

Understanding and diagnosing pregnancy loss

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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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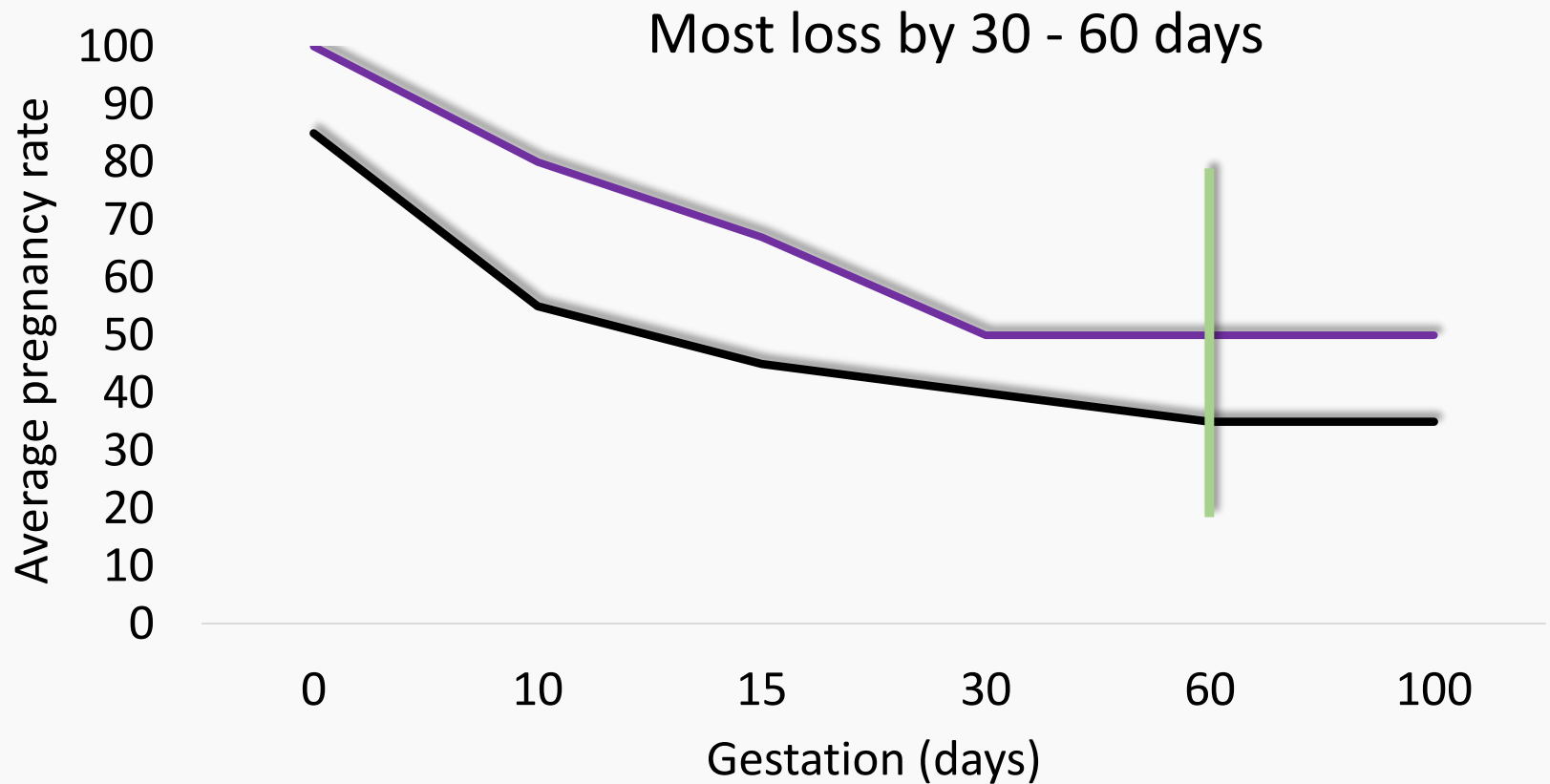
Pregnancy losses are “normal” in all species

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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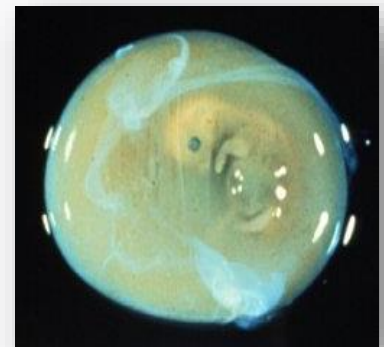
Early embryonic death

