

Understanding and diagnosing pregnancy loss

Gregg A. Hanzlicek, DVM, PAS, PhD
 Kansas State Veterinary Diagnostic Laboratory
 College of Veterinary Medicine
 Kansas State University

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Pregnancy loss definitions

Early embryonic death (EED)
 less than 42 days gestation

Abortion
 42 days to gestation term (280 days)

Stillborn vs. weak calf syndrome
 check lung tissue for signs of breathing
 2" X 2" lung tissue in water
 floats = at least one breath taken

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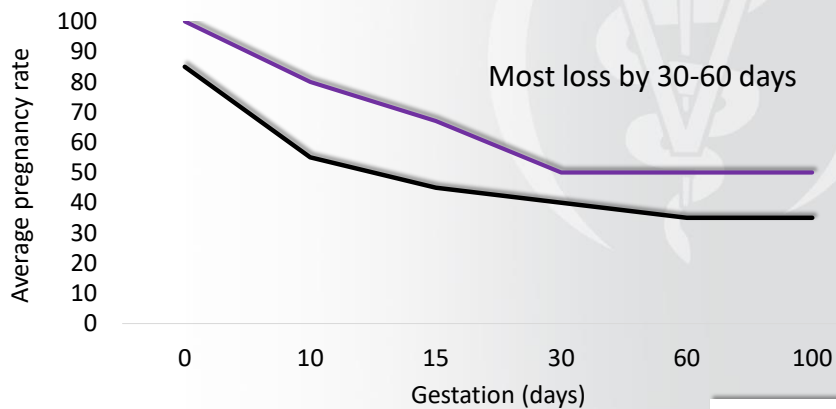
Pregnancy losses are “normal” in all species

Mares, Ewes, Cows, Pig, Mice, Rats, Poultry, Turtles, Humans
1960 to 2020

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Pregnancy loss in beef cows: two studies



Ealy, et al: 2019
&
Reese, et al. 2020

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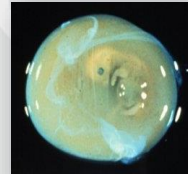
Early embryonic death

Unlikely to notice fetus or placenta

Return to estrus for rebreed

Estrus interval 30+ days
indication of EED

42 day fetus



~ 1 finger diameter

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Early embryonic death

Causes:

Developmental issues

BVDV

Lepto

Neospora

Human induced; e.g. Lutalyse®

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Abortion: 42 days to term

May or may not notice fetus

mouse size = 60 days

rat size = 90 days

Usually will return to estrus within a few days to weeks

Trich and Campy?



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Abortion causes

Bacteria: many species

Mold: silage, hay, cubes, cake

Toxins: nitrate

Vaccine: IBR (MLV unvaccinated, pregnant animals)

IBR: field exposure

Lepto: carriers, wildlife

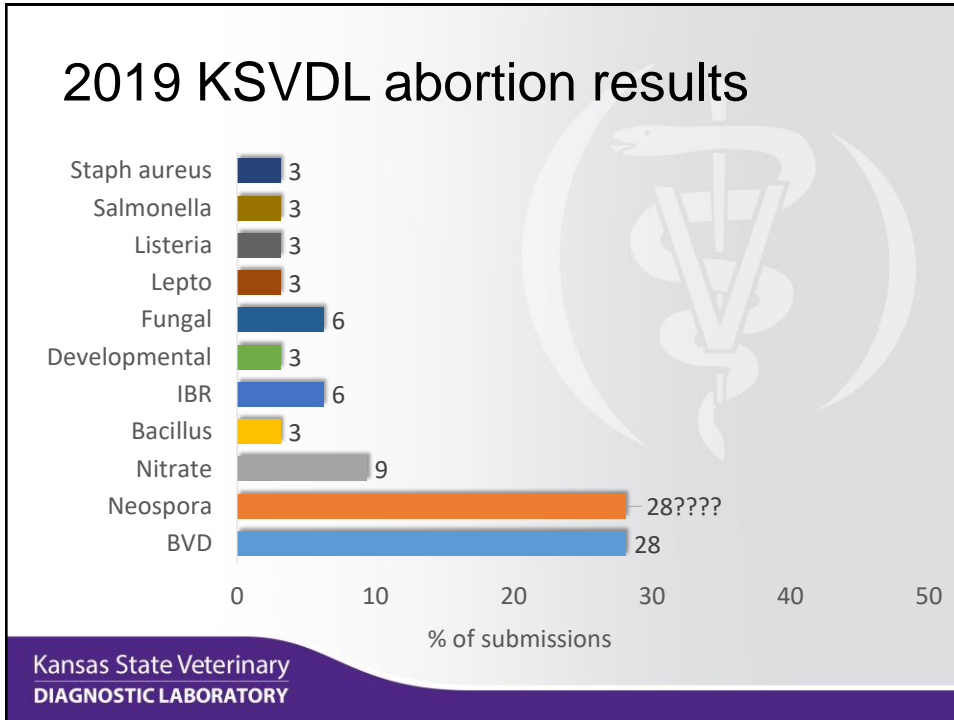
BVDV I and II: not in every herd, neighbors, wildlife

