UCDAVIS VETERINARY MEDICINE
California Animal Health and Food Safety Laboratory System

CAHFS CONNECTION

LEADING DIAGNOSTICS NATIONALLY, PROTECTING CALIFORNIA LOCALLY · MARCH, 2021

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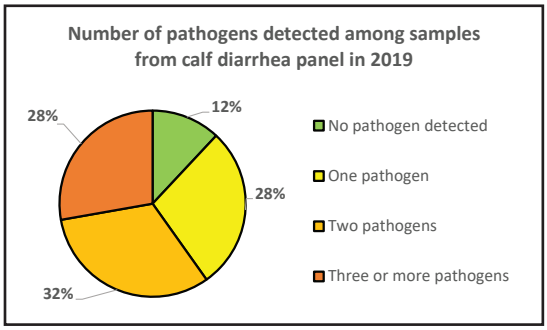
Holiday Schedule

CAHFS will be open, but will have limited services available on Friday, March 26, 2021 in observance of Cesar Chavez Day.

Calf diarrhea panels show high levels of co-infections

Diarrhea poses a significant health concern in young calves and can lead to high morbidity and mortality, delayed or reduced growth, and can be costly to manage. Identifying the pathogens associated with infection is critical to appropriately direct treatment and management decisions. In calf diarrhea samples received at CAHFS, depending on the age of the animal, we commonly test for the following pathogens: rotavirus, coronavirus, *Cryptosporidium* spp., *Salmonella* spp. and K99 (F5) *Escherichia coli*.

Figure 1. Prevalence of co-infections in CAHFS diarrhea panels in 2019



Results obtained from 234 calf diarrhea panels performed at CAHFS in 2019 revealed that 60% of animals tested were co-infected with more than one pathogen and 28% were co-infected with three or more pathogens (Fig. 1). In animals with a pathogen detected, 78-93% of animals had a second pathogen present (Table 1). Given the frequency of co-infections, we encourage submitters to request the full diarrhea panel rather than individual tests.

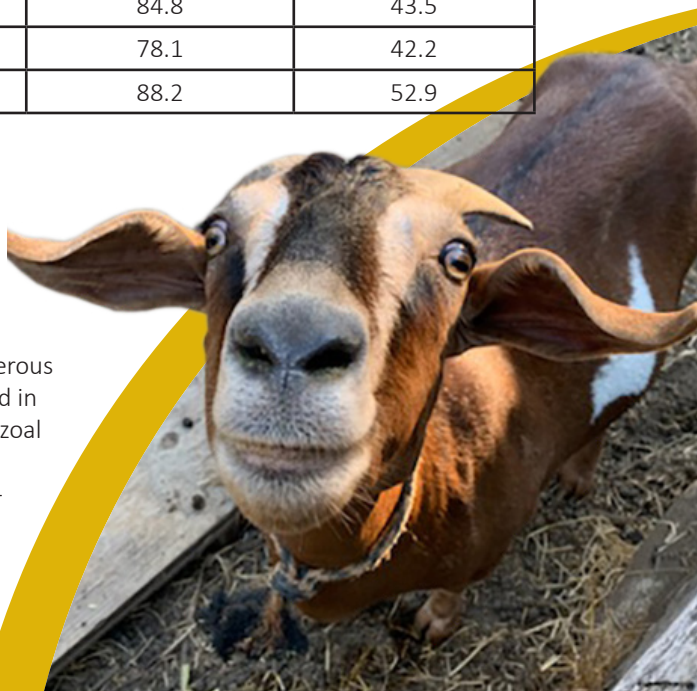
IMPORTANT NOTE: We need a minimum of 5 grams of feces (about the size of a large grape) to perform all tests.

