Diarrheic Beef Calf (<30 days old) – Antimicrobial Treatment Decision Tree

Pasty soft manure, no dehydration, bright and alert, still nursing cow (belly full), can't catch easily.

Leave on cow. Monitor for developing signs of **systemic disease**, such as depression, lethargy, weakness, reduced milk intake (full udder on cow), dehydration (↑skin tent, ↑CRT), fever (rectal temp ≥ 39.5 C), purple/red gums or toxic line.

Mild diarrhea (semi-liquid but still solids), mild depression, dull, belly not full, mild dehydration 6-8% (eyeball recession 2-4 mm skin tent 1-2s, CRT<2s), light pink gums (normal), ambulatory, nursing cow, good suckle reflex.

NO FEVER

Leave on cow, supplement with appropriate **oral electrolytes**[¥], monitor closely

FEVER

Leave on cow, supplement with appropriate **oral electrolytes**[¥]**, NSAIDs***, **antimicrobial**[+] **if ≤3 days of age**, monitor closely

Moderate diarrhea (liquid, wet tail and hindquarters), depressed, moderate dehydration 8-10% (eyeball recession 4-6 mm, skin tent 2-5s), empty belly, not nursing cow (udder full), weak suckle reflex, general weakness but still ambulatory.

NO FEVER

Leave on cow, treat with appropriate **oral electrolytes with dextrose**[¥]**, bolus of IV fluids**[β¥]**,** monitor closely

FEVER

Leave on cow, treat with appropriate **oral electrolytes with dextrose**[¥]**, bolus of IV fluids**[β¥]**, NSAIDs*, antimicrobial**[+], monitor closely

Severe watery diarrhea (fire-hose diarrhea, pure liquid) **or diarrhea with blood or mucosal shreds**, severe depression, severe dehydration ≥10% (eyeball recession ≥6 mm, skin tent ≥5s, CRT>2s), empty belly, not nursing cow (full udder), weak, no suckle reflex, cold, recumbent, red gums or toxic line.

Remove from cow, warm **IV fluids**[¥] (bolus of IV fluids [β¥] initially followed by continuous slow IV drip[β]); **once sucking** give appropriate **oral electrolytes with dextrose**[¥]**, milk**[¥]**, NSAIDs*, antimicrobial**[+]**, hot box**, monitor very closely

***NSAID** – do not exceed 3 doses or use in dehydrated calves. Meloxicam preferred over flunixin due to COX2 target. Vet Clin North Am Food Anim Pract. 2009 Mar;25(1):101-20. J Anim Sci. 2010 Jun;88(6):2019-28. [β]**Choice of fluids for IV bolus** (hypertonic saline or isotonic or hypertonic bicarb) depending on acid-base balance, [¥] **IV and Oral Fluid and Milk Recommendations:** J Vet Med A Physiol Path Clin Med 2003 Mar;50(2):57-61. J Vet Intern Med 2017 May;31(3):907-921; Vet Clin North Am Food Anim Pract. 2014 Jul;30(2):409-27; J Dairy Sci. 2019 Dec;102(12):11337-11348. J Dairy Sci. 2020 Nov;103(11):10446-10458. Vet Clin Food Anim 25 (2009) 55–72. Vet J. 2017; 226:15-25.

[+]**Only use antimicrobials in diarrheic calves with signs of systemic illness (dehydration, depression, fever, weak or absent suckle reflex, generalized weakness, red gums/toxic line) or diarrhea with blood or mucosal shreds and if disease not coccidiosis (≥3 wk of age)**: a) TMP-Sulfa (caution in dehydrated calves) - 25 mg/kg IV or IM every 24 hours for maximum of 5 treatments b) ceftiofur – 2.2. mg/kg IM every 12 hours for minimum of 3 days, c) parenteral fluoroquinolones per label dosage and route (ELDU), d) Ampicillin -10 mg/kg IM every 12 hours for minimum of 3 days. J Vet Intern Med 2004; 18:8–17. Res Vet Sci. 2003 Apr;74(2):171-8. Vet Clin North Am Food Anim Pract. 2009 Mar;25(1):101-20. J Dairy Sci. 2014 Dec;97(12):7644-54. **Cryptosporidiosis** Halocur® or Halagon® and fluids Parasitology. 2020 Dec 2;1-12. **Coccidiosis** Baycox® or Amprol® for treatment; ionophores, Deccox® or Amprol® for control/prevention. **Non-antimicrobial alternatives** review *J Vet Res 2020*. 64,1 119-126.

Note: Fecal bacterial culture and antimicrobial susceptibility testing is not recommended in calves with diarrhea because fecal bacterial populations do not accurately reflect small intestinal or blood bacterial populations and because the break points for susceptibility test results have not been validated. *J Vet Intern Med* 2004; 18:8–17. **If herd problem**, may consider fecal sampling to determine if problem *E. coli* (usually ≤3 days of age), cryptosporidia (5-14 days old), rota/corona virus (5-14 days old), bloody scours (DDX: *Clostridial perfringens*, *Salmonella* spp), coccidiosis ≥ 14 days old. Mixed infections common. **If herd problem, investigate risk factors associated with diarrhea and adjust to prevent and control disease e.g. poor colostral immunity (Failure of Passive Transfer) overcrowding, environmental factors including poor hygiene**…Vet Clin North Am Food Anim Pract. 2012 Nov; 28(3): 465–481.