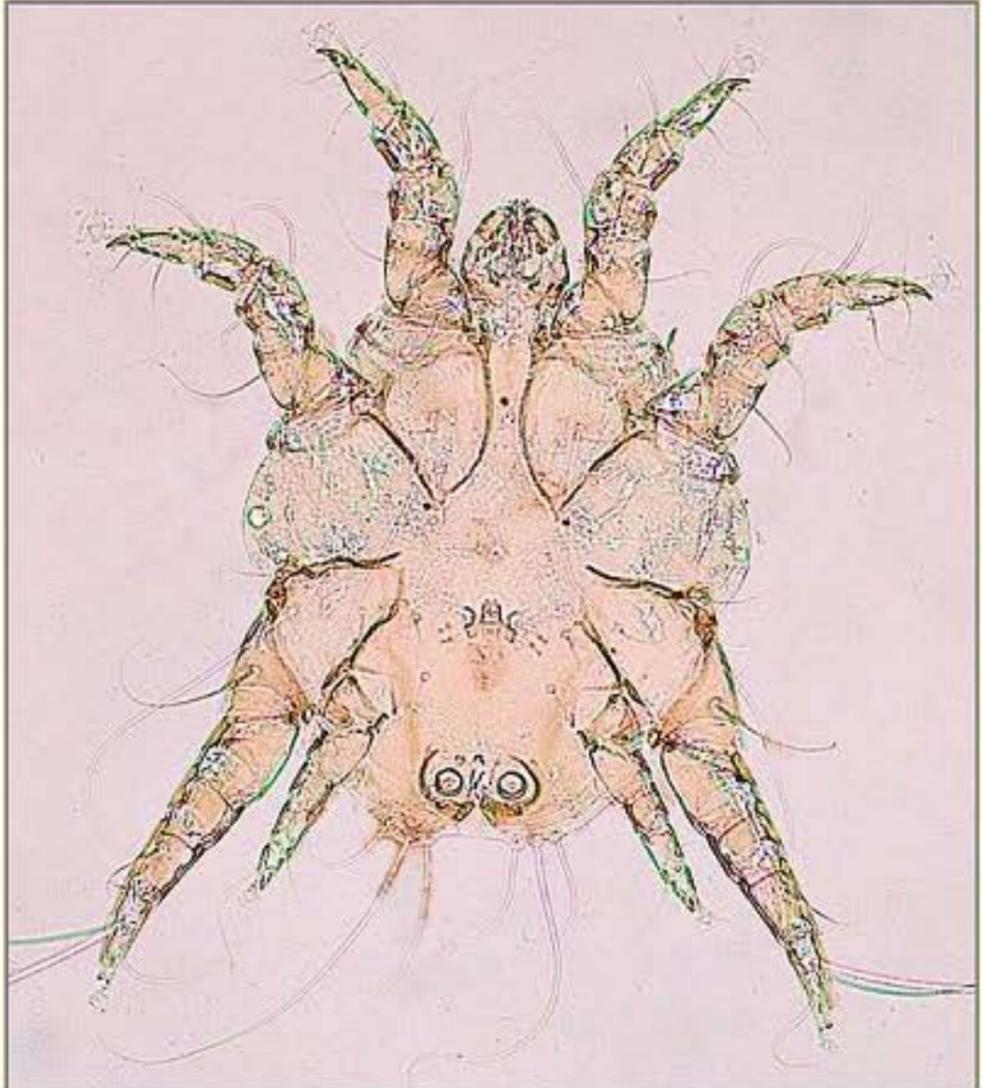
Click here for a Merck summary on Trichinella, with images.

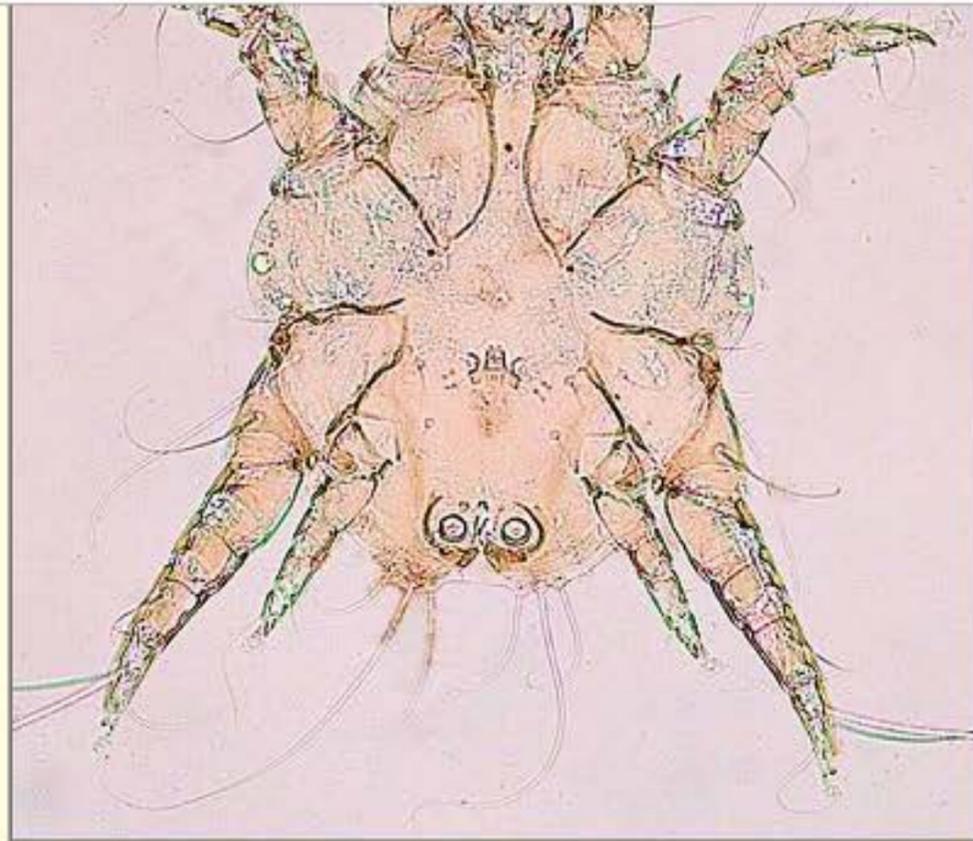
Refs: U.S. Centers for Disease Control, MMWR, Trichinellosis Surveillance-US, 1997-2001/52(SS06);1-8, and the Merck Veterinary Manual online edition.

41	42	43	44	45	46	47	48	49	50
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A skin scrape from a cow with pruritus and crusts around the caudal thighs and perineum shows the organism below.

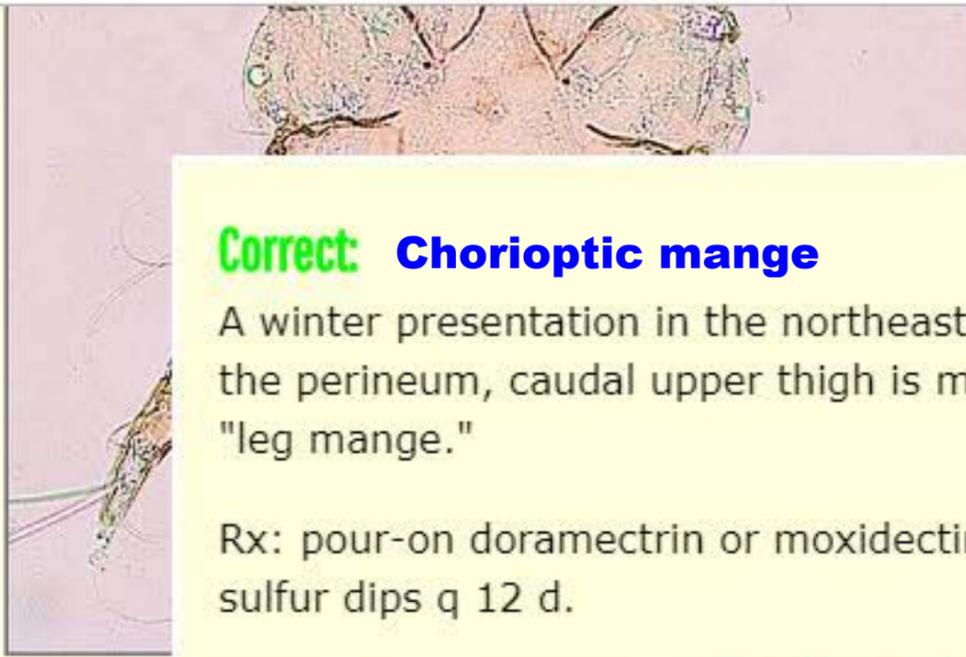
What is the presumptive diagnosis?





Sarcoptic mange	HIDE
Trombiculidiasis	HIDE
Psoroptic mange	HIDE
Cutaneous onchocerciasis	HIDE
Chorioptic mange	HIDE

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**Correct: Chorioptic mange**

A winter presentation in the northeastern U.S. of crusty, pruritic skin disease around the perineum, caudal upper thigh is most likely to be chorioptic mange. Also called "leg mange."

Rx: pour-on doramectrin or moxidectin, eprinomectrin (injectible or pour-on), or lime-sulfur dips q 12 d.

On skin scrape, look for long legs and short UNsegmented pedicles in chorioptes. In CONTRAST to the short legs and long UNsegmented pedicles of sarcoptes.