Table 1. Prevalence of infection and co-infections from CAHFS diarrhea panels in 2019

	Overall Prevalence (%)	% animals with the agent that tested positive for 1 or more other agents (≥ 2 pathogens)	% animals with the agent that tested positive for 2 or more other agents (≥ 3 pathogens)
Rotavirus	42.0	87.6	56.7
Coronavirus	26.5	93.2	71.2
Cryptosporidia	65.4	84.8	43.5
Salmonella spp.	29.6	78.1	42.2
K99 (F5) *E. coli* (<8 d)	23.9	88.2	52.9

Small Ruminant

Neosporosis was the cause of **abortion** of a Nigerian dwarf goat, which aborted two fetuses at 97 days of gestation. Both fetuses had severe meningoencephalitis and glial nodules with numerous protozoal cysts. Inflammation was observed in different tissues of both fetuses, and protozoal cysts were also associated with placentitis and nephritis. *Neospora caninum* immunohistochemistry (IHC) was positive, while *Toxoplasma gondii* and *Sarcocystis* IHC were negative. Neosporosis is rare in goats and sheep.



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Bovine

Postparturient neuropathy and paralysis was the cause of a progressive loss of mobility and hind limb muscle atrophy in a 5-year-old Shorthorn cow that had calved four months earlier. Postparturient paralysis in cows occurs due to trauma to the obturator and peroneal nerves, and associated inflammation. Damage to the obturator nerve can cause a cow to be unable to rise and to lay splay-legged. Damage to the peroneal nerve can cause knuckling. The nerve damage in this case was likely a consequence of a maternal-fetal mismatch at calving (calf weighing 100+ lbs.).

Leptospira pomona was the primary cause of abortion in 15, 20- to 21-month-old Holstein heifers over one week. Three fetuses ranging from 5-7.5 month gestation, and nine aborting heifer sera were submitted. Six of nine sera had titers to *L. pomona* >1:3200, one each had 1:800 and 1:1600 titers, and one was negative. All heifers had negative or 1:100 titers to several other *Leptospira* spp. This pattern is compatible with field exposure to *Leptospira* spp. in unvaccinated animals. Two fetuses had icterus and the third had bile stasis in the liver. *Leptospira* spp. fluorescent antibody test was positive on all three fetuses, though PCR was negative. Two fetuses had below normal liver copper concentration and no vitamin A was detected in the only one tested for this vitamin, suggesting the heifers also had nutritional deficiencies.

Equine

***Streptococcus equi* subspecies *zooepidemicus* septicemia** was diagnosed in a euthanized, Thoroughbred yearling filly with a 24-hour history of acute onset of shock-like signs and suspected pleuropneumonia, colitis, uveitis and disseminated intravascular coagulation. Grossly, multiple areas of consolidation were detected in both lungs. Histologically, there was severe bronchopneumonia with vasculitis and thrombosis. Chains of gram-positive cocci were detected in the lungs and retropharyngeal lymph nodes, and were associated with foci of necrosis in the latter. *S. equi* subspecies *zooepidemicus* was isolated from lungs, lymph node, and spleen. This is a commensal, opportunistic bacterium that may cause severe disease, including acute septicemia, lymphadenitis, pneumonia, and reproductive tract infection, under certain circumstances such as stress.

Pig

***E. coli* septicemia and meningitis** was the cause of death of two, 3-day-old Kunekune piglets from a litter of eight, in which all piglets were born lethargic and unable to nurse. Piglets were initially bottle fed but then lapsed into a semi-comatose state, were shivering and had diarrhea; some were unable to walk. All eight piglets died within four days. Both piglets submitted had subacute meningitis and pure culture of *E. coli* was isolated from multiple organs including the brain.

Poultry and Other Avian

Polytetrafluoroethylene (PTFE) gas poisoning was the presumptive cause of pulmonary hemorrhage leading to sudden death in a 3-year-old brown-throated conure that died an hour after a new self-cleaning function of an oven was employed near this bird. PTFE toxicosis occurs commonly in pet birds housed in or near kitchens. The gas is released from nonstick cookware such as Teflon® when the ovens are overheated, at temperatures reaching 280°C (536°F) and it is toxic to birds. Self-cleaning ovens are not typically coated with Teflon, but may have drip-catching liners which are coated with Teflon and should be removed prior to using the self-cleaning cycle. Self-cleaning ovens can also release carbon monoxide, acrolein and formaldehyde which are also toxic and have been associated with mortality in birds. Other sources of PTFE include irons, ironing board covers, heating elements from some reverse cycle heat pumps, and some heat lamps. Often, the only clinical sign is sudden death.