

- Note: The susceptibility information presented below is a summary of data gathered at ISU VDL for the time period listed. The information may be useful to understand susceptibility trends or as an aid in making clinical decisions, but may not be accurate for specific disease situations.
- In vitro antimicrobial test results do not represent therapeutic recommendations from the VDL or personnel therein. Extra/Off label usage of an antimicrobial which is limited/prohibited for certain species may result in legal action by FDA-CVM.
- Data is reported as: % susceptible (# isolates tested) – not all bacteria isolated at ISU VDL have been tested for antimicrobial susceptibility.

## Bovine 2016-2018 Susceptibility profile of Bovine pathogens received at ISU VDL in 2016-2018

Data reported as: % susceptible (# isolates tested)

Antibiotic	B tre	C per	E coli	H som	M bov	M bovo	M haem	P mult	Salm B <sup>1</sup>	Salm C2 <sup>1</sup>	Salm D <sup>1</sup>	Salm sp <sup>1</sup>
Ampicillin	46% (50)	73% (37)	21% (956)	97% (620)	31% (35)	46% (63)	78% (821)	98% (767)	33% (137)	42% (45)	16% (217)	94% (144)
Ceftiofur	88% (50)	62% (37)	49% (956)	100% (620)	91% (35)	100% (63)	100% (821)	100% (767)	45% (137)	47% (45)	16% (217)	96% (142)
Chlortetracycline	41% (41)	61% (33)	9% (836)	92% (502)	97% (30)	94% (53)	65% (688)	85% (658)	27% (123)	17% (41)	3% (184)	81% (129)
Clindamycin	2% (50)	54% (37)	0% (934)	37% (620)	0% (35)	6% (63)	0% (821)	0% (765)	0% (137)	0% (45)	0% (217)	0% (142)
Danofloxacin	34% (50)	11% (37)	40% (934)	80% (620)	17% (35)	27% (63)	67% (821)	88% (765)	47% (137)	80% (45)	76% (217)	89% (142)
Enrofloxacin	40% (50)	81% (37)	51% (934)	88% (620)	94% (35)	97% (63)	69% (821)	94% (765)	57% (137)	100% (45)	97% (217)	96% (144)
Florfenicol	42% (50)	81% (37)	6% (934)	96% (620)	91% (35)	87% (63)	81% (821)	95% (765)	31% (137)	40% (45)	4% (217)	49% (142)
Gamithromycin <sup>^</sup>	NI	NI	NI	63% (118)	NI	NI	67% (133)	79% (107)	NI	NI	NI	NI
Gentamicin	86% (50)	0% (37)	70% (934)	44% (620)	100% (35)	98% (63)	75% (821)	86% (765)	95% (137)	100% (45)	98% (217)	98% (144)
Neomycin	46% (50)	0% (37)	38% (934)	33% (620)	97% (35)	92% (63)	67% (821)	48% (765)	46% (137)	100% (45)	51% (217)	95% (142)
Oxytetracycline <sup>^</sup>	12% (41)	33% (33)	9% (836)	40% (502)	97% (30)	85% (53)	55% (688)	66% (658)	27% (123)	17% (41)	3% (184)	79% (129)
Penicillin	2% (50)	70% (37)	0% (956)	84% (620)	14% (35)	19% (63)	29% (821)	65% (767)	0% (137)	0% (45)	0% (217)	0% (142)
Spectinomycin	10% (50)	3% (37)	7% (934)	74% (620)	86% (35)	41% (63)	73% (821)	78% (765)	9% (137)	11% (45)	21% (217)	15% (142)
Sulfadimethoxine	20% (50)	41% (37)	16% (956)	20% (620)	89% (35)	73% (63)	12% (821)	15% (767)	9% (137)	4% (45)	2% (217)	55% (142)
Tetracycline <sup>^</sup>	0% (9)	0% (4)	22% (120)	34% (118)	40% (5)	10% (10)	0% (133)	60% (109)	29% (14)	50% (4)	3% (33)	80% (15)
Tiamulin	56% (50)	84% (37)	0% (934)	100% (620)	97% (35)	100% (63)	93% (821)	54% (765)	0% (137)	0% (45)	0% (217)	0% (142)
Tildipirosin <sup>^</sup>	NI	NI	NI	78% (118)	NI	NI	74% (133)	82% (107)	NI	NI	NI	NI
Tilmicosin	38% (50)	81% (37)	0% (934)	81% (620)	97% (35)	83% (63)	61% (821)	72% (765)	0% (137)	0% (45)	0% (217)	0% (142)
Trimethoprim/ Sulphamethoxazole	46% (50)	27% (37)	41% (934)	76% (620)	97% (35)	79% (63)	96% (821)	79% (765)	45% (137)	100% (45)	90% (217)	98% (144)
Tulathromycin	NI	0% (37)	NI	75% (620)	NI	NI	68% (821)	88% (765)	NI	0% (45)	NI	NI
Tylosin (Tartrate/Base)	2% (50)	0% (37)	NI	61% (620)	NI	NI	0% (821)	0% (765)	NI	0% (45)	NI	NI

<sup>1</sup> See Salmonella serotype table for most common serotypes isolated within each group.

\*Oxytetracycline can be used to represent Chlortetracycline.

<sup>^</sup>In Aug of 2018 a new test was added including Gamithromycin, Tetracycline, and Tildipirosin; Oxytetracycline was removed.