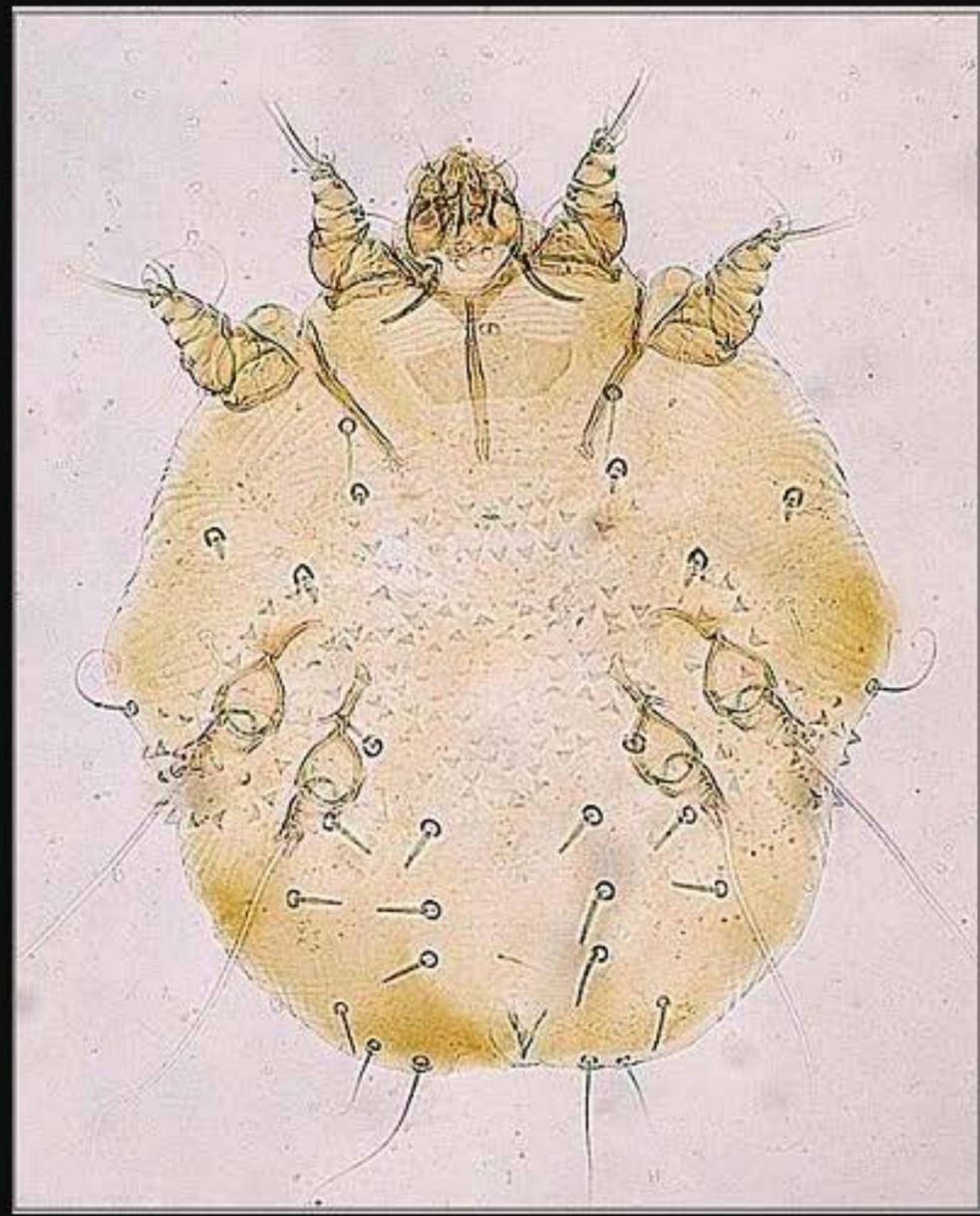
Refs: Pasquini's Guide to Bovine Clinics, 4th ed. pp. 180-2 and the Merck Veterinary Manual online edition. Images courtesy of Alan R Walker.

- Sarcopti
- Psoropti
- Trombic
- Chorioptic mange**
- Cutaneous onchocerciasis

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Anxiety, hand-rearing and lack of exposure to humans at an early age are all risk factors for what problem in cats?

Persistent inappropriate elimination	HIDE
Intolerance of other cats	HIDE
Excessive nocturnal activity	HIDE
Aggression	HIDE
Submissive urination	HIDE

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**Correct: Aggression**

Anxiety, hand-rearing and lack of exposure to humans at an early age are all risk factors for feline aggression.

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.

- 41 ✓
- Anxiety, what pro
- Persiste
- Intolera
- Excessiv
- Aggress

Submissive urination HIDE

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Which parts of cattle are acceptable for human consumption in the United States?

Thyroid glands	HIDE
Brain	HIDE
Laryngeal muscles	HIDE
Thymus	HIDE
Lungs	HIDE

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- Which part of the pig is safe to eat?
- Thyroid
- Brain
- Laryngeal
- Thymus**
- Lungs

Correct:

Of these, **only thymus** is ok to eat in the U.S. Sometimes **called sweetbreads**, though other organs, including **pancreas** can apparently **also be called sweetbread**. The Merck Veterinary Manual, 9<sup>th</sup> edition, states that it is NOT ok to consume lungs, brain, thyroid, laryngeal muscles and lactating mammary glands.

**Lungs** (think TB), **brain** (think rabies, BSE), **laryngeal** muscles (think rabies), **thyroid gland** (think thyroid hormone).

In 1984-5 there was a classic outbreak of 121 cases of **thyrotoxicosis in hamburger** meat contaminated with thyroid glands, reported in the **New England Journal of Medicine**. Thyroid hormone is orally active, **EVEN AFTER COOKING** in a hamburger. Patients complained of sleeplessness, nervousness and weight loss, among other things.

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Which choice is the etiologic agent of malignant catarrhal fever (MCF)?

Coronavirus	HIDE
Togavirus	HIDE
Herpesvirus	HIDE
Orbivirus	HIDE
Morbillivirus	HIDE

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Correct:

Malignant catarrhal fever (MCF) is caused by herpesviruses. In the United States, the most common cause is a gammaherpes virus that is adapted for sheep, the ovine herpes 2 virus. Occasional outbreaks in ruminants of MCF have been due to a caprine herpesvirus 2 as well.

Which of

Coronav

Togaviru

Herpesv

Orbiviru

Morbilliv

Additionally, a gammaherpes virus that has adapted to wildebeest (the blue gnu) can transmit to cattle and produce MCF..

Refs: Smith's Large An Med 3<sup>rd</sup> ed. pp. 714-6, Pasquini's Guide to Bov Clin, 4<sup>th</sup> ed. p.10 and the Merck Veterinary Manual online edition.

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Several thousand migrating ducks have died on one large lake in the past week.

On evaluation, many ducks have flaccid paralysis of the neck and are unable to ambulate.

What is the diagnosis?

West Nile virus	HIDE
Avian encephalomyelitis	HIDE
Botulism	HIDE
Avian influenza	HIDE
Duck viral hepatitis	HIDE

BACK NEXT LEAVE BLANK



**Correct: Botulism**

Floppy-necked birds, whether ducks or chickens, means Botulism.

Sporadic in poultry, but can see MASSIVE MORTALITY in waterfowl in western North America.

Also called Limberneck or Western Duck Sickness.

West Nile virus, (REPORTABLE!) Duck viral hepatitis and Avian encephalomyelitis are not characterized by limp necks.

LOW pathogenicity Avian influenza (LPAI) is common in North American waterfowl, poultry, but typically subclinical.

Botulism	HIDE
Avian influenza	HIDE
Duck viral hepatitis	HIDE

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not characterized by limp necks.

**LOW pathogenicity** Avian influenza (LPAI) is **common in North American** waterfowl, poultry, but typically subclinical.

**HIGHLY Pathogenic Avian Influenza HAS caused massive die-offs of migrating waterfowl in other parts of the world (ie: China), but not in North American waterfowl (yet).**

Several t  
On evalu  
What is t

For the latest maps of HPAI outbreaks, see the [OIE Avian flu website](#) (World Organization for Animal Health).

Refs: The Merck Veterinary Manual online edition.

West Nil	HIDE
Avian er	
Botulism	HIDE
Avian influenza	HIDE
Duck viral hepatitis	HIDE

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Which parasite can cause visceral larva migrans in people?

<i>Habronema muscae</i>	HIDE
<i>Fasciola hepatica</i>	HIDE
<i>Spirocerca lupi</i>	HIDE
<i>Toxascaris leonina</i>	HIDE
<i>Ancylostoma braziliense</i>	HIDE

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Fasciola

Spirocer

Toxasca

Ancylostoma braziliense



Correct:

Roundworms (Toxocara spp., Toxascaris spp.) can cause visceral and ocular larva migrans in people. Hookworms (Ancylostoma spp.) may cause cutaneous larva migrans in people.

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

Spirocerca lupi makes nodules in the esophageal, gastric, or aortic walls of affected small animals. Typically asymptomatic.

Fasciola hepatica may be asymptomatic in cattle but fatal to sheep.

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Which of these parasites is reportable?

<i>Cuterebra</i>	HIDE
<i>Gasterophilus</i>	HIDE
<i>Onchocerca</i>	HIDE
<i>Cochliomyia</i>	HIDE
<i>Hypoderma</i>	HIDE

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Correct:

*Cochliomyia* is the genus of the **screwworm**. Screwworm larvae produce myiasis. REPORTABLE.

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

- Cutereb
- Gastero,
- Onchoce
- Cochlior

**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**.

Infestation with larvae of *Hypoderma spp.* leads to the formation of warbles, larval cysts in the subdermal tissue on the back of cattle and sporadically in horses kept near cattle.

Hypoderma

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41  Which of the following is a parasite that produces cysts in the subdermal tissue on the back of cattle and sporadically in horses kept near cattle.

*Cuterebra*

*Gasterophilus*

*Onchocerca*

*Cochlioides*

*Hypoderma*

Click here to see a [Hypoderma grub](#) and [subcutaneous warbles](#) under a cow's skin.

*Cuterebra* is the genus of the rodent or rabbit botfly, which, similar to *Hypoderma*, produces fistulous larval cysts in the aberrant hosts cats, dogs, and ferrets.

*Gasterophilus* is the genus of the horse botfly. Larvae reside in the stomach and may cause a mild gastritis.

Refs: Smith, Large Animal Internal Medicine, 3<sup>rd</sup> ed. pp. 1220-1, the USDA APHIS program, and the Merck Veterinary Manual online edition.

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After the **first** rabies vaccination, **when** is a dog, cat or ferret considered to be fully immunized and protected against rabies?

After 24 hours	HIDE
After 7 days	HIDE
After 28 days	HIDE
Same day	HIDE
After 14 days	HIDE

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- 41
- After the immuniz
- After 24
- After 7
- After 28
- Same d

After 28 days.

According to the [2016 Compendium for Rabies Control](#), a peak [rabies virus](#) antibody titer is reached **28 days after initial vaccination** and **immediately after booster vaccination**.

Here are some thoughts on rabies:

When in doubt, it is never wrong to check with your local health department.