Neospora

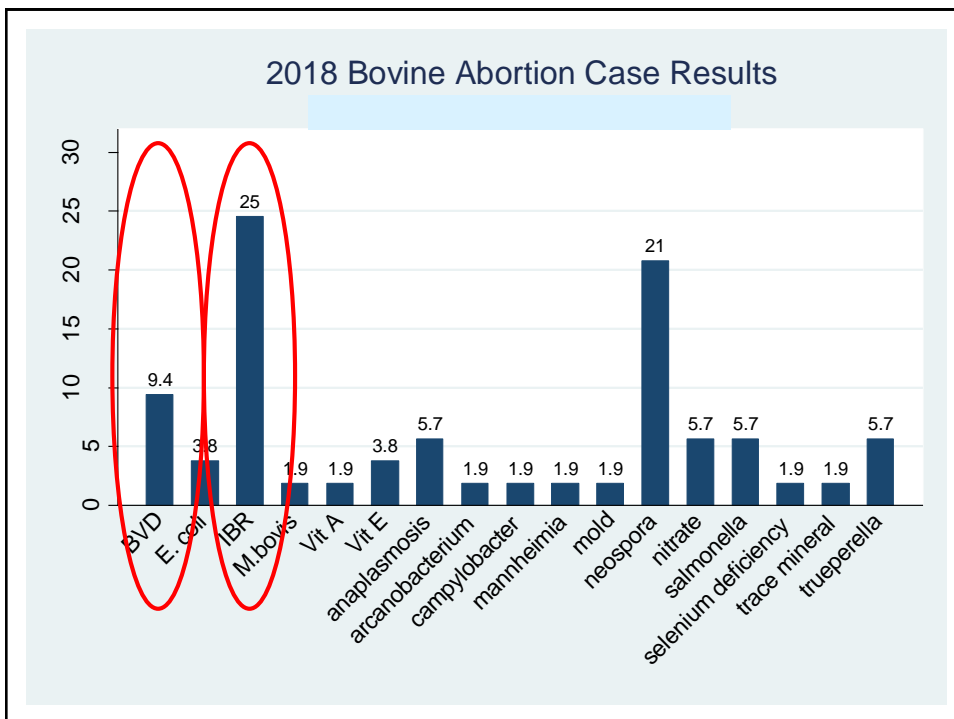
Nutritional: protein/trace-mineral/vitamin/energy deficiencies