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

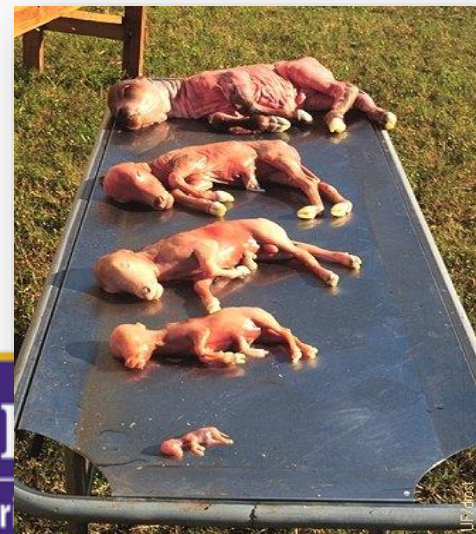
May or may not notice fetus

mouse size = 60 days

rat size = 90 days

Usually will return to estrus within a few days to weeks

Trich and Campy?



Abortion causes

Bacteria: many species

Mold: silage, hay, cubes, cake

Toxins: nitrate

Vaccine: IBR (MLV unvaccinated, pregnant animals)

IBR: field exposure

Lepto


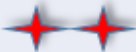












BVDV I and II

Neospora

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



Infectious cause

		Gestation period where pregnancy loss occurs		
Pathogen		Early	Mid	Late
IBR	*			
BVDV	*			
Lepto	*			
Vibrio	*			
Trich				
Neospora				