Basically all potential rabies exposures boil down to 2 questions:

**1. Who is involved?**

- Animal-Animal exposure (less alarm bells)
- Animal bites/exposed human (more alarm bells)

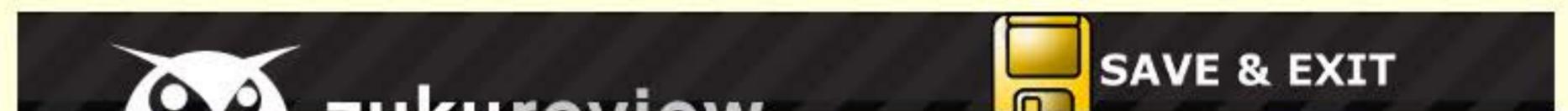
**2. Was dog/cat/ferret vaccinated?**

--Documented up to date on rabies vaccination (booster + 45 days owner observation)

After 14 days HIDE

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### 2. Was dog/cat/ferret vaccinated?

- Documented up to date on rabies vaccination (booster + 45 days owner observation)
- Documented vaccinated, but overdue (booster + 45 days owner observation)
- UN-documented vaccinated, and overdue (Handle on case-by-case basis).
- Ferrets that are OVERDUE for booster (Handle on case-by-case basis).
- UN-vaccinated pet (euthanize or vaccinate + 4-6 month strict isolation)
- Wild animal, esp. bats, raccoon, skunk (euthanize, send head to state lab)

When dealing with rabies questions, ask yourself if this seems like a **HIGH-risk** exposure (ie: wild raccoon bites a child) or a **LOWER risk** exposure (ie: Up-to-date vaccinated dog messes with woodchuck but no bite wounds on dog).

- PREV
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- After the immuniz
- After 24
- After 7
- After 28
- Same d
- After 14 days

HIDE

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41

After the immuniz

After 24

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After 28

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After 14 days

HIDE

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For high risk lean towards euthanasia/testing or immediate vaccination + long, strict isolation (4 months, dogs/cats, 6 months, ferrets).

For low risk lean towards immediate vaccination + shorter, easier observation period (45 days).

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

References:

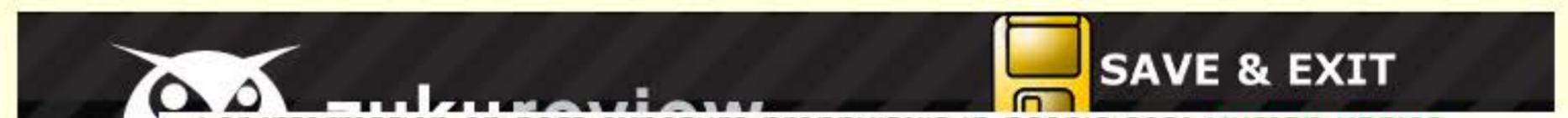
**United States guidelines**

[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 Prevention-US](#), 2008 ACIP Reccs: May 23, 2008 / 57(RR03);1-26,28.

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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.



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### Canadian guidelines

Canadian Food Inspection Agency (CFIA) [rabies home page](#) and [rabies testing summary](#).

After the immuniz

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](#).

After 24

### Global guidelines

After 7

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

After 28

Same d

After 14 days HIDE

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41 ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✗ ✗ ✓

A 6-year  
veterinar  
This mor  
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the recor  
bitten by

**Correct: Immediate vaccination; Keep under owner control 45 days**

According to the [2016 Compendium of Animal Rabies Prevention and Control](#), a dog or cat that has received at least one documented USDA-licensed rabies vaccination and is overdue for a booster should receive an immediate booster vaccination and be kept under the owner's control and observed for 45 days for signs suggestive of rabies.

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 249, No. 5, 505](#)

Immediate vaccination; Keep under owner control 45 days	HIDE
Immediate vaccination; Confine 10 days for observation	HIDE
Confine 10 days for observation; Vaccinate after 10 days	HIDE

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How long does *Brucella abortus* survive in a cool, moist environment, (like manure, aborted fetal tissue)?

Days	HIDE
Months	HIDE
Weeks	HIDE
Hours	HIDE

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Correct:

Brucella abortus can survive more than 2 months in cool, moist environments.

How long fetal tiss

Refs: The Merck Veterinary Manual online edition.

- Days
- Months**
- Weeks
- Hours

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Which one of the following animals poses as a potential source of infection of *Francisella tularensis* to humans?

Opossums	HIDE
Raccoons	HIDE
Passerine birds	HIDE
Rabbits	HIDE
Deer	HIDE

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**Correct: Rabbits**

Tularemia is mainly contracted by people via the skin when skinning animals (usually rabbits or rodents) or via the GI tract when eating undercooked meat. Tularemia in humans varies from localized illness to fulminant septicemia.

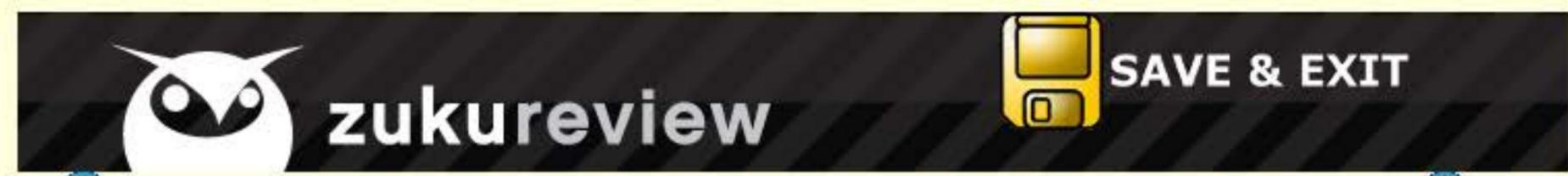
The post-mortem liver of a rabbit has been compared to a "starry sky" because of the pale, necrotic foci on the dark congested liver.

Refs: The Center for Food Security and Public Health and the Merck Veterinary Manual online edition.

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- Which of the following is a reservoir of *tularensis*?
- Opossum
- Raccoon
- Passerine birds
- Rabbits
- Deer

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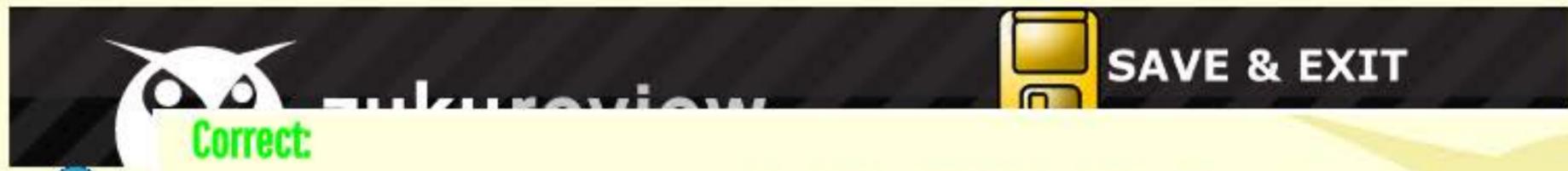
A cat owner is having trouble getting a two-year-old intact female Siamese cat to accept the male for breeding.

Which choice may be most helpful to promote breeding?

Interrupt first attempt to copulate, then leave cats alone	HIDE
Treat queen with diazepam before introducing male	HIDE
Feed cats separately, then introduce male	HIDE
Wait until day length is less than 12 hours	HIDE
Bring the queen to the male's territory	HIDE

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Correct

To promote breeding, the queen should go to the tom's territory. The environment should be familiar to the Tom and quiet, with good footing. Minimize interruption of the two cats.

To decrease stress on the queen, especially a nervous cat, transport her weeks prior to the planned breeding to allow her time to adapt.

Feline estrus generally lasts six to seven days (range one to ten days). The length of feline estrus is affected by whether a male is present. If a male is present, estrus typically lasts one to four days.

Typically allow the male several meetings with queen to breed multiple times per day, but separate them regularly to allow the male to rest and to prevent fighting. Without a male, estrus lasts 7-10 days and recurs in 2-3 weeks.



A cat ow  
male for

Which ch

Interrup

Treat qu

Feed cat

- Wait until day length is less than 12 hours HIDE
- Bring the queen to the male's territory** HIDE

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A cat ow  
male for

Which ch

Interrup

Treat qu

Feed cat

Typically allow the male several meetings with queen to breed multiple times per day, but separate them regularly to allow the male to rest and to prevent fighting. Without a male, estrus lasts 7-10 days and recurs in 2-3 weeks.

Cats are seasonally polyestrous and induced ovulators. Unlike dogs, the feline estrus cycle is controlled by day length. In North America, cats go through an anestrus period in December and January when day length is less than 12 hours.

Click the following link for a [table of reproductive cycle features](#), most animals.

Refs: Pasquini's, Tschauner's Guide to Sm An Clin, vol 1, 2<sup>nd</sup> ed. pp. 398-9 and the Merck Veterinary Manual online edition.

- Wait until day length is less than 12 hours HIDE
- Bring the queen to the male's territory HIDE

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The primary route of infection with *Brucella abortus* is:

Inhalation	HIDE
Ingestion	HIDE
Venereal (natural breeding)	HIDE
Artificial insemination	HIDE

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The prim

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**Ingestio**

Venerea

Artificial

**Correct: Ingestion**

Brucella abortus is primarily transmitted through **INGESTION** of contaminated milk, food and water, and via **licking of genitals and contaminated uterine secretions**.

Refs: The Merck Veterinary Manual online edition.

