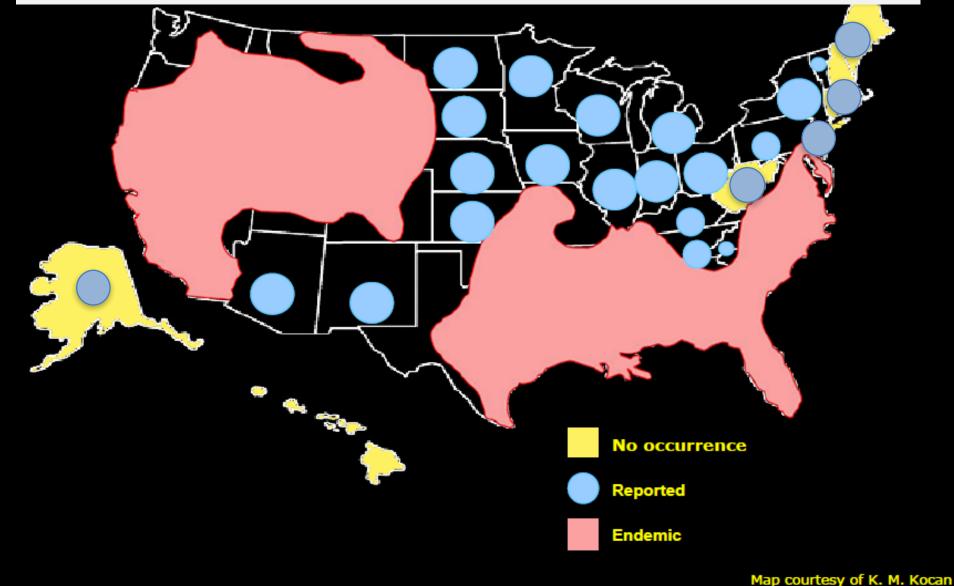
Anaplasmosis: What it is and what it isn't

Dr. Mike Apley College of Veterinary Medicine Dr. Gregg Hanzlicek Kansas State Veterinary Diagnostic Laboratory

