Table 7a. Distribution of MICs and Occurrence of Resistance by Top Serotypes Tested from Cattle, 2005

Antimicrobial	Isolate Source (# of Isolates)	%I[1]	%R[2]	95% CI[3]	Distribution (%) of MICs (µg/ml)[4] 0.015	0.03	0.06	0.125	0.25	0.50	1	2	4	8	16	32	64	128	256	512	1024
Aminoglycosides																					
Amikacin	Montevideo (43)	0.0	**0.0**	0.0-10.2							58.1	39.5	2.3								
	Newport (27)	0.0	**0.0**	0.0-15.5						18.5	70.4	11.1									
	Muenster (24)	0.0	**0.0**	0.0-17.2						4.2	62.5	33.3									
	Anatum (21)	0.0	**0.0**	0.0-19.2						28.6	61.9	9.5									
	Typhimurium var. 5- (17)	0.0	**0.0**	0.0-22.9						17.6	64.7	17.6									
	Typhimurium (17)	0.0	**0.0**	0.0-22.9							76.5	23.5									
	Mbandaka (15)	0.0	**0.0**	0.0-25.3							26.7	53.3	6.7	13.3							
	Agona (15)	0.0	**0.0**	0.0-25.3						13.3	73.3	13.3									
	Dublin (13)	0.0	**0.0**	0.0-28.3						30.8	53.8	15.4									
	Cerro (12)	0.0	**0.0**	0.0-30.1						16.7	66.7	8.3	8.3								
	Reading (12)	0.0	**0.0**	0.0-30.1						25.0	75.0										
Gentamicin	Montevideo (43)	0.0	**0.0**	0.0-10.2					46.5	51.2	2.3										
	Newport (27)	0.0	**0.0**	0.0-15.5					63.0	37.0											
	Muenster (24)	0.0	**0.0**	0.0-17.2					75.0	20.8	4.2										
	Anatum (21)	0.0	**0.0**	0.0-19.2					81.0	19.0											
	Typhimurium var. 5- (17)	0.0	**0.0**	0.0-22.9					58.8	41.2											
	Typhimurium (17)	0.0	**0.0**	0.0-22.9					70.6	23.5	5.9										
	Mbandaka (15)	0.0	**0.0**	0.0-25.3					53.3	46.7											
	Agona (15)	0.0	**0.0**	0.0-25.3					20.0	73.3		6.7									
	Dublin (13)	0.0	**38.5**	15.2-67.8					53.8	7.7					**15.4**	**23.1**					
	Cerro (12)	0.0	**0.0**	0.0-30.1					75.0	25.0											
	Reading (12)	0.0	**25.0**	6.7-57.2					75.0							**25.0**					
Kanamycin	Montevideo (43)	0.0	**0.0**	0.0-10.2										100.0							
	Newport (27)	0.0	**14.8**	4.8-34.6										85.2				**14.8**			
	Muenster (24)	0.0	**4.2**	0.2-23.2										87.5	8.3			**4.2**			
	Anatum (21)	0.0	**0.0**	0.0-19.2										100.0							
	Typhimurium var. 5- (17)	0.0	**5.9**	0.3-30.8										94.1				**5.9**			
	Typhimurium (17)	0.0	**70.6**	44.1-88.6										29.4				**70.6**			
	Mbandaka (15)	0.0	**53.3**	27.4-77.7										46.7				**53.3**			
	Agona (15)	0.0	**0.0**	0.0-25.3										100.0							
	Dublin (13)	0.0	**53.8**	26.1-79.6										46.2			**7.7**	**46.2**			
	Cerro (12)	0.0	**0.0**	0.0-30.1										100.0							
	Reading (12)	0.0	**16.7**	3.0-49.2										83.3				**16.7**			
Streptomycin	Montevideo (43)	0.0	**2.3**	0.1-13.8												97.7	**2.3**				
	Newport (27)	0.0	**81.5**	61.3-93.0												18.5		**81.5**			
	Muenster (24)	0.0	**4.2**	0.2-23.2												95.8		**4.2**			
	Anatum (21)	0.0	**0.0**	0.0-19.2												100.0					
	Typhimurium var. 5- (17)	0.0	**35.3**	15.3-61.4												64.7	**5.9**	**29.4**			
	Typhimurium (17)	0.0	**76.5**	49.8-92.2												23.5	**17.6**	**58.8**			
	Mbandaka (15)	0.0	**53.3**	27.4-77.7												46.7		**53.3**			
	Agona (15)	0.0	**6.7**	0.4-34.0												93.3	**6.7**				
	Dublin (13)	0.0	**38.5**	15.2-67.8												61.5		**38.5**			
	Cerro (12)	0.0	**0.0**	0.0-30.1												100.0					
	Reading (12)	0.0	**66.7**	35.5-88.7												33.3		**66.7**			