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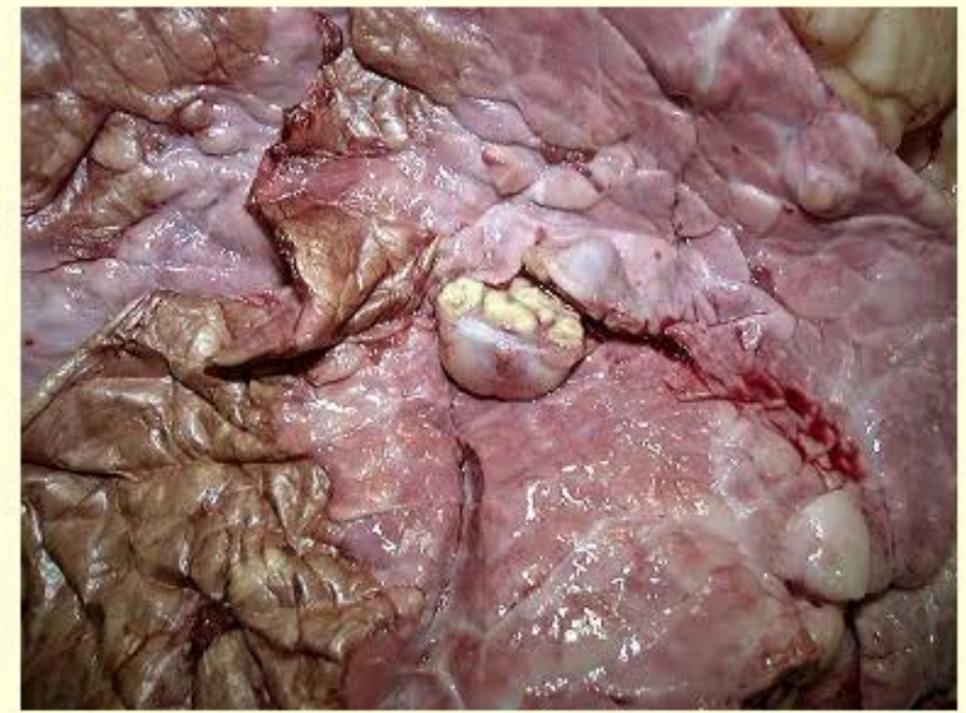
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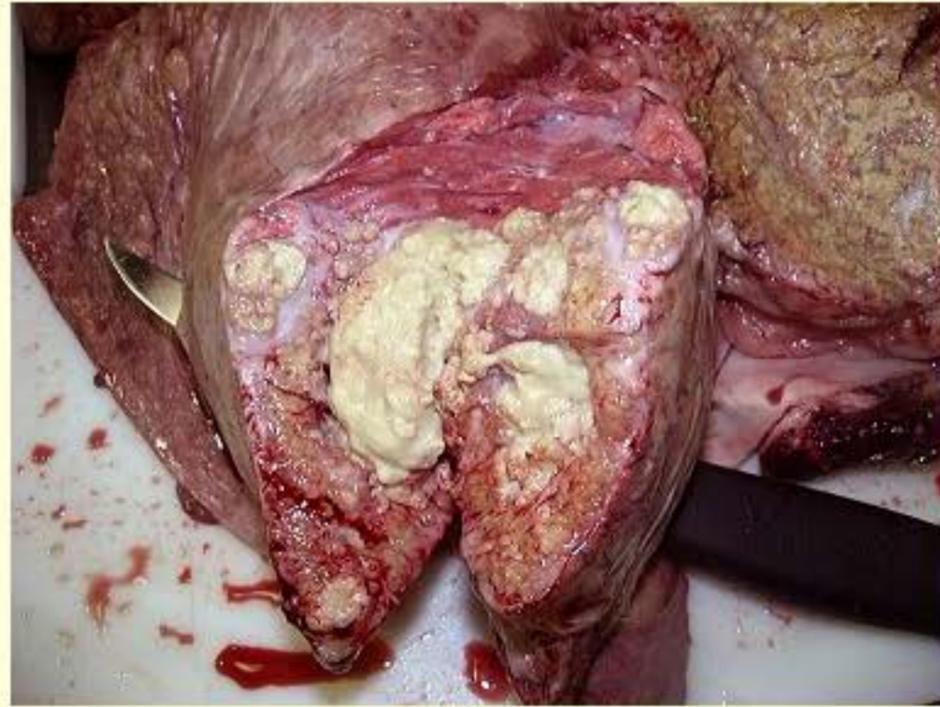
51 <span style="color: red;">✘</span>	52 <span style="color: green;">✔</span>	53 <span style="color: green;">✔</span>	54	55	56	57	58	59	60
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An emaciated cow is presented. She appears weak and anorexic, with enlarged superficial cervical lymph nodes.

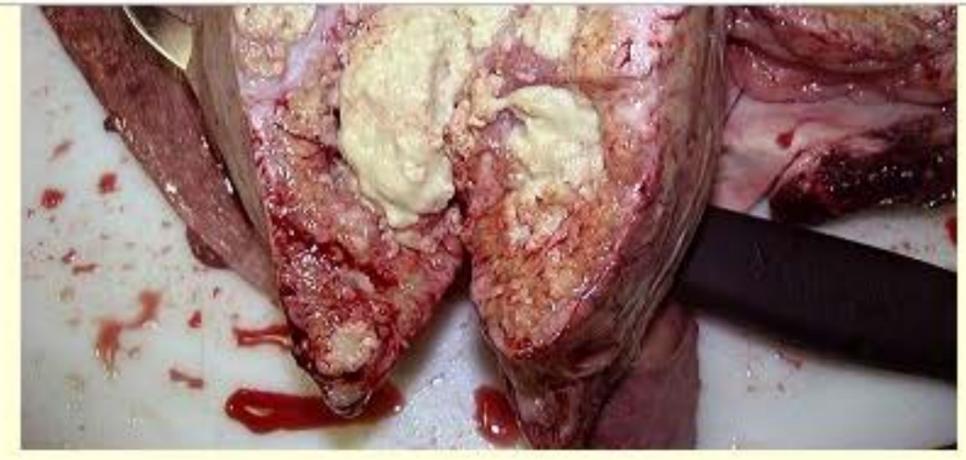
The cow dies the next day. On necropsy, the following lesions in the lungs are evident.

What is the diagnosis?





Value	Normal
T=102.9 F (39.5C)	100.4-102.8 F,38.0-39.3 C
HR=60 bpm	48-84bpm
BR=30 brpm	26-50brpm



Value	Normal
T=102.9 F (39.5C)	100.4-102.8 F, 38.0-39.3 C
HR=60 bpm	48-84bpm
BR=30 brpm	26-50brpm

Contagious bovine pleuropneumonia	HIDE
Johne's disease	HIDE
Bovine tuberculosis	HIDE
Bovine lymphoma	HIDE
Actinobacillosis	HIDE

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Value	Normal
-------	--------

T=102.9 F (39.5C) 100.4-102.8 F 38.0-39.3

HR=60  
BR=30

Contagious  
Johne's  
Bovine TB  
Bovine L  
Actinobac

**Correct:**

These are the classic granulomas and abscesses of bovine tuberculosis.

Most commonly caused by Mycobacterium bovis or Mycobacterium tuberculosis in cattle.

**TB** is reportable.

Look for cows with chronic debilitation, emaciation, but WITHOUT the telltale watery diarrhea of Johne's disease.

Here is an excellent image set of TB lesions in 3 animals.

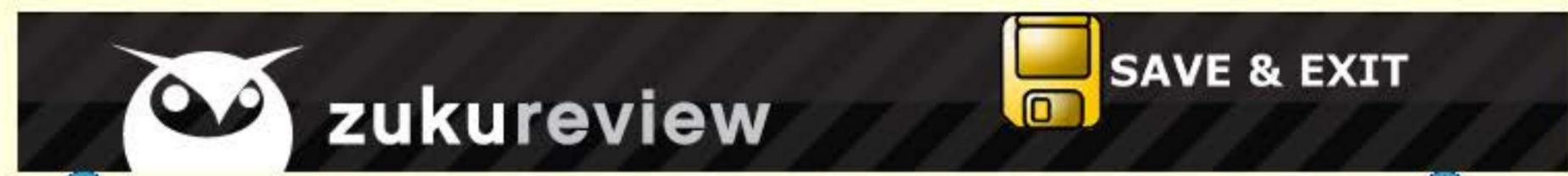
Actinobacillosis causes Wooden tongue in cows.

Refs: Pasquini's Guide to Bovine Clinics, 4<sup>th</sup> ed. pp. 23, 70, Center for Food Security

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The Animal Welfare Act is enforced by which U.S. government agency?

Department of Agriculture (USDA)	HIDE
Institutional Animal Care and Use Committee (IACUC)	HIDE
National Institute of Health (NIH)	HIDE
Centers for Disease Control and Prevention (CDC)	HIDE
Food and Drug Administration (FDA)	HIDE

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- Instituti
- National
- Centers
- Food and Drug Administration (FDA)

Correct:

The United States Department of Agriculture (USDA) enforces the Animal Welfare Act.

Specifically, it is the **Animal and Plant Health Inspection Service** (APHIS) within the USDA that is responsible.

The Animal Welfare act sets minimal standards for care of laboratory animals including dogs, cats and non-human primates.

It regulates the pet trade, animal transportation and exhibition and licensure of animal dealers.

Since 1976 it has prohibited most forms of commercial animal fighting.

Refer: The Animal and Plant Health Inspection Service

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Hyperadrenocorticism is suspected in a 9-year old female spayed dog with a two-month history of increased appetite, thirst and urinary accidents.

Which of the following diagnostic tests is most reliable when results are positive?

- Urine Cortisol Creatinine Ratio (UCCR). Sensitivity=90% , Specificity =25%
- ACTH Stimulation. Sensitivity=80% , Specificity =85%
- Low Dose Dexamethasone Suppression. Sensitivity=95% , Specificity =50%

Cannot say without knowing the positive predictive value	HIDE
Low Dose Dexamethasone Suppression (LDDS)	HIDE
ACTH Stimulation	HIDE
Cannot say without knowing the negative predictive value	HIDE
Urine Cortisol Creatinine Ratio	HIDE

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51  
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 Urine Co  
 ACTH Sti  
 Low Dos  
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 Low Dos

**Correct:**

**ACTH Stimulation.** The two diagnostic screening tests used commonly for diagnosis of hyperadrenocorticism are the ACTH stimulation test and the LDDS. For sensitivity and specificity Qs, remember your **Ps** and **Ns**.

**ACTH** Stim is the most **sPecific** (fewer false **Pos**, so **trust a POS** test more).  
[Click here for a diagram](#)

**LDDS** is more **seNsitive** (fewer false **Negs**, so **trust NEG** test more).  
[Click here for a diagram](#)

**hyperadrenocorticism**

For naturally-occurring HAC, the LDDS test is the preferred screening test because:

- It has the highest sensitivity so there will be fewer false negatives (desirable in a screening test)

ACTH Stimulation	HIDE
Cannot say without knowing the negative predictive value	HIDE
Urine Cortisol Creatinine Ratio	HIDE

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-It can sometimes differentiate PDH from ADH

If the LDDS test does not differentiate between pituitary and adrenal HAC, a additional testing [ie. abdominal ultrasound (to assess adrenal gland size), high-dose dexamethasone suppression test (HDDST) or endogenous ACTH concentration] is usually necessary to confirm the type of HAC present.