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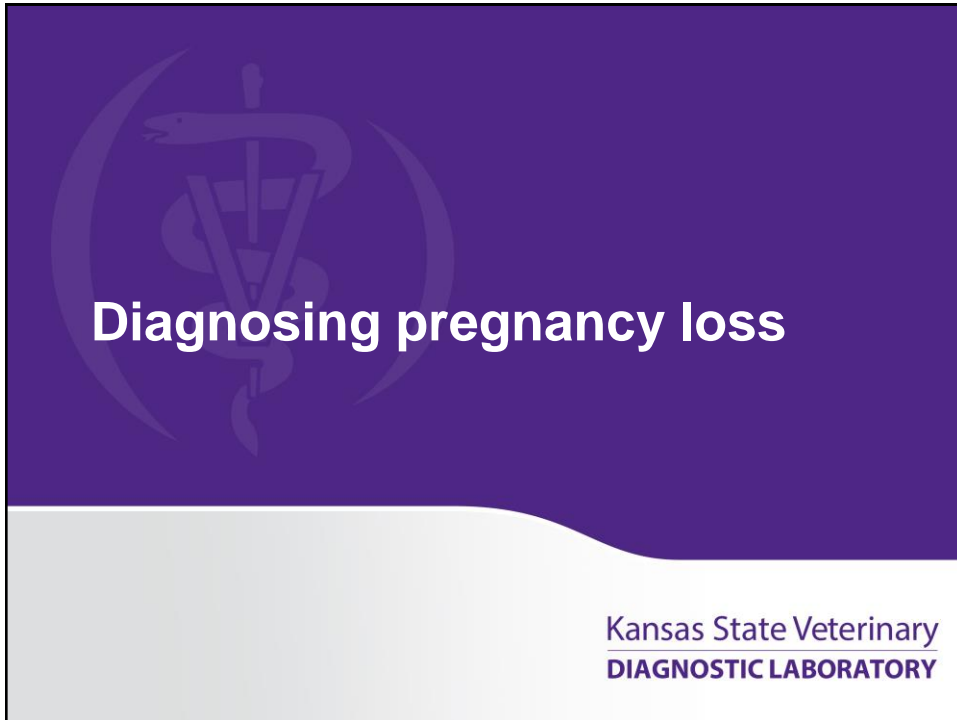
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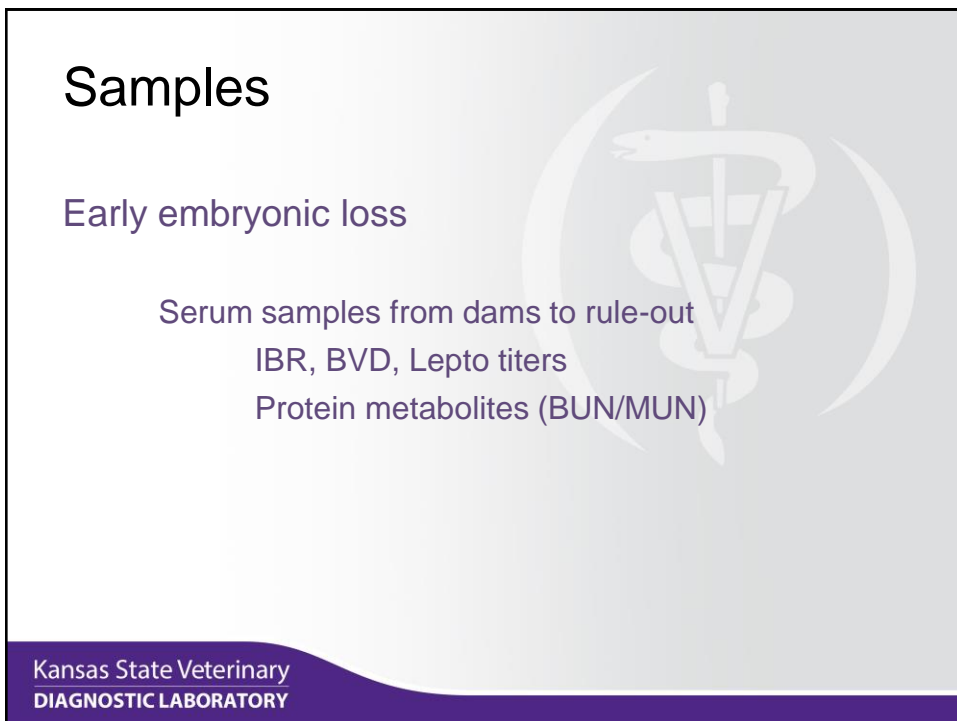
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Diagnosing pregnancy loss