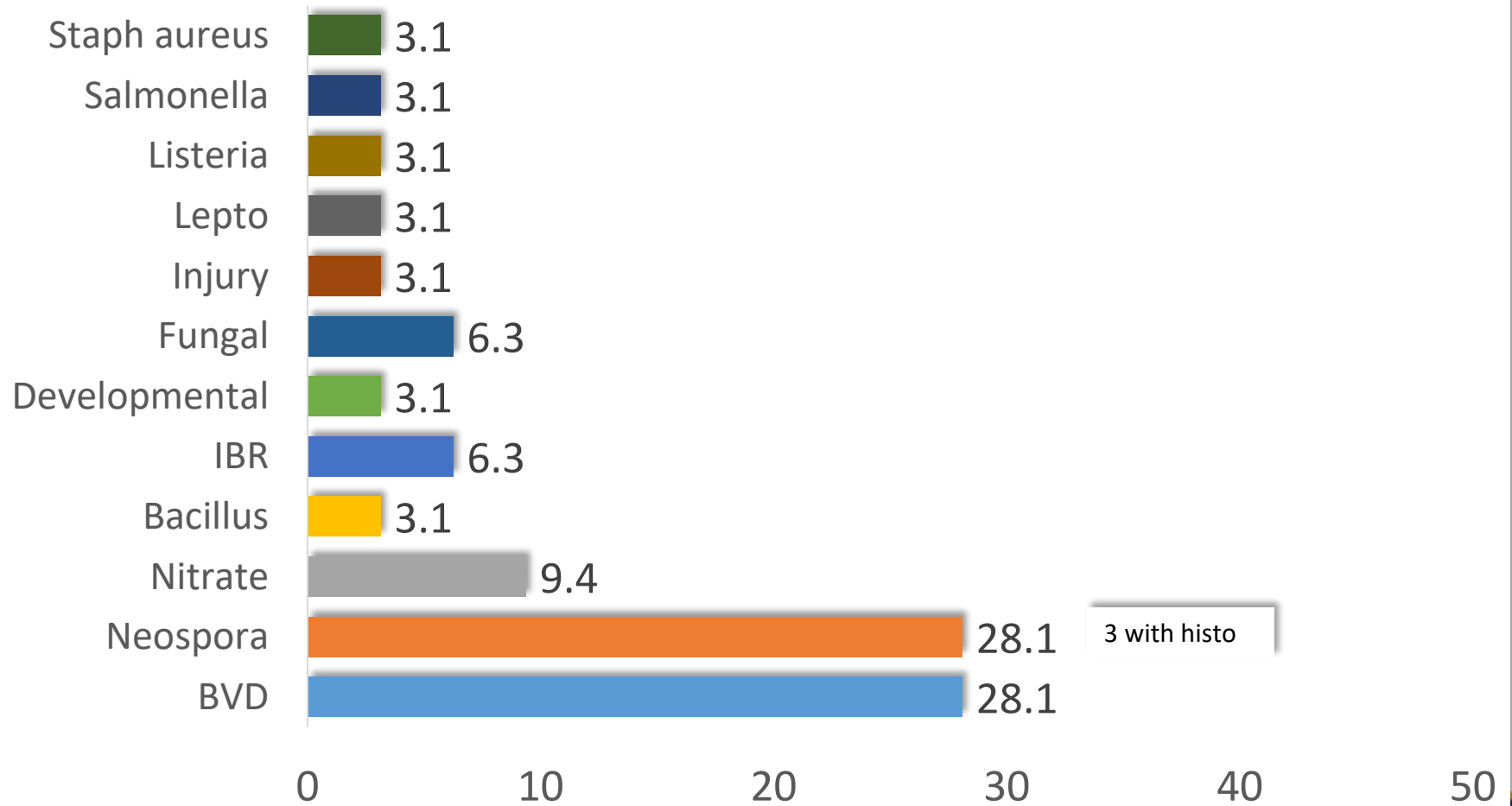
*

Vaccination program should include



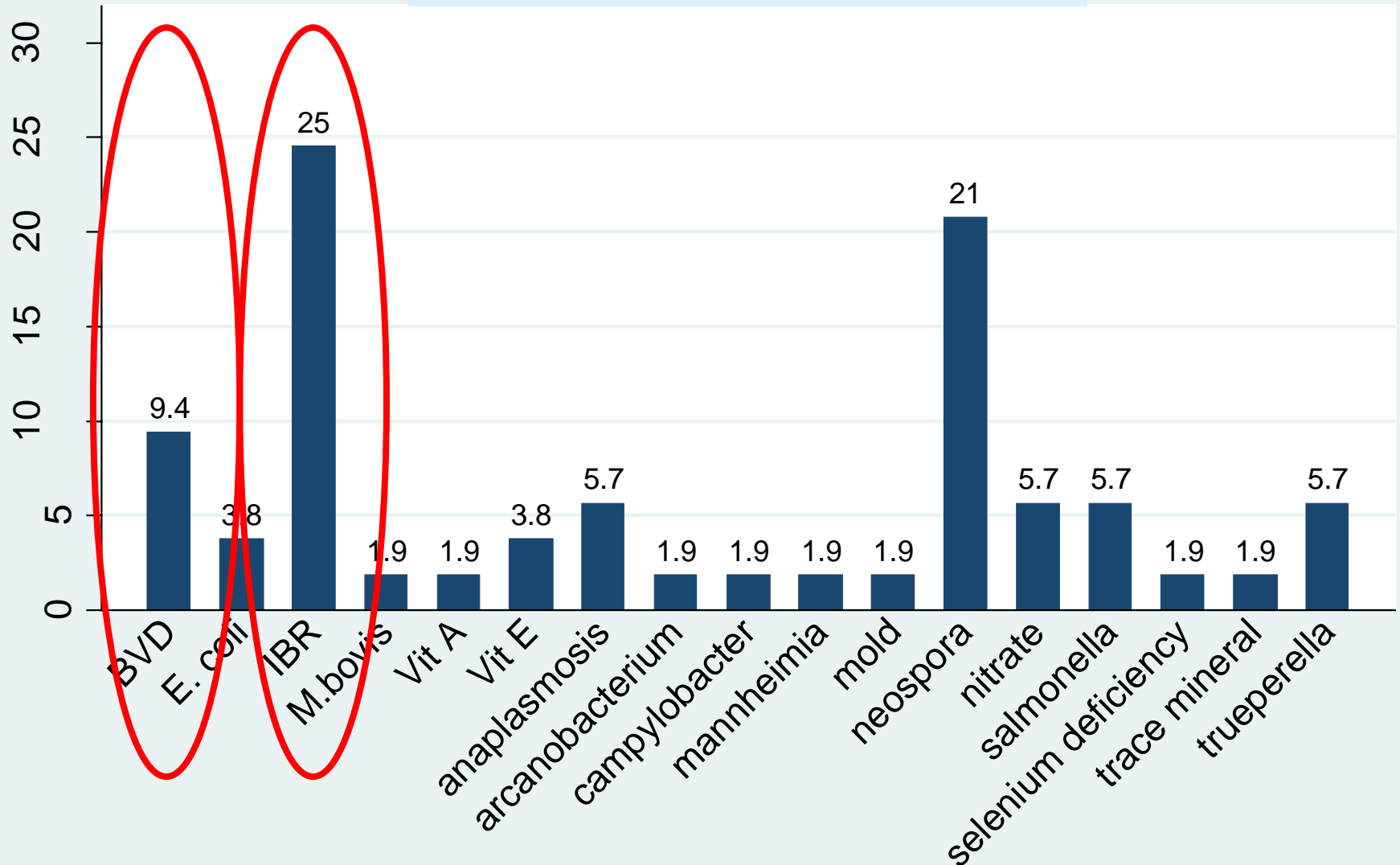
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2020 KSVDL abortion results