Anaplasmosis is reported in every state except Hawaii

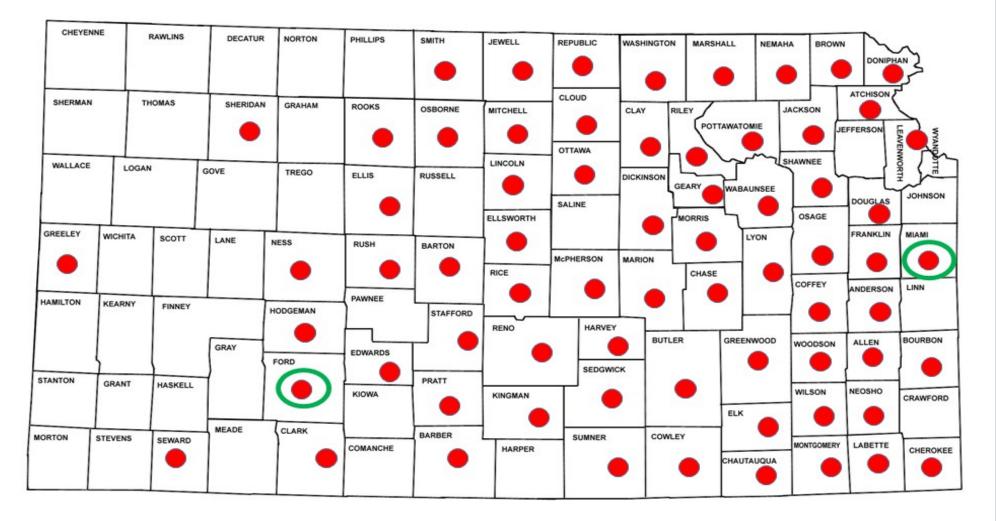


2013: Kansas Positive Counties

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											POTTAWATOMIE	<u>ل</u>	FFERSON	
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WALLACE		LOGAN						LINCOLN	UTTAWA) ~~~~{	SHAWNEE		
		LUGAN		GOVE	TREGO	ELLIS	RUSSELL							
1									SALINE		WABAUNSEE		DOUGLAS	JOHNSON
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GREELEY	WICH	ITA	SCOTT	LANE	NESS			ι Ι			LYON	1	FRANKLIN	міамі
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HAMILTON	KEAR	NY	FINNEY		HODGEMAN		STAFFORD							(
						F-		RENO	HARVEY					
				GRAY		EDWARDS				BUTLER	GREENWOOD	WOODSON	ALLEN	BOURBON
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STANTON	GRAN	ΙТ	HASKELL	7			PRATT		ᆔ 👩			WILSON	NEOSHO	
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				MEADE	Tours									
MORTON	STEVEN	IS	SEWARD		CLARK	COMANCHE	BARBER		SUMNER	COWLEY		MONTGOMERY	LABETTE	\
						COMANCHE		HARPER			CHAUTAUQUA	1		CHEROKEE
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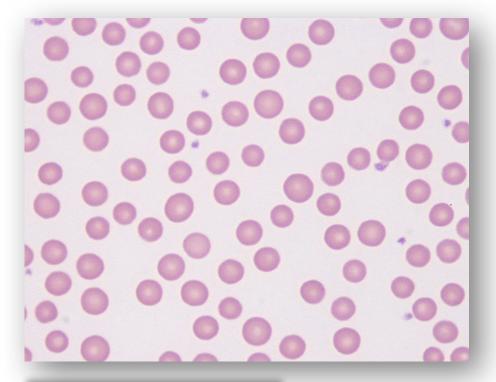
2015: Kansas Positive Counties

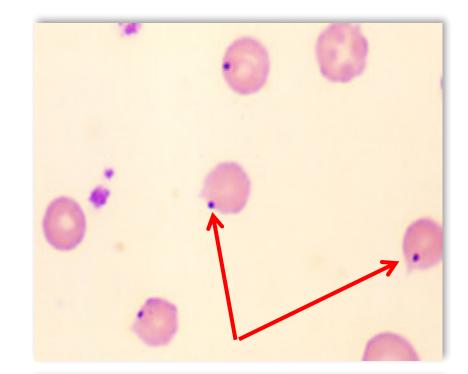


www.ksvdl.org "Disease Trend" button

Anaplasma marginale

•<u>Rickettsia (gram (–) bacteria</u>) infect red blood cells



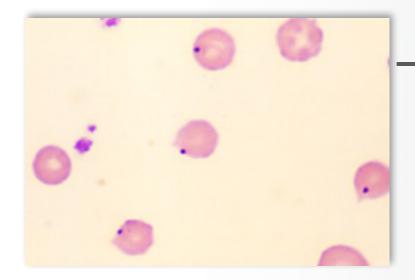


Normal red blood cells

Anaplasma infected red blood cells

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Red blood cell destruction



Animal becomes infected

Spleen removes Anaplasma infected red blood cells Anemic **Clinical signs**

Clinical signs only in Adults >2 years age

Time from infection to clinical signs (prepatent period) 6-70 days Average 28 days

Kocan; 2003, Audry; 2011



Clinical signs

- Adult cows/bulls found dead in the pasture/calving
- Lethargy
- Difficulty breathing (especially when moved)
- Aggressive behavior!!!
- Abortion: KSVDL— 4 herds in spring 2015
- Icterus (yellow membranes)/enlarged spleen

Fever Weight loss Constipation

Radostits, Smith

How does infection occur?