[1] Percent of isolates with intermediate susceptibility

[2] Percent of isolates that were resistant

[3] 95% confidence intervals for percent resistant (%R) were calculated using the Clopper-Pearson exact method

[4] The unshaded areas indicate the range of dilutions tested for each antimicrobial. Single vertical bars indicate the breakpoints for susceptibility, while double vertical bars indicate the breakpoints for resistance. Numbers in t shaded area indicate the percentages of isolates with MICs greater than the highest tested concentrations. Numbers listed for the lowest tested concentrations represent the percentages of isolates with MICs equal to or less than the lowest tested concentration. CLSI breakpoints were used when available. There are no CLSI breakpoints for streptomycin.

Table 7b. Distribution of MICs and Occurrence of Resistance by Top Serotypes Tested from Cattle, 2005

Antimicrobial	Isolate Source (# of Isolates)	%I[1]	%R[2]	95% CI[3]	Distribution (%) of MICs (µg/ml)[4] 0.015	0.03	0.06	0.125	0.25	0.50	1	2	4	8	16	32	64	128	256	512	1024
Aminopenicillins																					
Ampicillin	Montevideo (43)	0.0	**0.0**	0.0-10.2							81.4	18.6									
	Newport (27)	0.0	**85.2**	65.4-95.2							14.8						**85.2**				
	Muenster (24)	0.0	**4.2**	0.2-23.2							83.3	12.5					**4.2**				
	Anatum (21)	0.0	**0.0**	0.0-19.2							85.7	14.3									
	Typhimurium var. 5- (17)	0.0	**52.9**	28.5-76.1							29.4	17.6					**52.9**				
	Typhimurium (17)	0.0	**94.1**	69.2-99.7							5.9						**94.1**				
	Mbandaka (15)	0.0	**53.3**	27.4-77.7							40.0	6.7					**53.3**				
	Agona (15)	0.0	**0.0**	0.0-25.3							80.0	20.0									
	Dublin (13)	0.0	**76.9**	46.0-93.8							15.4	7.7					**76.9**				
	Cerro (12)	0.0	**0.0**	0.0-30.1							75.0	16.7	8.3								
	Reading (12)	0.0	**66.7**	35.5-88.7							25.0	8.3					**66.7**				
β-Lactam/β-Lactamase Inhibitor Combinations																					
Amoxicillin-Clavulanic Acid	Montevideo (43)	0.0	**0.0**	0.0-10.2							95.3	4.7									
	Newport (27)	0.0	**81.5**	61.3-93.0							14.8			3.7		**3.7**	**77.8**				
	Muenster (24)	0.0	**4.2**	0.2-23.2							95.8					**4.2**					