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Samples

Early embryonic loss

Serum samples from dams to rule-out
IBR, BVD, Lepto titers
Protein metabolites (BUN/MUN)

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Best diagnostic samples

Abortion

1st abortion of the year, diagnostics?
Probably not...but just in case
Save fetus and placenta
chilled (best not frozen)

Best: Entire fetus AND sections of placenta
OR
2nd Best: All fetal tissues except intestines

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Abortion diagnostic success

One fetus submitted

Definitive diagnosis = 30-50% of the time

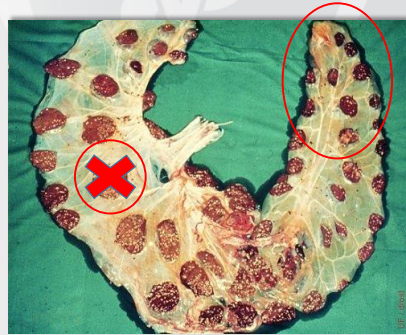
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Increasing abortion diagnostic success

Placenta included
(several sections)

~3X times more likely to
result in a diagnosis



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Increasing abortion diagnostic success

Submit more than one aborted fetus/placenta

~1.5 X more likely to result in diagnosis

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Diagnosing pregnancy loss: after preg check

Called pregnant, now open, no fetus, no placenta!!!

Stage of gestation when checked?

Losses are greater in early gestation

Checked at 45 days vs. 150 days

Confidence in palpation or ultrasound or test?

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Pregnancy exam goal?

To find opens!

resynchronization

culling

other

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Pregnancy exam: accuracy

Test method	Gestation (minimum days)	Days post calving	False negatives	False positives
Rectal palpation	30	-	0.1%	0.1%
Ultrasound	25	-	0.1%	0.1%
Blood/milk (IDEXX: PAG)*	25/28	60	0.7%	4.9%
Blood/milk (Biopyrn:PSPB*)	25/28	73-92	1.0%	5.0%

*Manufacturers' advertised accuracy

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Blood pregnancy test

100 cows tested using blood sample

All called pregnant

Reality: 95 are pregnant
5 are actually open

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Late losses: no fetus/placenta

Pregnancy confirmed in fall
comfortable results were accurate

Now calving season, several confirmed open

No fetus or placenta available

Now what???

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Confident they were pregnant

CAN'T eliminate all causes

for example: nutritional/genetic/toxic
lag time from diagnosis to finding open
available sample issues: limited

CAN eliminate the major infectious causes

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Confident they were pregnant

Blood (serum) samples: 3-5 adults
target open animals

3 additional from pregnant animals are helpful

1 blood sample from 1 animal = difficult to interpret

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Serum titers from now open cows

Pathogen	Tag 3372
IBR	1:128
BVD I	1:2064
BVD II	1:512
Lepto hardjo bovis	1:400

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Pregnancy loss prevention

Biosecurity

minimize:

exposure to disease strains

exposure to large amounts = overwhelm
immunity

Vaccination program

IBR, BVDI, BVDII, Lepto, Campylobacter

Local veterinarians' advice = best source

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Pregnancy loss prevention

Nutrition

Immune system requires large amounts of
protein, energy, minerals, vitamins

Test forages

Formulate appropriate diet

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Summary

Pregnancy losses are “normal”
biological attrition

Most losses occur in the first 60 days of gestation

Prevention is important, but not complete
biosecurity, immunity, nutrition

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Thank you!

Gregg A. Hanzlicek
gahanz@vet.k-state.edu
785-532-4853

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Estimated “normal” pregnancy loss

Gestation age (days)	% Loss
	Low - High Range
1	5 - 10
8	25 - 30
14 - 28	5 - 10
29 - 42	5 - 10
43 - term	5 - 12

Diskin: 1980; Dunne: 2000; Inskeep:2005

6-7% loss: 30 to 60 days
 1-2% loss: greater than 60 days
 GAH: unpublished

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Diagnosing losses

EED

most go unnoticed

Abortions

entire fetus and placenta important tissues

fetus and placenta not available = blood test can eliminate some diseases as causes

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