The Urine Cortisol Creatinine Ratio (UCCR) has a low specificity (~25%), which means high false positives. 75% of dogs with non-adrenal illness will have a UCCR result consistent with HAC.

So, a positive UCCR is not useful to identify HAC, however, a negative is very useful to *rule-out* HAC as dogs with a normal UCCR cannot have HAC.

Refs: Tschauner/Pasquini's Guide to Sm An Clinics, 2<sup>nd</sup> ed. pp. 654-58, 5-Minute Vet

ACTH Stimulation	HIDE
Cannot say without knowing the negative predictive value	HIDE
Urine Cortisol Creatinine Ratio	HIDE

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Which of the following drugs is licensed for the use in canine cognitive dysfunction syndrome in the United States?

Selegiline	HIDE
Donepezil	HIDE
Levetiracetam	HIDE
Diazepam	HIDE
Potassium bromide	HIDE

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Which of syndrom

Selegilir

Donepe:

Levetira

Diazepa

Potassium bromide

HIDE

BACK

NEXT



Correct:

Selegiline, a monoamine oxidase inhibitor, is licensed for the use in treating canine cognitive dysfunction syndrome (CDS).

Donepezil is used to treat Alzheimer disease in humans.

Refs: Cote, Clinical Veterinary Advisor-Dogs and Cats, 3rd ed. pp. 205-7 and the Merck Veterinary Manual online edition.



**zukunft**



**SAVE & EXIT**

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51	52	53	54	55	56	57	58	59	60
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What are sentinel animals?

Animals that act as monitors for disease	HIDE
Animals with good eyesight	HIDE
Animals used to help the physically challenged	HIDE
Animals that alert staff to intruders	HIDE
Animals that range ahead of a herd or flock	HIDE

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**Correct: Anima Is that act as monitors for disease**

**Sentinel animals** are typically **susceptible to a particular disease** and are **used in laboratories and in the wild to monitor the environment and determine if that disease is on the rise.**

A classic **example** is the **sentinel canary** that coal miners used to carry down into the **mines. If toxic gas levels were high, the canary would get sick quickly and this would warn the miners to get out fast.**

**Sentinel chickens** are used to as an early warning system to **detect an early rise of West Nile virus** or **equine viral encephalomyelitis.**

Because **dogs** are particularly **susceptible** to **Rocky Mountain spotted fever, (RMSF)** they make good sentinel animals for people in areas that have RMSF.

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51 ✘ 52 ✔ 53 ✔ 54 ✘ 55 ✔ 56 ✘ 57 ✘ 58 M ✔ 59 60

A sheep farmer has brought in several prize breeding rams from Western Europe to improve her bloodlines.

One animal has developed large, scaly, crusted lesions on the woolly parts of his body, and is constantly biting and scratching himself to distraction.

Physical exam shows he is still in decent body condition, and ambulates normally. When pressured over his hindquarters, he gives little response.

The ram presents with the lesions shown below.

[Click here to see image](#)

What is the diagnosis?

Scrapie	HIDE
Dermatophilosis	HIDE
Pseudorabies	HIDE
Ulcerative dermatosis	HIDE
Psoroptic mange	HIDE

MERCK MANUAL Veterinary Manual



Courtesy of Dr. Raffaele Roncalli.

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51 52 53 54 55 56 57 58 M 59 M 60

**Correct:**

A sheep Scaly, crusty very itchy lesions in woolly parts of a sheep brought to the U.S. from her blood another country suggests Psoroptic mange also known as "Sheep scab" (Psoroptes ovis).

One animal is constantly Eliminated from US since 1970, but reporting seems to vary by state.

Physical pressure When in doubt, most mange in livestock is reportable. Note: In goats, *Psoroptes cuniculi* is an EAR mite.

The ram Pseudorabies and Scrapie should be on your DDX for a super-itchy sheep, though a skin scrape could make your *Psoroptes* Dx.

[Click here](#)

What is t Expect Scrapie animals to be more neurologic, exhibit behavior changes (aggression sometimes), bunny-hopping and thin in advanced cases.

Psoroptic mange	HIDE
Dermatophilosis	HIDE
Pseudorabies	HIDE
Scrapie	HIDE
Ulcerative dermatosis	HIDE

PREV NEXT

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

A sheep  
her blood  
One animal  
is constant  
Physical  
pressure  
The ram  
[Click here](#)  
What is t

sometimes), during-nipping and trim in advanced cases.

Pressure over hinds may elicit a nibbling response.

Ulcerative dermatosis is a sheep disease caused by a parapoxvirus.

It resembles Contagious ecthyma.

Dermatophilosis is a pustular infection of hair follicle roots.

Look for characteristic Paintbrush hair tufts.

Refs: Smith and Sherman, Goat Medicine 1<sup>st</sup> ed. p. 31 and the Merck Veterinary Manual online edition.

Psoroptic mange	HIDE
Dermatophilosis	HIDE
Pseudorabies	HIDE
Scrapie	HIDE
Ulcerative dermatosis	HIDE

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Which one of these zoonotic pathogens is associated with consumption of undercooked pork?

<i>Echinococcus granulosus</i>	HIDE
<i>Dipylidium suis</i>	HIDE
<i>Capillaria hepatica</i>	HIDE
<i>Taenia solium</i>	HIDE
<i>Hymenolepis nana</i>	HIDE

BACK

*This is the last question. Click Save and Exit after you finish it.*

FINISH

LEAVE BLANK AND FINISH



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51

Which or pork?

- Echinococcus
- Dipylidid
- Capillari
- Taenia s

Hymenolepis nana HIDE

BACK

This is the last question. Click Save and Exit after you finish it.

FINISH

**Correct:**

Humans are the definitive host of the cestode, *Taenia solium*; the intermediate host is usually swine.

Ingestion of undercooked pork containing *T. solium* larvae by humans causes taeniasis (adult tapeworms in the gastrointestinal tract) and ingestion of eggs (including autoinfection by the adult worms) leads to cysticercosis, or the migration of hatched oncospheres into muscle, brain, liver, and other tissues and their development into large cysts.

Refs: The Merck Veterinary Manual online edition.

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A **brucellosis ring test** comes back **positive** on a milk sample. What is the next step to take?

Check vaccination status of herd	HIDE
Slaughter positive cow	HIDE
Trace positive cow back to the herd of origin	HIDE
Draw blood from each cow in herd and test	HIDE
Draw blood from the cow with positive milk ring test for serologic testing	HIDE

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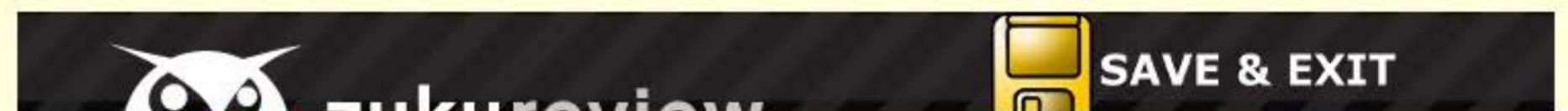
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**Correct: Draw blood from each cow in herd and test**

The brucellosis ring test (BRT, herd test) is a screening test for brucellosis in a whole dairy herd.

If a herd BRT comes back positive, then blood is drawn on each individual cow in the herd and tested serologically. Reactors (positives) are slaughtered.

Market cattle testing (MCT, individual cow test) is for non-dairy herds. Sera are collected from individual cows going to slaughter.

If there is an MCT reactor cow, it is traced back to the herd of origin and all the individual animals in that herd are tested serologically. Reactors (positives) are slaughtered.

Refs: Pasquini's Guide to Bov Clin, 4<sup>th</sup> ed. pp. The Merck Veterinary Manual online edition.

- PREV
- 1
- A brucell
- Check v
- Slaught
- Trace pc
- Draw bl
- Draw blood from the cow with positive milk ring test for serologic testing

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Which reportable condition mainly causes disease in pigs and cattle (as opposed to other farm animals such as horses, sheep, and goats)?

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

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Which re  
farm ani

Anthrax

Foot and

Bluetongue

Rinderpest

Vesicular stomatitis HIDE

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Foot and mouth disease (FMD) mainly affects pigs and cattle.

Rinderpest mainly affects one species: 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 mainly affects one species: almost exclusively a sheep disease (but cattle and deer can get it).

Look for anthrax mainly in two species: cattle, sheep. Can occur in horse, goat. See rarely in pigs, humans.

Vesicular stomatitis (VS) can occur in three species: horses, pigs, cows.



**zukunft**



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1	2	3	4	5	6	7	8	9	10
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Any animal suspected to be febrile must have the rectal temperature verified in order to be an acceptable candidate for slaughter as food in North America.

In which of the following animals is the acceptable rectal temperature less than or equal to 106°F (41°C)?

Cow	HIDE
Pig	HIDE
Horse	HIDE
Goat	HIDE
Sheep	HIDE

BACK    NEXT    LEAVE BLANK





PREV

1

Any animal  
an acceptable  
In which  
106°F (4

Correct:

**Pigs** should have a **rectal temperature less than 106°F (41°C)** to be acceptable for consumption. Rectal temperatures should be verified on any animal suspected of being febrile. Body temperature should be under 105°F (40.5°C) for **cattle, sheep, goats, horses, and mules**.

Refs: The Merck Veterinary Manual online edition.

- Cow
- Pig**
- Horse

Goat	HIDE
Sheep	HIDE

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Which one of the following choices most correctly describes a desensitization and counter conditioning technique useful in the treatment of petting-induced aggression in cats?