	Anatum (21)	0.0	**0.0**	0.0-19.2							100.0										
	Typhimurium var. 5- (17)	17.6	**35.3**	15.3-61.4							47.1				17.6		**35.3**				
	Typhimurium (17)	5.9	**35.3**	15.3-61.4							5.9			52.9	5.9		**35.3**				
	Mbandaka (15)	0.0	**53.3**	27.4-77.7							46.7						**53.3**				
	Agona (15)	0.0	**0.0**	0.0-25.3							93.3	6.7									
	Dublin (13)	7.7	**46.2**	20.4-73.9							15.4	7.7		23.1	7.7		**46.2**				
	Cerro (12)	0.0	**0.0**	0.0-30.1							91.7	8.3									
	Reading (12)	0.0	**66.7**	35.5-88.7							33.3					**16.7**	**50.0**				
Cephalosporins																					
Ceftiofur	Montevideo (43)	0.0	**0.0**	0.0-10.2						86.0	14.0										
	Newport (27)	0.0	**81.5**	61.3-93.0						18.5					**81.5**						
	Muenster (24)	0.0	**8.3**	1.4-28.4						37.5	54.2			**4.2**	**4.2**						
	Anatum (21)	0.0	**0.0**	0.0-19.2						66.7	33.3										
	Typhimurium var. 5- (17)	0.0	**35.3**	15.3-61.4						52.9	11.8				**35.3**						
	Typhimurium (17)	0.0	**35.3**	15.3-61.4						52.9	11.8				**35.3**						
	Mbandaka (15)	0.0	**53.3**	27.4-77.7						20.0	26.7				**53.3**						
	Agona (15)	0.0	**0.0**	0.0-25.3						33.3	60.0	6.7									
	Dublin (13)	0.0	**46.2**	20.4-73.9				7.7	7.7	15.4	23.1			**15.4**	**30.8**						
	Cerro (12)	0.0	**0.0**	0.0-30.1						75.0	25.0										
	Reading (12)	0.0	**66.7**	35.5-88.7						33.3					**66.7**						
Ceftriaxone	Montevideo (43)	0.0	**0.0**	0.0-10.2					100.0												
	Newport (27)	59.3	**14.8**	4.8-34.6					18.5					7.4	37.0	22.2	**11.1**	**3.7**			
	Muenster (24)	0.0	**0.0**	0.0-17.2					95.8		4.2										
	Anatum (21)	0.0	**0.0**	0.0-19.2					100.0												
	Typhimurium var. 5- (17)	29.4	**0.0**	0.0-22.9					64.7					5.9	23.5	5.9					
	Typhimurium (17)	35.3	**0.0**	0.0-22.9					64.7						17.6	17.6					
	Mbandaka (15)	46.7	**6.7**	0.4-34.0					46.7						13.3	33.3		**6.7**			
	Agona (15)	0.0	**0.0**	0.0-25.3					100.0												
	Dublin (13)	15.4	**15.4**	2.7-46.4					53.8				7.7	7.7		15.4	**7.7**	**7.7**			
	Cerro (12)	0.0	**0.0**	0.0-30.1					100.0												
	Reading (12)	33.3	**0.0**	0.0-30.1					33.3					33.3	25.0	8.3					