% of non-negative submissions

2018 Bovine Abortion Case Results



Diagnosing pregnancy loss



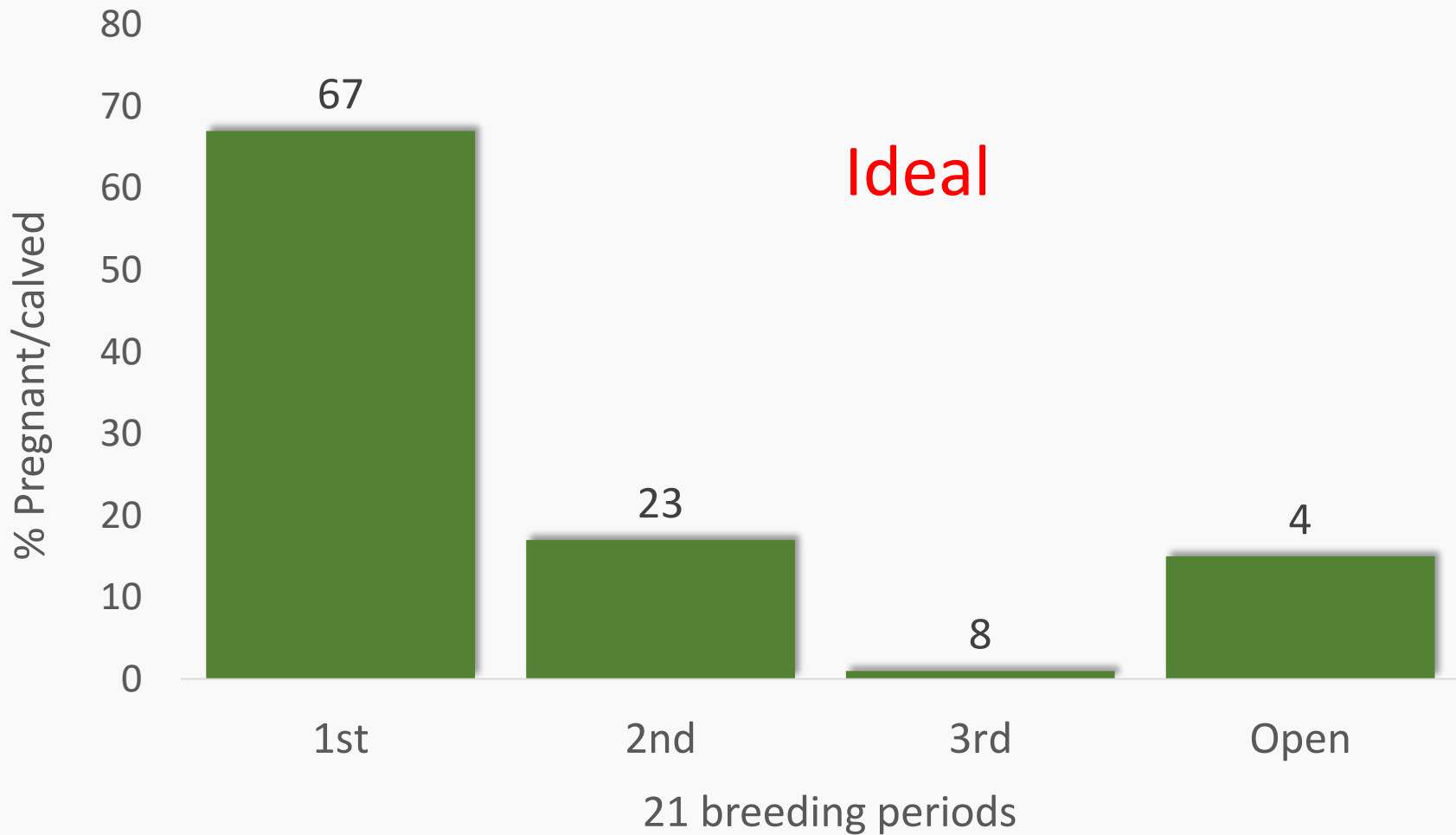
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Pregnancy histograms
can be helpful.....