- Owners should cease petting or playing with the cat until aggression is under control HIDE
- Gently flicking the cat on the nose counter-conditions the aggression HIDE
- Petting time is gradually increased within cat's comfort level coupled with food rewards HIDE
- If cat shows aggression during petting, squirt face with water, then counter-condition with a toy HIDE
- Vocal reprimands are initiated with each attempt at aggression HIDE

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PREV

1

Which or condition

Owners control

Gently f

Petting food rev

**Correct:**  
**Gradually increasing petting associated with food rewards** is the best method to treat petting-induced aggression.  
**Clicker training** may be **helpful**. **Verbal or physical reprimands** should be **avoided**.  
Refs: Landsberg, Handbook of Behavior Problems of the Dog and Cat, 2<sup>nd</sup> ed. pp. 436-7, Cote, Clinical Veterinary Advisor-Dogs and Cats, 3<sup>rd</sup> ed. pp. 39-40 and the Merck Veterinary Manual online edition.

- If cat shows aggression during petting, squirt face with water, then counter-condition with a toy HIDE
- Vocal reprimands are initiated with each attempt at aggression HIDE

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A herd of **cattle** is being **vaccinated** and **the following are identified** on many of the cattle's **backs** (see below).

What are these?





Tsetse flies	HIDE
Biting midges ( <i>Culicoides</i> spp.)	HIDE
Horn flies ( <i>Haematobia irritans</i> )	HIDE
Sheep keds ( <i>Melophagus ovinus</i> )	HIDE
Horse flies ( <i>Tabanus</i> spp.)	HIDE

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Correct

Stephanofilariasis.

These are horn flies, and they transmit *Stephanofilaria stilesi*, the causative agent of stephanofilariasis. Horn flies can lead to significant economic losses.

Control measures include use of dust bags, feed-through insect growth regulators or insecticides, insecticide-impregnated ear tags, and pour-on insecticides.

Stephanofilariasis is characterized by a plaque-like dermatitis along the ventral midline of cattle. Click here to see stephanofilariasis in a cow.

Dx: Identify microfilaria on deep skin scraping.

Rx: Topical organophosphates.

Refs: Haskell. Blackwell's 5-minute Vet Consult: Ruminant and the Merck Vet Manual



Tsetse fl

Biting m

Horn flies ( <i>Haematobia irritans</i> )	HIDE
Sheep keds ( <i>Melophagus ovinus</i> )	HIDE
Horse flies ( <i>Tabanus spp.</i> )	HIDE

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1 ✓	2 ✓	3 ✓	4 ✓	5 ✗	6	7	8	9	10
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In counseling clients regarding their play-aggressive cat, what would be the best advice?

Advise owner against adding other cats to the household	HIDE
Avoid the use of chase toys	HIDE
Redirect cat's attention with toys suspended from poles	HIDE
Always use familiar toys for playtimes	HIDE
Use hands to engage cat in play behavior	HIDE

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- PREV
- 1
- In couns
- Redirect
- Always**
- Use han
- Advise c
- Avoid the

**Correct: Redirect eat's attention with toys suspended from poles**

Play-aggressive behaviors can be redirected from people with **toys suspended from poles such as cat dancers**

Aggression toward owners may be due to play, fear or predation. A cat with a low tolerance for physical contact may bite when petted.

The addition of another cat, similar in age and temperament, may be encouraged to give the aggressor an outlet of normal play activity.

**Always**

Chase toys (not stalking or the use of one's hands) are recommended as appropriate in playtime with aggressive felines.

Use han

New toy rotation is encouraged to stimulate longer play times.

Advise c

Refs: Cote. Clinical Veterinary Advisor-Dogs and Cats. 3rd ed. pp. 30-40. Landsberg

Avoid the

use of chase toys

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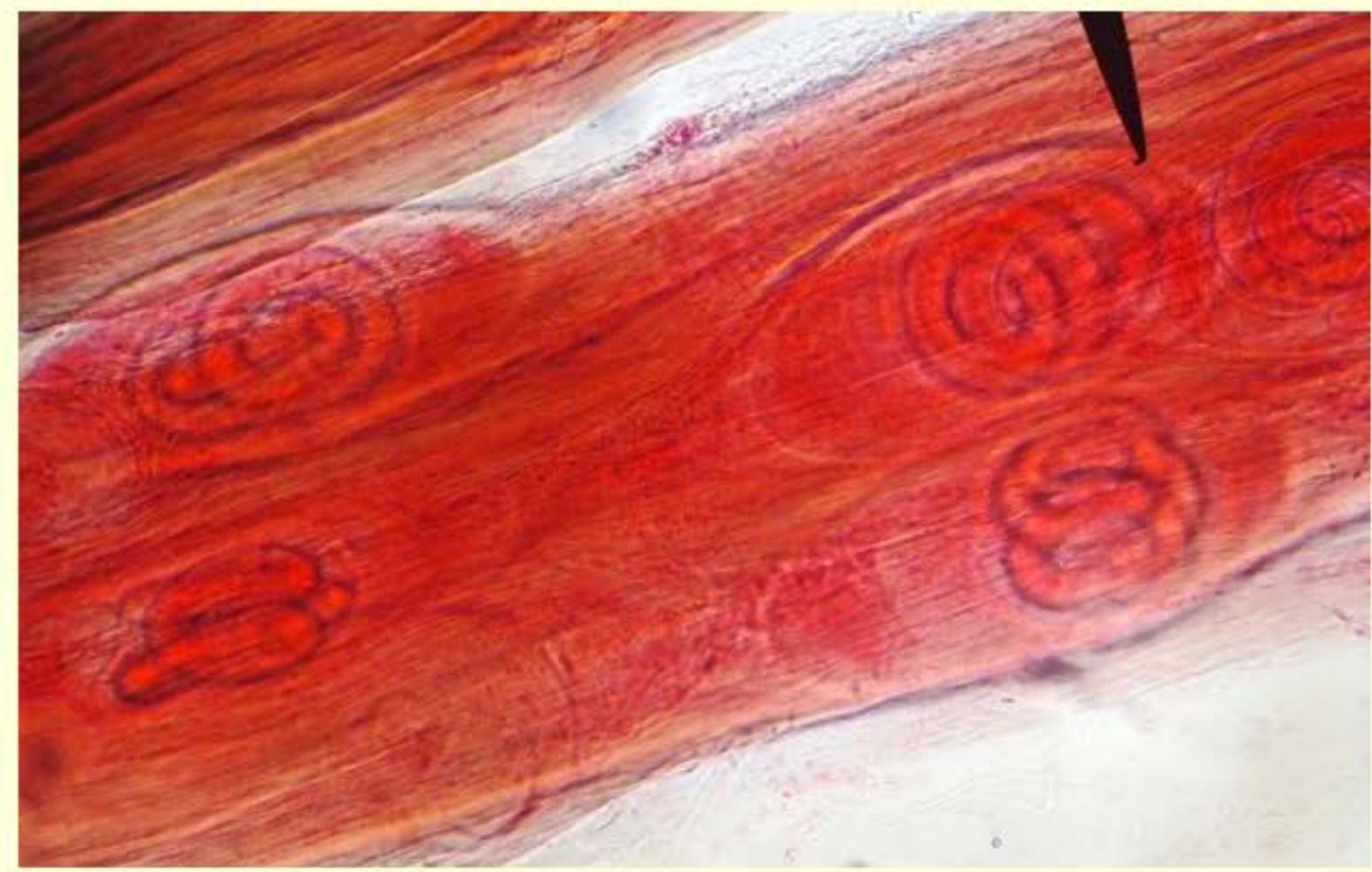
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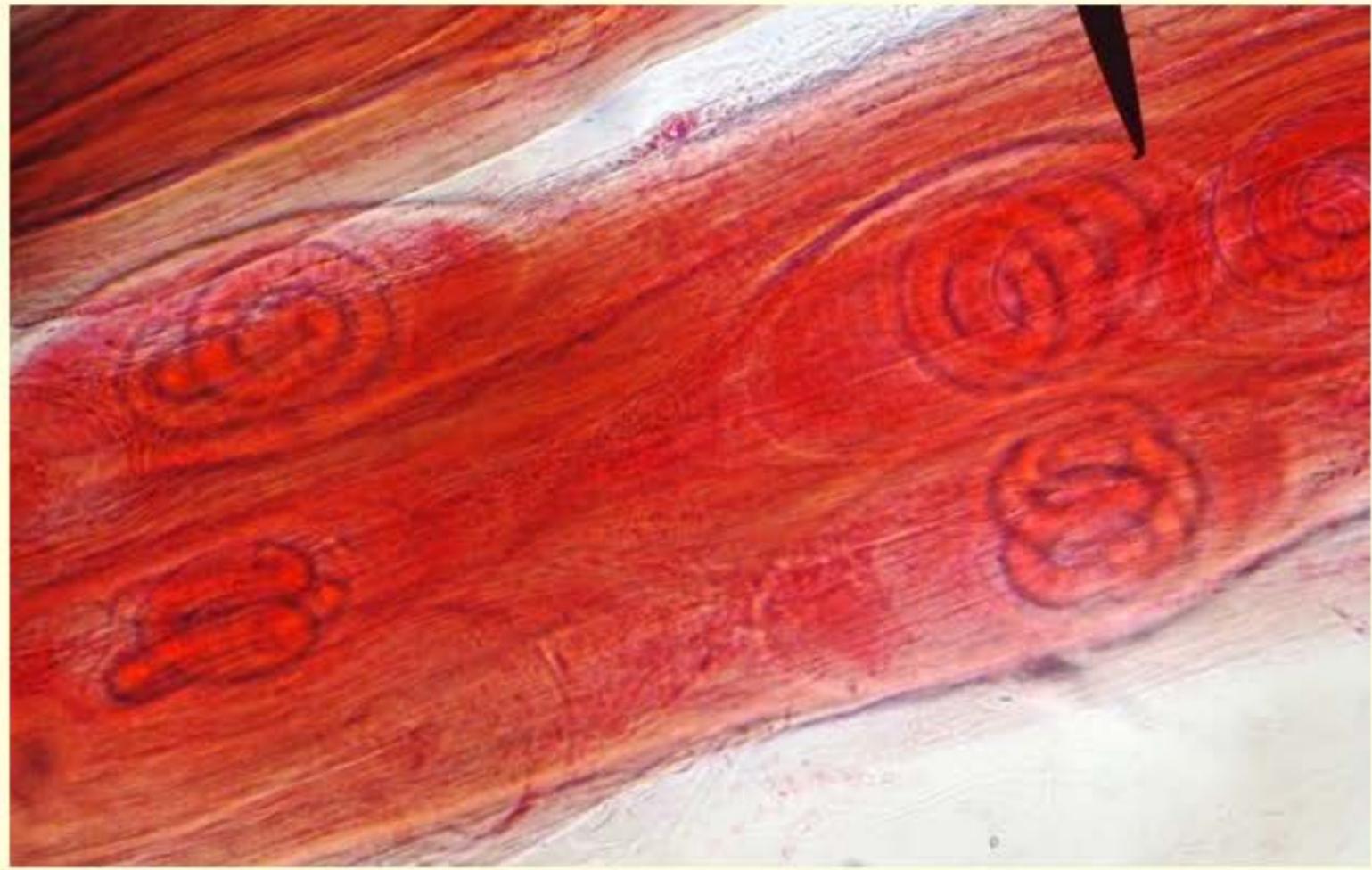
1 ✓	2 ✓	3 ✓	4 ✓	5 ✗	6 ✗	7	8	9	10
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You see the following image from a tongue muscle biopsy on a pig.