[1] Percent of isolates with intermediate susceptibility

[2] Percent of isolates that were resistant

[3] 95% confidence intervals for percent resistant (%R) were calculated using the Clopper-Pearson exact method

[4] The unshaded areas indicate the range of dilutions tested for each antimicrobial. Single vertical bars indicate the breakpoints for susceptibility, while double vertical bars indicate the breakpoints for resistance. Numbers in t shaded area indicate the percentages of isolates with MICs greater than the highest tested concentrations. Numbers listed for the lowest tested concentrations represent the percentages of isolates with MICs equal to or less than the lowest tested concentration. CLSI breakpoints were used when available. There are no CLSI breakpoints for streptomycin.

Table 7c. Distribution of MICs and Occurrence of Resistance by Top Serotypes Tested from Cattle, 2005

Antimicrobial	Isolate Source (# of Isolates)	%I[1]	%R[2]	[95% CI][3]	Distribution (%) of MICs (µg/ml)[4] 0.015	0.03	0.06	0.125	0.25	0.50	1	2	4	8	16	32	64	128	256	512	1024
Cephamycins																					
Cefoxitin	Montevideo (43)	0.0	**0.0**	0.0-10.2							4.7	83.7	11.6								
	Newport (27)	0.0	**81.5**	61.3-93.0							3.7	7.4	3.7	3.7		**37.0**	**44.4**				
	Muenster (24)	0.0	**4.2**	0.2-23.2									95.8			**4.2**					
	Anatum (21)	0.0	**0.0**	0.0-19.2									95.2	4.8							
	Typhimurium var. 5- (17)	0.0	**35.3**	15.3-61.4								64.7				**17.6**	**17.6**				
	Typhimurium (17)	0.0	**35.3**	15.3-61.4								35.3	29.4			**11.8**	**23.5**				
	Mbandaka (15)	0.0	**53.3**	27.4-77.7									46.7				**53.3**				
	Agona (15)	0.0	**0.0**	0.0-25.3									86.7	13.3							
	Dublin (13)	15.4	**30.8**	10.4-61.1							15.4		23.1	15.4	15.4		**30.8**				
	Cerro (12)	0.0	**0.0**	0.0-30.1							16.7	50.0	16.7	16.7							
	Reading (12)	0.0	**66.7**	35.5-88.7								25.0	8.3			**50.0**	**16.7**				
Folate Pathway Inhibitors																					
Sulfonamides	Montevideo (43)	0.0	**0.0**	0.0-10.2											27.9	46.5	23.3	2.3			
	Newport (27)	0.0	**85.2**	65.4-95.2												11.1	3.7			**85.2**	
	Muenster (24)	0.0	**4.2**	0.2-23.2											4.2	50.0	29.2	12.5		**4.2**	
	Anatum (21)	0.0	**0.0**	0.0-19.2											38.1	38.1	19.0	4.8			
	Typhimurium var. 5- (17)	0.0	**52.9**	28.5-76.1											17.6	29.4				**52.9**	
	Typhimurium (17)	0.0	**94.1**	69.2-99.7											5.9					**94.1**	
	Mbandaka (15)	0.0	**53.3**	27.4-77.7											6.7	20.0	20.0			**53.3**	
	Agona (15)	0.0	**0.0**	0.0-25.3											13.3	20.0	33.3	33.3			
	Dublin (13)	0.0	**69.2**	38.9-89.6											30.8					**69.2**	
	Cerro (12)	0.0	**0.0**	0.0-30.1											8.3	58.3	25.0	8.3			
	Reading (12)	0.0	**66.7**	35.5-88.7												33.3				**66.7**	
Trimethoprim-Sulfamethoxazole	Montevideo (43)	0.0	**0**	0.0-10.2				88.4	11.6												
	Newport (27)	0.0	**25.9**	11.9-46.6				33.3	37	3.7				**25.9**							
	Muenster (24)	0.0	**0**	0.0-17.2				87.5	12.5												
	Anatum (21)	0.0	**0**	0.0-19.2				81	19												
	Typhimurium var. 5- (17)	0.0	**5.9**	0.3-30.8				35.3	47.1	11.8				**5.9**							
	Typhimurium (17)	0.0	**5.9**	0.3-30.8				29.4	47.1	11.8	5.9			**5.9**							
	Mbandaka (15)	0.0	**13.3**	2.3-41.6				33.3	26.7	26.7				**13.3**							
	Agona (15)	0.0	**0**	0.0-25.3				86.7	13.3												
	Dublin (13)	0.0	**0**	0.0-28.3				23.1	46.2	15.4	15.4										
	Cerro (12)	0.0	**0**	0.0-30.1				66.7	33.3												
	Reading (12)	0.0	**0**	0.0-30.1				25	58.3	16.7											

[1] Percent of isolates with intermediate susceptibility

[2] Percent of isolates that were resistant

[3] 95% confidence intervals for percent resistant (%R) were calculated using the Clopper-Pearson exact method

[4] The unshaded areas indicate the range of dilutions tested for each antimicrobial. Single vertical bars indicate the breakpoints for susceptibility, while double vertical bars indicate the breakpoints for resistance. Numbers in t shaded area indicate the percentages of isolates with MICs greater than the highest tested concentrations. Numbers listed for the lowest tested concentrations represent the percentages of isolates with MICs equal to or less than the lowest tested concentration. CLSI breakpoints were used when available. There are no CLSI breakpoints for streptomycin.

Table 7d. Distribution of MICs and Occurrence of Resistance by Top Serotypes Tested from Cattle, 2005