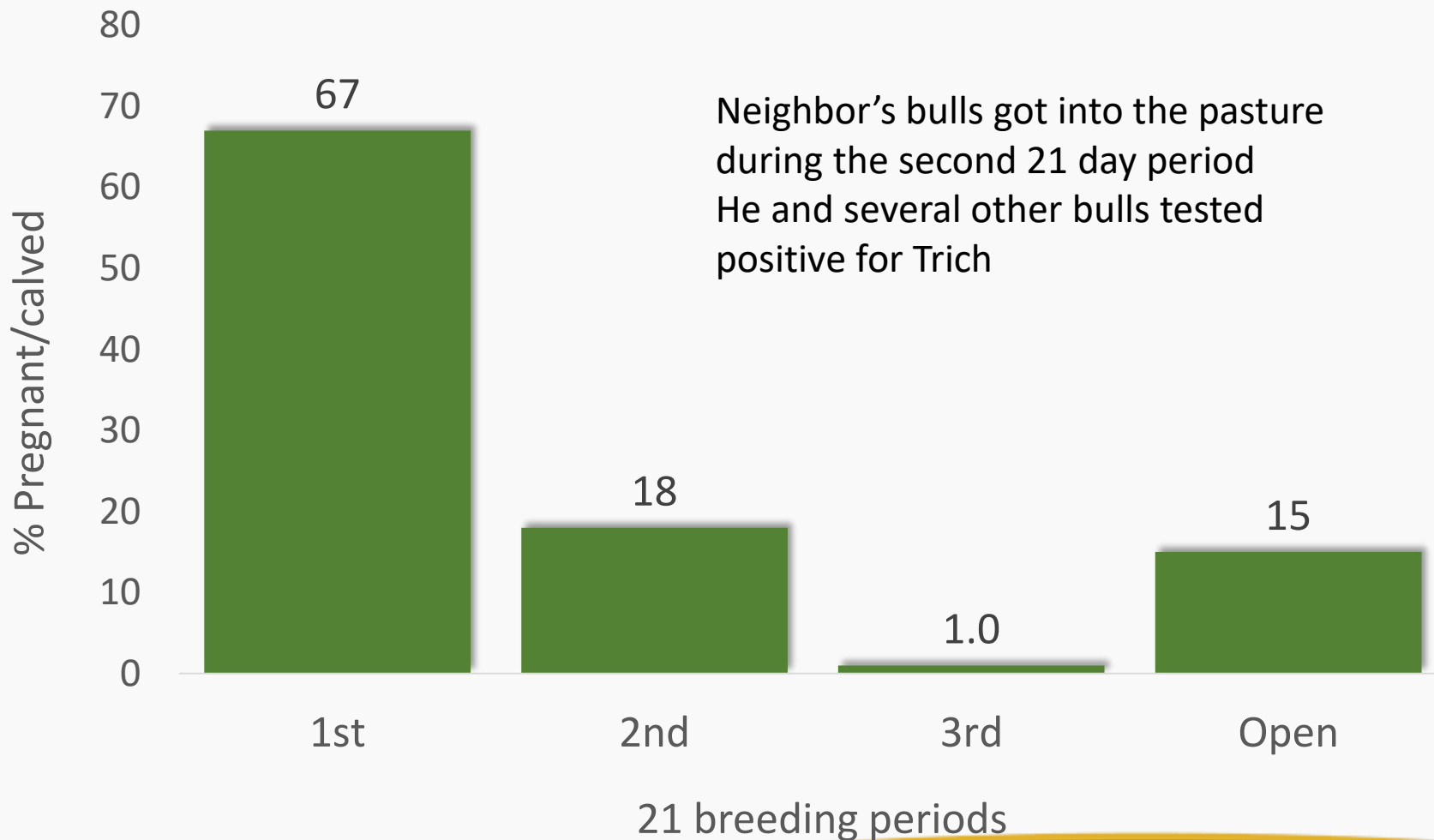


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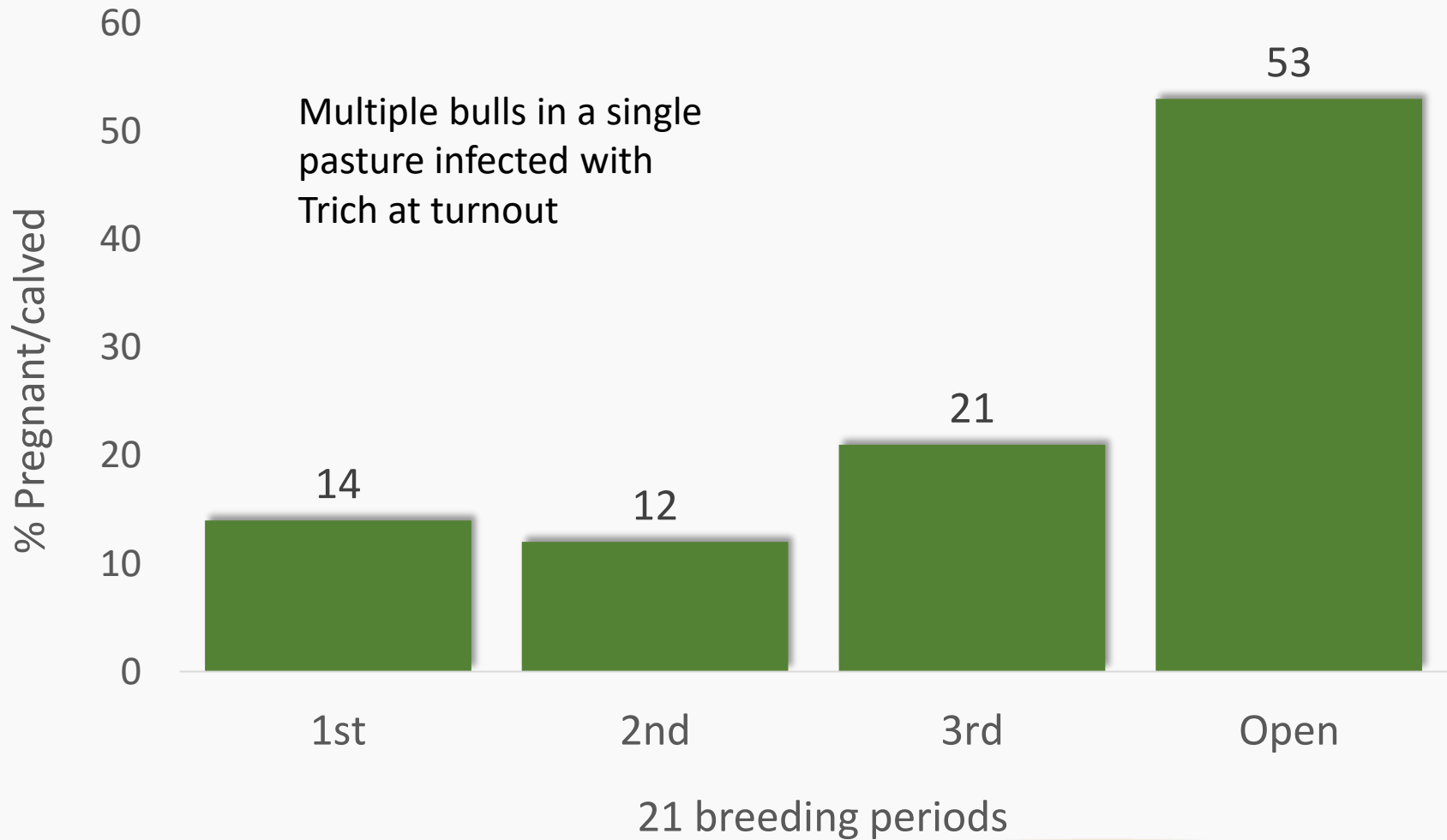
% Pregnant by breeding season period