What other test might you use to detect this disease in a herd?



What other test might you use to detect this disease in a herd?



PCR	HIDE
Lymph node biopsy	HIDE
IFA	HIDE
ELISA	HIDE

What other test might you use to detect this disease in a herd?

**WITELL**

This is *Trichinella* - **ELISA** is a reliable test for anti-Trichinella antibodies. Seroconversion may not occur for weeks after infection, but even tiny amounts (0.01 larvae per gram of meat) are detectable.

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).

NOTE: **USDA recommends HIGHER temps** to allow for different cooking methods, uneven temperature distributions (ie: microwave). *E. coli*, *Salmonella*, *Staph aureus*, *Listeria*, and other foodborne microorganisms also found in pork are killed by thorough cooking to an internal temp of 160F (71C).

PCR	HIDE
Lymph node biopsy	HIDE
IFA	HIDE
<b>ELISA</b>	<b>HIDE</b>

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1 ✓	2 ✓	3 ✓	4 ✓	5 ✗	6 ✗	7 ✓	8	9	10
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Which one of the following is true regarding bovine leukosis virus?

- The most common consequence of infection is lymphosarcoma HIDE
- Beef cattle are more frequently infected than dairy cattle HIDE
- Most infected animals have no outward clinical signs HIDE
- Passage in milk has been linked to human adult T cell leukemia/lymphoma HIDE
- Feces of infected cattle are a major source of transmission HIDE

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1

Which of the following is true about Bovine leukosis virus (BLV)?

The most common outcome of infection with BLV is persistent infection with no outward clinical signs or lymphocytosis.

Beef cattle are more commonly infected than dairy cattle.

Most infections are resolved within a few weeks.

Passage through the placenta is common.

Feces of infected cattle are a major source of transmission.

**Correct: Most infected animals have no outward clinical signs**

The most common outcome of infection with **Bovine leukosis virus (BLV)** is persistent infection with no outward clinical signs or lymphocytosis.

About a 1/3 of infected cattle develop a persistent benign lymphocytosis and <5% develop lymphosarcoma.

BLV infection is more common in dairy cattle than in beef cattle.

BLV is not a zoonosis. There is no treatment.

Risk is minimized by preventing the transfer of blood (and therefore infected lymphocytes) between cattle. Vertical transmission can also occur.

Refs: The Merck Veterinary Manual online edition.

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Which one of the following diseases can be spread in aerosol form for long distances by the wind, without the aid of insect vectors?

Foot-and-mouth disease	HIDE
African horse sickness	HIDE
Bursal disease	HIDE
African swine fever	HIDE
Contagious bovine pleuropneumonia	HIDE

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Which or wind, with

Foot-and

African l

Bursal d

African s

**Correct: Foot-and-mouth disease**

Aerosolized **Foot-and-mouth disease** virus can spread a long distance as a plume with the wind direction. It is also spread by fomites and via secretions of infected animals.

**Foot-and-Mouth Disease** can infect most cloven-hoofed animals and typical signs are fever and vesicles on the mouth, teats, and feet.

**African horse sickness** is mainly spread by **Culicoides** mosquitos.

It is characterized by a **respiratory or cardiac form** of the disease, including coughing, dyspnea, and dilated nostrils. The disease is endemic to Africa.

**African swine fever** is spread by ticks.

Refs: Jackson and Cockcroft, Handbook of Pig Medicine, pp. 185-6 and the Merck Veterinary Manual online edition.

Contagious bovine pleuropneumonia HIDE

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Which of these organisms is transmitted in milk?

- Mycobacterium bovis*
- Listeria monocytogenes*
- Brucella abortus*
- Coxiella burnetii*

<i>Listeria monocytogenes, Brucella abortus, Mycobacterium bovis</i>	HIDE
<i>Listeria monocytogenes, Mycobacterium bovis, Coxiella burnetii</i>	HIDE
None of them	HIDE
All of them	HIDE
<i>Brucella abortus, Mycobacterium bovis, Coxiella burnetii</i>	HIDE

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PREV  
1  
Which of  
*Mycobac*  
*Listeria* /  
*Brucella*  
*Coxiella*

Correct:

All four of these organisms can be transmitted in milk. Historically, *Mycobacterium bovis* (bovine TB) was the reason milk pasteurization ordinances were passed, in order to protect children from *M. bovis* in milk.

*Coxiella burnetii*, the cause of Q fever is more heat-resistant than *M. bovis*, and therefore today, *Coxiella* sets the standards for minimum pasteurization temperatures in the U.S.

*Brucella* and *Listeria* can both be transmitted in the milk, too.

The [Cornell Milk Facts page](#) is a useful resource.

Refs: Merck Veterinary Manual online edition.

Listeria  
Listeria

None of them	HIDE
All of them	HIDE
<i>Brucella abortus</i> , <i>Mycobacterium bovis</i> , <i>Coxiella burnetii</i>	HIDE

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Soon after introducing an adult male llama into a new pen with a prize female, the female llama is found down, in sternal recumbency. What is occurring?

Female is in heat	HIDE
Back injury	HIDE
Obturator paralysis	HIDE
Aggression display	HIDE
Submission display	HIDE

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Soon after  
llama is

Female

Back inj

Obturate

Aggress

Correct:

If a female llama or alpaca is in heat and receptive, the animal will usually assume a position of sternal recumbency (called "cush" or "kush") within seconds to minutes after introduction of a male and allow the male to breed. After intromission, the male llama often vocalizes, making a sound called "orgling."

Refs: Fowler's Medicine and Surgery of South American Camelids, 3<sup>rd</sup> ed. pp.436-40, figs .17.16- 17.18 and the Merck Veterinary Manual online edition.

Submission display HIDE

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Which reportable disease has an identical clinical presentation to foot and mouth disease (FMD)?

Bovine viral diarrrhea (BVD)	HIDE
Vesicular stomatitis	HIDE
Bluetongue	HIDE
Rinderpest	HIDE
Bovine papular stomatitis	HIDE

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**Correct:**

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

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

Which re  
(FMD)?

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).

- Bovine v
- Vesicula**
- Blueton
- Rinderp

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.

Refs: Pasquini's Guide to Bovine Clinics, 4<sup>th</sup> ed. pp 8-11, 247, Pasquini's Guide to

Bovine papular stomatitis HIDE

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Which one of the following live vaccines for cattle against *Brucella abortus* is preferred because of its increased safety profile and ability to differentiate vaccinates from infected animals?

Strain H38	HIDE
Rev-1	HIDE
Strain 104-M	HIDE
Strain 19	HIDE
Strain RB51	HIDE

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11

Which or because animals?

- Strain H
- Rev-1
- Strain 1
- Strain 19
- Strain RB51

**Correct:**

Strain RB51 is a live vaccine against *B. abortus* that is less virulent than other available vaccines in humans and less abortigenic in cattle.

It also does not generate antibodies that cause a positive response in typical serological diagnostic tests.

Strain 19 is an effective vaccine but is more virulent and results in antibodies that may confuse diagnostic testing.

Rev-1 is a live vaccine used to vaccinate small ruminants against *B. melitensis*.

Strain H38 is a killed vaccine against *B. melitensis*.

Strain 104-M is a spontaneously attenuated vaccine against *B. abortus* that has been used for many years in humans in China.

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An immunochromatographic test kit for detection of fecal canine parvoviruses (CPV) antigen is being tested in 22 zoos in North America to investigate whether some of the large cats (lions, tigers, leopards) may have a panleukopenia-like syndrome 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	47	112	159
Test kit negative	22	819	841
Total	69	931	1000

What is the predictive value negative (PVN) of this test kit?

159/841	HIDE
47/159	HIDE
47/69	HIDE
819/841	HIDE
819/931	HIDE

An immunochromatographic test kit for detection of fecal canine parvoviruses (CPV) antigen is being tested in 22 zoos in North America to investigate whether some of the large cats

(lions, tigers) with the Predictive value negative (PVN) =  $\frac{819}{841} = \frac{d}{c+d}$  (97%)

Click here to see a [Basic 2X2 table](#).

Here are

[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 and large felids.

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

Refs: Decaro et al., Characterisation of [canine parvovirus strains isolated from cats](#) with feline panleukopenia, Res Vet Sci. 2010 Mar 22, Hennekens and Buring, Epidemiology in Medicine 5<sup>th</sup> ed. pp. 332-39 and the Merck Veterinary Manual online edition.

159/841	HIDE
47/159	HIDE
47/69	HIDE
819/841	HIDE
819/931	HIDE

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A healthy 6-year old female spayed cat is presented that bit her owner's hand this morning, and drew blood. It is unclear if the cat has been vaccinated against rabies before.

What is the correct action to take?

Confine 10 days for observation; Vaccinate after 10 days	HIDE
Vaccinate on days 1, 3, 7; Confine at clinic; 45 days observation	HIDE
Immediate vaccination; Confine, observe 45 days; Euthanize if behavior changes	HIDE
Immediate booster; Confine 10 days for observation	HIDE
Immediate booster; Keep under owner control & observation 60 days	HIDE

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Correct:

Confine 10 days for observation; Vaccinate after 10 days.

This kind of case management is DIFFERENT from animal-on-animal bite exposures, because a PERSON was BITTEN.

The literature suggests that an animal which is actually infectious with rabies virus will develop clinical signs within 10 days.