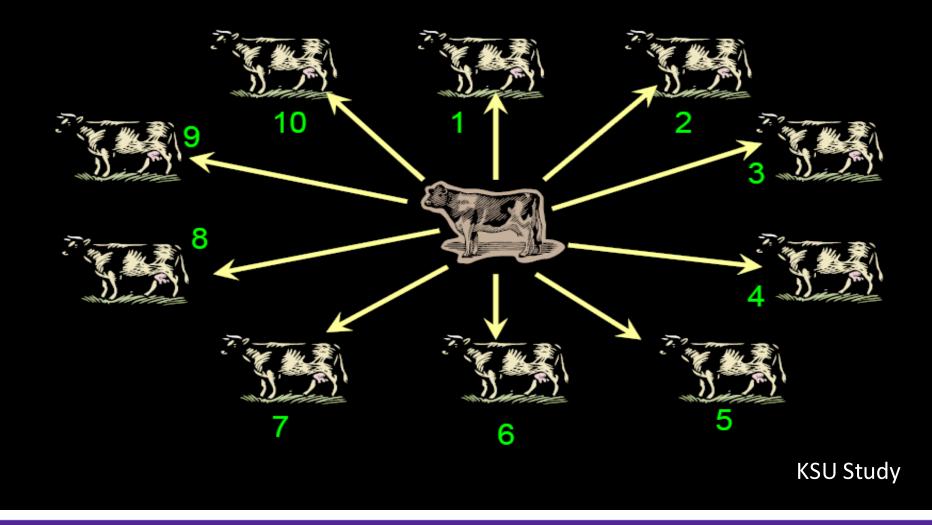
Blood transfer

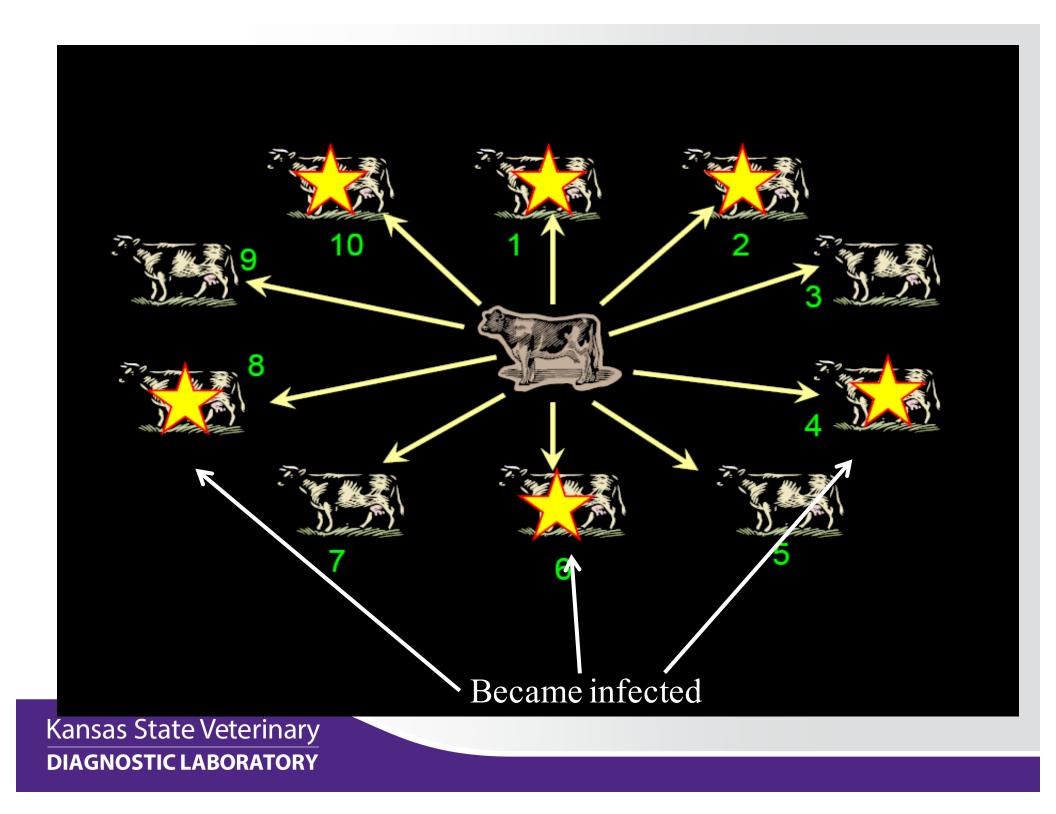
- ✓ Some tick species
- ✓ Some fly species
- During gestation
- ✓ Needles, Tattoo pliers, etc.





Injection sequence using the same needle: Index cow, 2% A. marginale parasitemia





All ages of cattle can become infected

Younger animals are more resistant to infection "inverse age immunity"

Kocan; 2003, Aubry; 2011



<u>All</u> recovered animals will remain lifelong carriers!!!

Kansas State Veterinary DIAGNOSTIC LABORATORY Richey; 1991, Kocan; 2007

Lifelong carriers <u>will not</u> experience clinical Anaplasmosis in subsequent years

Viseshaual; 2000, Kocan; 2003



Life-long carriers

Are the source of infection for other animals, but....

Difficult to eliminate the carrier state, and.....

If remove lifelong carrier state: these animals will be

Susceptible to CLINICAL Anaplasmosis if re-infected in subsequent years

Richey; 1991, Reinbold; 2010, Audry: 2011



Anaplasmosis is not...

- A bacterial disease.
 - It is a Rickettsial disease in which the pathogen must parasitize red blood cells to survive.
 - This disease has a very narrow choice for therapy
- A uniform disease caused by a consistent parasite.
 - There are different serotypes which originated from different areas of the country.
 - Research tells us that the ability to cause disease and the response to therapy may be quite different for the different serotypes.
- A disease that goes away if the animal survives clinical disease.

Anaplasmosis is...

- A disease with different clinical outcomes based on the age of cattle infected.
- A disease that can be spread in multiple ways.
 - Ticks are a host where the male tick can be a carrier in which the disease replicates
 - Flies can pass the disease by mechanical means through carrying infected red blood cells between cattle.
 - We can spread the disease through fomites such as injection needles, dehorners, and implant needles.

Anaplasmosis is...

- A disease for which some of our thinking has been informed by older studies that used relatively insensitive tests.
- A disease with limited data related to the efficacy of treatment and control programs.

Mike Apley 785-532-4167 mapley@vet.k-state.edu

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

Thank you

Icterus



Icteric eye



Normal eye



Icteric vulva