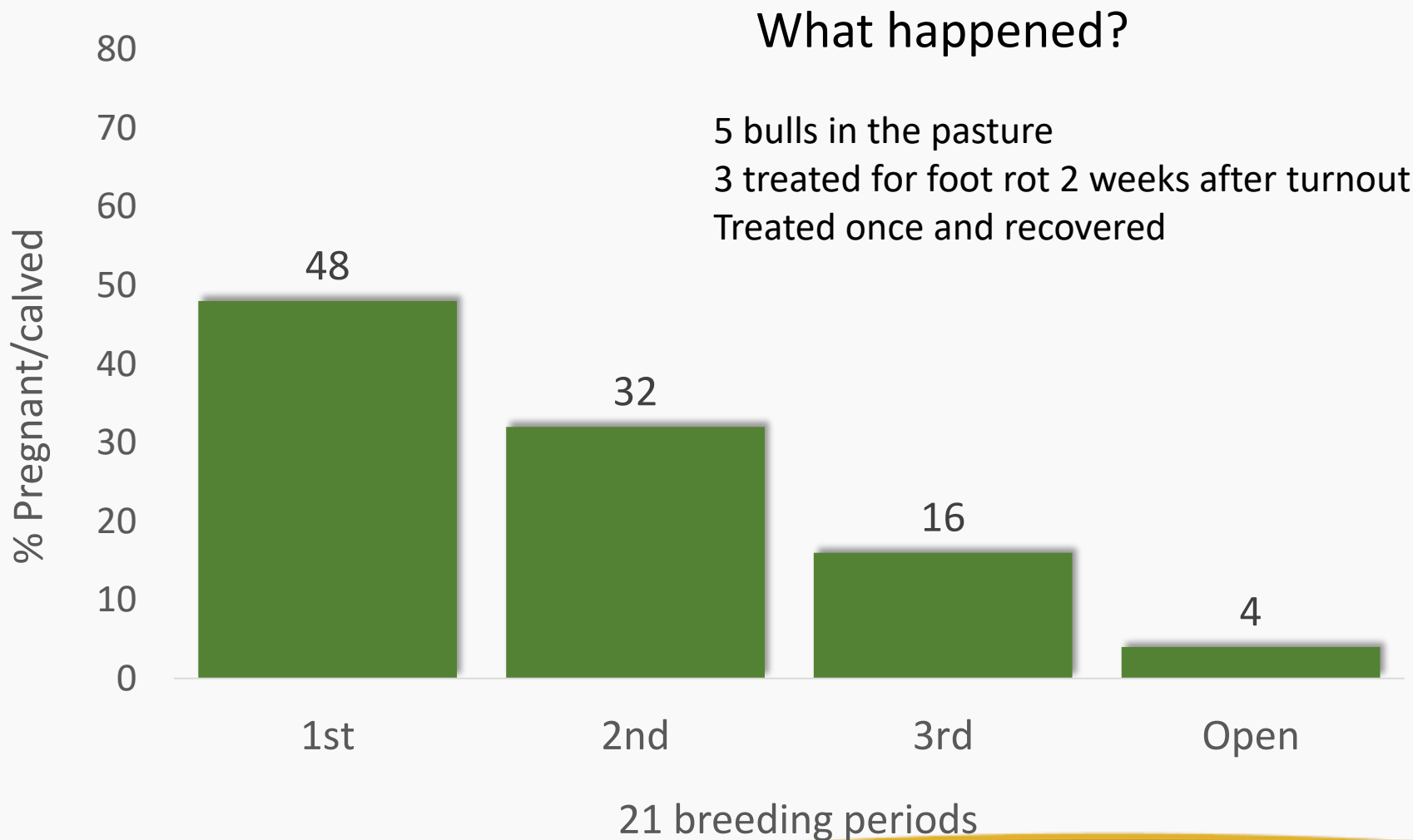
% Pregnant by breeding season period



% Pregnant by breeding season period

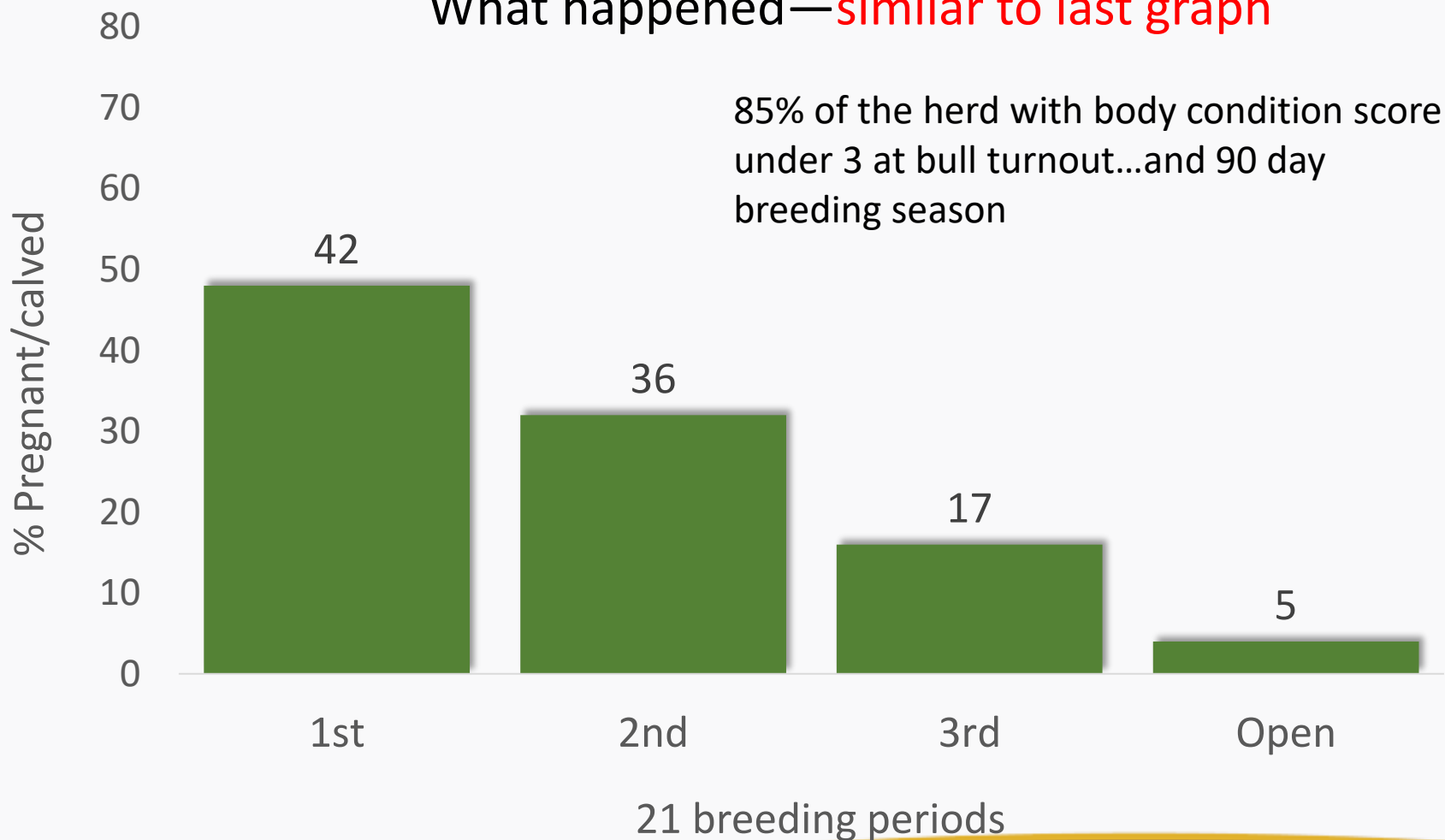


% Pregnant by breeding season period



% Pregnant by breeding season period

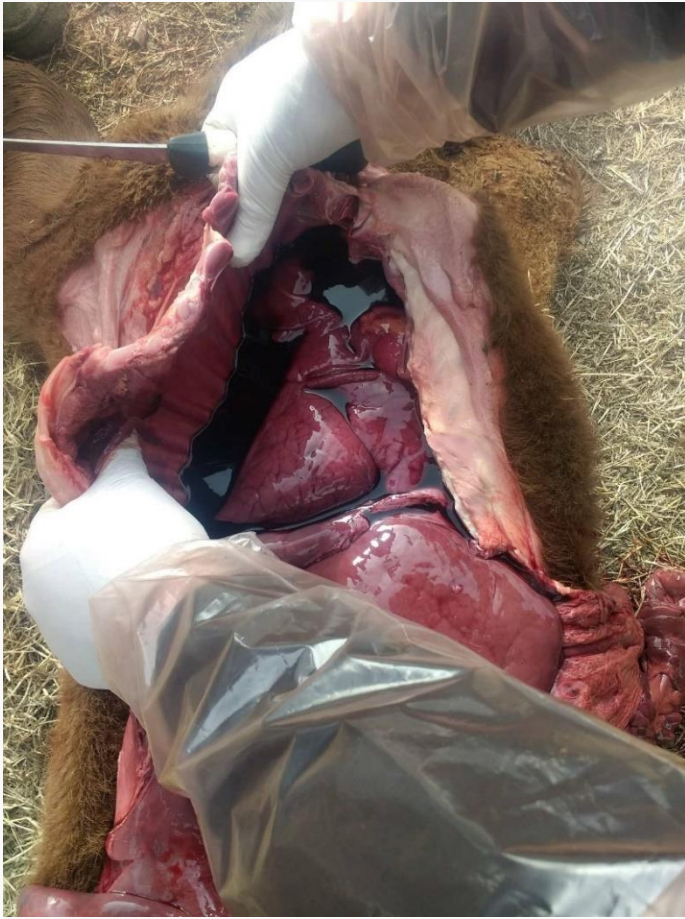
What happened—similar to last graph



Other diagnostics



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Normal appearance of aborted bovine fetus



Best diagnostic samples

Abortion

1st abortion of the year, \$\$ diagnostics?

Probably not...but just in case

Save fetus and placenta

chilled (best not frozen)

Entire fetus AND sections of placenta

OR

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

Submit more than one aborted fetus/placenta

~1.5 X more likely to result in diagnosis

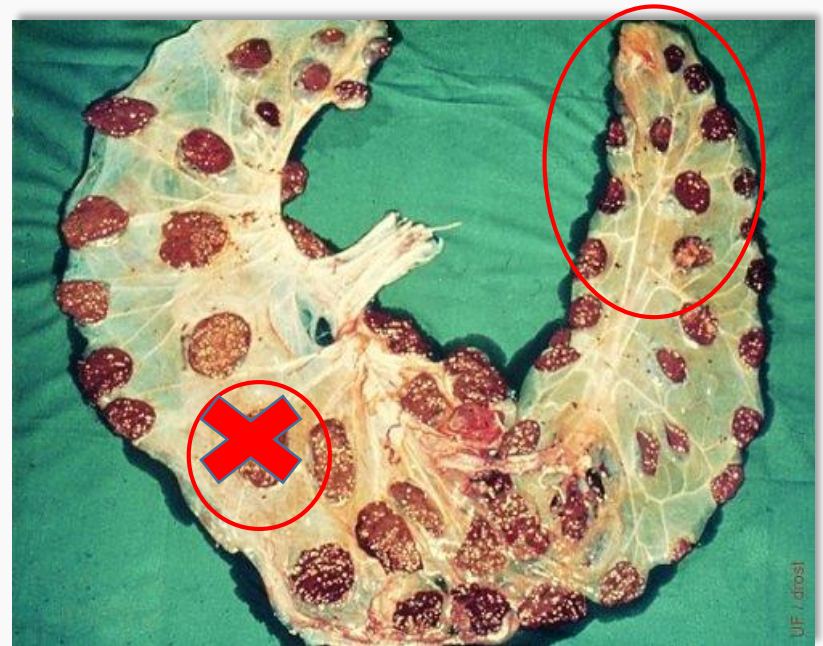


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Increasing abortion diagnostic success

Placenta included
(several sections)

4X times more likely to result in
a 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 blood test?



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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	28	-	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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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???

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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Prevention



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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



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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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Thank you

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