Antimicrobial	Isolate Source (# of Isolates)	%I[1]	%R[2]	[95% CI][3]	Distribution (%) of MICs (µg/ml)[4] 0.015	0.03	0.06	0.125	0.25	0.50	1	2	4	8	16	32	64	128	256	512	1024
Phenicols																					
Chloramphenicol	Montevideo (43)	2.3	**0.0**	0.0-10.2									14.0	83.7	2.3						
	Newport (27)	0.0	**81.5**	61.3-93.0									14.8	3.7			**81.5**				
	Muenster (24)	0.0	**4.2**	0.2-23.2									20.8	75.0			**4.2**				
	Anatum (21)	9.5	**0.0**	0.0-19.2									33.3	57.1	9.5						
	Typhimurium var. 5- (17)	0.0	**47.1**	23.9-71.5									35.3	17.6			**47.1**				
	Typhimurium (17)	0.0	**47.1**	23.9-71.5									17.6	35.3			**47.1**				
	Mbandaka (15)	6.7	**53.3**	27.4-77.7									6.7	33.3	6.7		**53.3**				
	Agona (15)	0.0	**0.0**	0.0-25.3									20.0	80.0							
	Dublin (13)	7.7	**53.8**	26.1-79.6								23.1		15.4	7.7	**7.7**	**46.2**				
	Cerro (12)	8.3	**0.0**	0.0-30.1									50.0	41.7	8.3						
	Reading (12)	0.0	**66.7**	35.5-88.7									8.3	25.0			**66.7**				
Quinolones																					
Ciprofloxacin	Montevideo (43)	0.0	**0.0**	0.0-10.2	90.7	9.3															
	Newport (27)	0.0	**0.0**	0.0-15.5	100.0																
	Muenster (24)	0.0	**0.0**	0.0-17.2	100.0																
	Anatum (21)	0.0	**0.0**	0.0-19.2	100.0																
	Typhimurium var. 5- (17)	0.0	**0.0**	0.0-22.9	100.0																
	Typhimurium (17)	0.0	**0.0**	0.0-22.9	88.2	11.8															
	Mbandaka (15)	0.0	**0.0**	0.0-25.3	93.3	6.7															
	Agona (15)	0.0	**0.0**	0.0-25.3	100.0																
	Dublin (13)	0.0	**0.0**	0.0-28.3	61.5	23.1		7.7	7.7												
	Cerro (12)	0.0	**0.0**	0.0-30.1	100.0																
	Reading (12)	0.0	**0.0**	0.0-30.1	75.0	16.7			8.3												
Nalidixic Acid	Montevideo (43)	0.0	**0.0**	0.0-10.2								23.3	76.7								
	Newport (27)	0.0	**0.0**	0.0-15.5								37.0	63.0								
	Muenster (24)	0.0	**0.0**	0.0-17.2								4.2	95.8								
	Anatum (21)	0.0	**0.0**	0.0-19.2									100.0								
	Typhimurium var. 5- (17)	0.0	**0.0**	0.0-22.9								5.9	94.1								
	Typhimurium (17)	0.0	**0.0**	0.0-22.9								23.5	70.6		5.9						
	Mbandaka (15)	0.0	**0.0**	0.0-25.3									100.0								
	Agona (15)	0.0	**0.0**	0.0-25.3								46.7	53.3								
	Dublin (13)	0.0	**15.4**	2.7-46.4							7.7	30.8	46.2				**15.4**				
	Cerro (12)	0.0	**0.0**	0.0-30.1								25.0	75.0								
	Reading (12)	0.0	**8.3**	0.4-40.2									91.7				**8.3**				
Tetracyclines																					
Tetracycline	Montevideo (43)	0.0	**9.3**	3.0-23.1									90.7				**9.3**				
	Newport (27)	0.0	**81.5**	61.3-93.0									18.5				**81.5**				
	Muenster (24)	4.2	**4.2**	0.2-23.2									91.7	4.2		**4.2**					
	Anatum (21)	0.0	**28.6**	12.2-52.3									71.4			**14.3**	**14.3**				
	Typhimurium var. 5- (17)	0.0	**52.9**	28.5-76.1									47.1			**17.6**	**35.3**				
	Typhimurium (17)	0.0	**82.4**	55.9-95.4									17.6			**17.6**	**64.7**				
	Mbandaka (15)	0.0	**66.7**	38.7-87.0									33.3				**66.7**				
	Agona (15)	0.0	**6.7**	0.4-34.0									93.3		**6.7**						
	Dublin (13)	0.0	**69.2**	38.9-89.6									30.8			**15.4**	**53.8**				
	Cerro (12)	0.0	**8.3**	0.4-40.2									91.7		**8.3**						
	Reading (12)	0.0	**91.7**	59.8-99.6									8.3			**16.7**	**75.0**				

[1] Percent of isolates with intermediate susceptibility

[2] Percent of isolates that were resistant

[3] 95% confidence intervals for percent resistant (%R) were calculated using the Clopper-Pearson exact method

[4] The unshaded areas indicate the range of dilutions tested for each antimicrobial. Single vertical bars indicate the breakpoints for susceptibility, while double vertical bars indicate the breakpoints for resistance. Numbers in t shaded area indicate the percentages of isolates with MICs greater than the highest tested concentrations. Numbers listed for the lowest tested concentrations represent the percentages of isolates with MICs equal to or less than the lowest tested concentration. CLSI breakpoints were used when available. There are no CLSI breakpoints for streptomycin.