Note that it is recommended to WAIT to VACCINATE in the case of unclear vaccination history in a pet who bites a person.

This is DIFFERENT from animal-on-animal bites, the general advice is to vaccinate IMMEDIATELY and observe/isolate.

According to the 2016 Compendium for Rabies Control, rabies virus might be excreted in the saliva of infected dogs, cats, and ferrets during illness and/or for only a few days before illness or death.

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	HIDE
Immediate booster; Confine 10 days for observation	HIDE
Immediate booster; Keep under owner control & observation 60 days	HIDE

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Which one of these zoonotic pathogens is associated with the ingestion of undercooked beef?

<i>Hymenolepis nana</i>	HIDE
<i>Taenia saginata</i>	HIDE
<i>Capillaria hepatica</i>	HIDE
<i>Echinococcus granulosus</i>	HIDE
<i>Dipylidium suis</i>	HIDE

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**Correct:**  
*Taenia saginata*, a cestode (tapeworm), can be found in undercooked beef.

The definitive host is humans. The intermediate hosts are cattle and other domestic or wild ruminants. Infected humans pass eggs in the feces which cattle can then ingest while grazing.

Oncospheres then migrate from the gastrointestinal tract of the cattle to the muscles where they form small cysts. Humans are infected by ingesting these cysts in undercooked meat.

Refs: The Merck Veterinary Manual online edition.

11

Which of the following is a parasite of beef?

- Hymenoc...
- Taenia s...**
- Capillari...
- Echinoc...

*Dipylidium suis* HIDE

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A herd from a large swine operation is presented with a severe outbreak of febrile hemorrhagic disease that appears to have affected 50% of the herd. So far, 12 animals have died.

The pigs are depressed and anorexic, with temperatures as high as 104.9°F (40.5°C).. [N=100-102°F, N=37.8-38.9°C]. There are purple blotches on the bellies of several, and necropsy finds hemorrhaged organs.

Diseases on the differential diagnosis include hog cholera, African swine fever, severe anticoagulant toxicity and bacterial septicemias.

What should be done first?

Depopulate affected barns	HIDE
Vaccinate unaffected animals for African swine fever	HIDE
Start affected animals on broad spectrum antibiotics	HIDE
Initiate strict biosecurity measures	HIDE
Report to the state vet	HIDE

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**Correct: Report to the state vet**

Because you suspect two **REPORTABLE** diseases ( **AFRICAN SWINE FEVER** and **HOG CHOLERA**) with potentially disastrous consequences for the national hog industry, you should notify the authorities first.

Given your suspicions and the severity of the outbreak, depopulation could be right if tests confirm one of the reportables, but it's probably not the first thing you should do.

Refs: The Merck Veterinary Manual online edition.

Depopulate affected barns	HIDE
Vaccinate unaffected animals for African swine fever	HIDE
Start affected animals on broad spectrum antibiotics	HIDE
Initiate strict biosecurity measures	HIDE
Report to the state vet	HIDE

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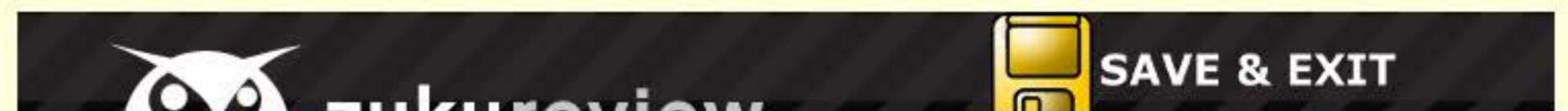
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People most commonly contract plague via which route?

Person-to-person contact	HIDE
Bite from a rodent flea	HIDE
Direct contact with infected pet cat	HIDE
Bite from an infected animal	HIDE
Inhalation of infected droplets from a plague-infected pet	HIDE

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**Bite from a rodent flea**

About 10 cases of **human plague** are reported each year, most often **infected via a flea bite**. Caused by **Yersinia pestis**, **animal plague** is carried by FLEAS and found in wild RODENTS (ground squirrels, wood rats) and RABBITS.

**After rodent epizootics** (massive die-offs) rodent fleas may migrate to pet cats and dogs, and possibly enter homes. **Dog and cat fleas** are RARE in most plague-enzootic areas of WESTERN US; so fleas on pets in places like New Mexico, Arizona, Colorado may be fleas from wild rodents or rabbits.

**Among pets**, think of septic CATS with ABSCESSSES, in the WESTERN United States (and Hawaii), May-October. ZONOTIC and REPORTABLE.

Refs: U.S. Centers for Disease Control, MMWR, Human plague-4 States- Sep 1, 2006 / 55(34); 940-3, Blackwell's 5-Minute Vet Consult Canine Feline, 4<sup>th</sup> ed. p. 1077 and the Merck Veterinary Manual online edition.

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What is the best way to know the milk or meat withdrawal time of a medication prior to administration in a food animal?

Ask the animal's owner	HIDE
Read through notes from school	HIDE
Consult the Food Animal Residue Avoidance Databank	HIDE
It is the same for all medications – 3 days for milk and 10 days for meat	HIDE
Refer to the Animal Medicinal Drug Use Clarification Act	HIDE

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**Correct: Consult the Food Animal Residue Avoidance Databank**

The most up-to-date guidelines on withdrawal times in food-producing animals are available from the [Food Animal Residue Avoidance Databank](#) (FARAD).

There are strict withdrawal regulations because drug residues in the food chain could be harmful to humans.

Refs: Bassert and Thomas, McCurnin's Clinical Textbook for Veterinary Technicians, 8<sup>th</sup> edition, p. 1073 and FARAD.

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Refer to the Animal Medicinal Drug Use Clarification Act HIDE

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Which reportable condition can affect cattle, but mainly causes disease in sheep?

Vesicular stomatitis	HIDE
Malignant catarrhal fever	HIDE
Anthrax	HIDE
Bluetongue	HIDE
Rinderpest	HIDE

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Vesicula

Blueton

Anthrax

Maligna

Rinderpest

Correct:

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.

Vesicular stomatitis (VS) can occur in horses, pigs, cows. Remember the big 8 vesicular diseases: BVD, IBR, BPS, MCF, bluetongue, VS, FMD, Rinderpest.

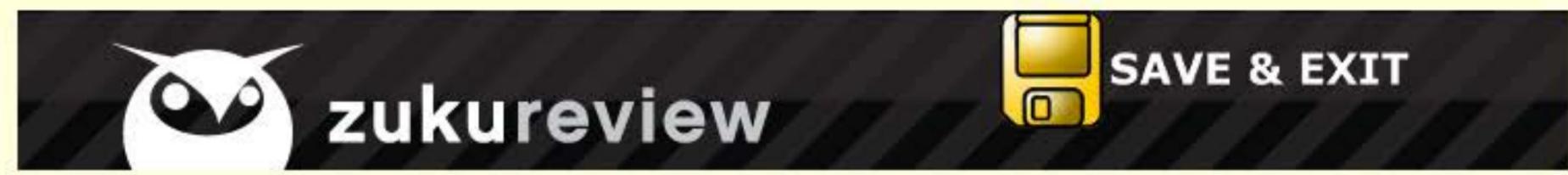
Refs: Pasauini's Guide to Bovine Clinics. 4<sup>th</sup> ed. pp 8-11. 247. Pasauini's Guide to

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What is the "OIE"?

Official Internal Element	HIDE
World Organization for Animal Health	HIDE
International Bureau for Transport	HIDE
Office of International Emergencies	HIDE
United States Department of Homeland Security	HIDE

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**Correct:**

The OIE is the [World Organization for Animal Health](#). It is an international organization that began as the Office International des Epizooties in 1924 after Belgium was afflicted by an outbreak of Rinderpest in 1920.

In 2003 they officially changed the name to the World Organization for Animal Health but kept the well-recognized acronym "OIE."

Its main goal is to control and prevent the spread of epizootic diseases and improve animal health worldwide.

It is an autonomous intergovernmental organization with 180 member countries, represented on all continents.

Refs: the [OIE](#) website.



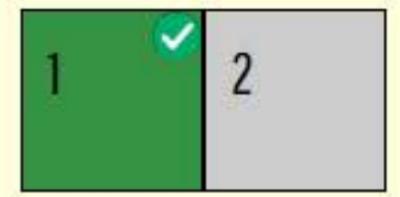
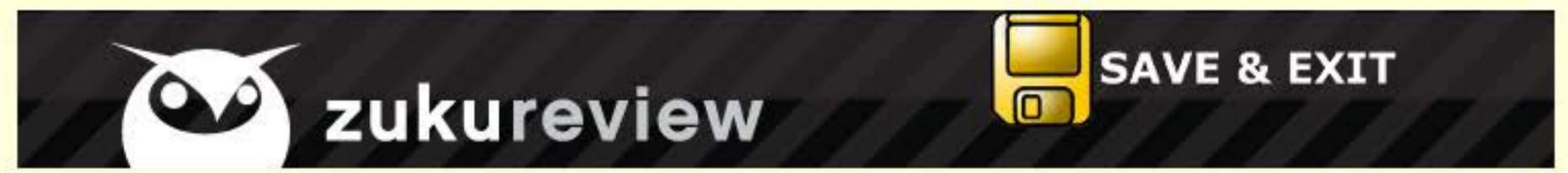
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- Office of
- United States Department of Homeland Security

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Which one of the following choices is the most effective means of transmission of virulent systemic feline calicivirus (VS-FCV)?

Contact	HIDE
Fecal-oral	HIDE
Vector	HIDE
Aerosol	HIDE
Hematogenous	HIDE

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**Correct:**

**Contact** (direct or via fomites) is the most effective way to transmit virulent systemic feline calicivirus (VS-FCV). Aerosol transmission is not considered to be significant.

Which or systemic

Control within a home, shelter or hospital must therefore involve elimination of contact between cats and disinfection of surfaces and fomites, including caretakers' hands.

Contact

Fecal-or

Refs: Greene, Infectious Dz, Dog and Cat, 3<sup>rd</sup> ed., Cote, Clinical Veterinary Advisor-

Vector

Dogs and Cats, 3<sup>rd</sup> ed. pp. 158-9, Virulent Systemic Feline Calicivirus from UC Davis

Aerosol

site and the Merck Veterinary Manual online edition.

Hematogenous

HIDE

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