

Supplementary Table S1—Kappa values and associated statistics for comparisons among transtracheal wash (TTW), nasal swab (NS), deep nasopharyngeal swab (DNP), and bronchoalveolar lavage (BAL) for *P. multocida* obtained from >30-day old Holstein/Holstein-cross bull calves with naturally occurring bovine respiratory disease. All NA values indicate a kappa statistic could not be calculated due to all results falling within a single cell. Totals cell counts for each comparison are in parentheses.

Drug	Comparison	Kappa	St. Error	95% CI		P Cum >95%	Probabilistic CI	
				Lower	Upper		Lower	Upper
Ceftiofur	NS vs DNP (n=40)	NA	NA	NA	NA	NA	NA	NA
	NS vs BAL (n=40)	NA	NA	NA	NA	NA	NA	NA
	NS vs. TTW (n=38)	NA	NA	NA	NA	NA	NA	NA
	BAL vs. DNP (n=40)	NA	NA	NA	NA	NA	NA	NA
	TTW vs. DNP (n=38)	NA	NA	NA	NA	NA	NA	NA
	TTW vs. BAL (n=39)	NA	NA	NA	NA	NA	NA	NA
Enrofloxacin	NS vs DNP (n=40)	1	0	1	1	-	-	-
	NS vs BAL (n=40)	1	0	1	1	-	-	-
	NS vs TTW (n=38)	0.89	0.11	0.68	1	1	-	0
	BAL vs DNP (n=40)	1	0	1	1	-	-	-
	TTW vs DNP (n=38)	0.89	0.11	0.68	1	1	-	0
	TTW vs BAL (n=39)	0.91	0.09	0.72	1	1	-	0
Penicillin	NS vs DNP (n=40)	0.35	0.14	0.06	0.63	0.99	0	0.20
	NS vs BAL (n=40)	0.48	0.14	0.19	0.77	0.97	0.20	0.40

	NS vs TTW (n=38)	0.60	0.14	0.33	0.87	1	0.20	0.40
	BAL vs DNP(n=40)	0.54	0.14	0.26	0.82	0.99	0.20	0.40
	TTW vs DNP (n=38)	0.41	0.16	0.08	0.74	0.99	0	0.20
	TTW vs BAL (n=39)	0.49	0.15	0.20	0.79	0.97	0.20	0.40
Spectinomycin	NS vs DNP (n=28)	NA	NA	NA	NA	NA	NA	NA
	NS vs BAL (n=28)	NA	NA	NA	NA	NA	NA	NA
	NS vs TTW (n=28)	NA	NA	NA	NA	NA	NA	NA
	BAL vs DNP (n=28)	NA	NA	NA	NA	NA	NA	NA
	TTW vs DNP (n=28)	NA	NA	NA	NA	NA	NA	NA
	TTW vs BAL (n=29)	1	0	1	1	-	-	-
Tulathromycin	NS vs DNP (n=25)	0	0	0	0	-	-	-
	NS vs BAL (n=24)	0.65	0.33	-0.04	1	1	-	0
	NS vs TTW (n=24)	0	0	0	0	-	-	-
	BAL vs DNP (n=24)	0	0	0	0	1	-	0
	TTW vs DNP (n=24)	NA	NA	NA	NA	NA	NA	NA
	TTW vs BAL (n=24)	NA	NA	NA	NA	NA	NA	NA