**Key:**

A equ Actinobacillus equuli  
A suis Actinobacillus suis  
APP Actinobacillus pleuropneumoniae  
B bron Bordetella bronchiseptica  
B tre Bibersteinia trehalosi  
(formerly Pasteurella trehalosi)  
C per Clostridium perfringens  
Clos Clostridium species  
E coli Escherichia coli  
E fael Enterococcus faecalis  
E faem Enterococcus faecium  
Ente Enterobacter species  
Erys Erysipelothrix  
H ecol Hemolytic E.coli  
H som Histophilus somni  
HPS Haemophilus parasuis  
G ana Gallibacterium anatis  
K pneu Klebsiella pneumoniae  
M bov Moraxella bovis  
M bovo Moraxella bovoculi

M haem Mannheimia haemolytica  
P aer Pseudomonas aeruginosa  
Past Pasteurella species  
PMul A Pasteurella multocida group A  
PMul D Pasteurella multocida group D  
Pseu Pseudomonas species  
R equ Rhodococcus equi  
S aur Staphylococcus aureus  
S can Streptococcus canis  
S equus Streptococcus equisimilis  
S hyi Staphylococcus hyicus  
S pint Staphylococcus pseudintermedius  
S suis Streptococcus suis  
S zoo Streptococcus zooepidemicus  
Salm B Salmonella species group B  
Salm C1 Salmonella species group C1  
Salm C2 Salmonella species group C2  
Salm D Salmonella species group D  
Salm sp Salmonella species

2018 *Salmonella* Serotypes Isolated at  
Iowa State University  
Veterinary Diagnostic Laboratory

2018 <i>Salmonella</i> serogroups/serotypes	Avian	Bovine	Porcine
<b>Group B</b>	<b>29</b>	<b>39</b>	<b>735</b>
<i>Salmonella</i> 4, [5], 12:i:-	5	8	382
<i>Salmonella</i> Agona		7	39
<i>Salmonella</i> Bredeney	2		
<i>Salmonella</i> Derby			96
<i>Salmonella</i> Heidelberg		15	33
<i>Salmonella</i> Reading	3		
<i>Salmonella</i> Saintpaul		1	1
<i>Salmonella</i> Schwarzengrund	1	4	17
<i>Salmonella</i> Typhimurium	18	4	167
<b>Group C1</b>	<b>12</b>	<b>24</b>	<b>136</b>
<i>Salmonella</i> 6,7:-:1,5			1
<i>Salmonella</i> Braenderup	2	4	17
<i>Salmonella</i> Choleraesuis_(Kunzendorf)			24
<i>Salmonella</i> Infantis	5	2	53
<i>Salmonella</i> Livingstone			1
<i>Salmonella</i> Mbandaka	5	2	4
<i>Salmonella</i> Montevideo		15	1
<i>Salmonella</i> Ohio			19
<i>Salmonella</i> Rissen		1	16
<b>Group C2</b>	<b>16</b>	<b>15</b>	<b>26</b>
<i>Salmonella</i> Albany	1		
<i>Salmonella</i> Altona		2	1
<i>Salmonella</i> Bovismorbificans		3	2
<i>Salmonella</i> Chailey			3
<i>Salmonella</i> Hadar	2		
<i>Salmonella</i> Kentucky	13		1
<i>Salmonella</i> Litchfield			2
<i>Salmonella</i> Muenchen		4	14
<i>Salmonella</i> Newport		6	3

2018 Salmonella serogroups/serotypes	Avian	Bovine	Porcine
<b>Group D</b>	<b>25</b>	<b>85</b>	<b>15</b>
<i>Salmonella</i> Berta			7
<i>Salmonella</i> Dublin		84	1
<i>Salmonella</i> Enteritidis	25		3
<i>Salmonella</i> Ouakam			2
<i>Salmonella</i> Panama		1	3
<b>Group E</b>	<b>22</b>	<b>23</b>	<b>113</b>
<i>Salmonella</i> 3,10:e,h:-		2	
<i>Salmonella</i> 3,19:Nonmotile	1		
<i>Salmonella</i> Amager	1		
<i>Salmonella</i> Amsterdam		1	
<i>Salmonella</i> Anatum	5	3	40
<i>Salmonella</i> Anatum_var_15+		1	
<i>Salmonella</i> Cannstatt			1
<i>Salmonella</i> Give		4	4
<i>Salmonella</i> Krefeld			1
<i>Salmonella</i> Liverpool	6	1	1
<i>Salmonella</i> London			13
<i>Salmonella</i> Meleagridis		1	
<i>Salmonella</i> Muenster		4	5
<i>Salmonella</i> Muenster_var._15+,34+	1		
<i>Salmonella</i> Orion		1	2
<i>Salmonella</i> Orion_var_15+			1
<i>Salmonella</i> Senftenberg	1		18
<i>Salmonella</i> Uganda	3	5	27
<b>Group G</b>	<b>2</b>		<b>8</b>
<i>Salmonella</i> Havana	1		5
<i>Salmonella</i> Putten	1		3
<b>Group I</b>			<b>1</b>
<i>Salmonella</i> Barranquilla			1
<b>Group K</b>		<b>5</b>	<b>2</b>
<i>Salmonella</i> Cerro		5	2
<b>Group L</b>		<b>2</b>	<b>1</b>
<i>Salmonella</i> Minnesota		2	1
<b>Group O</b>	<b>1</b>		<b>15</b>
<i>Salmonella</i> Adelaide			14
<i>Salmonella</i> Alachua	1		1

2018 Salmonella serogroups/serotypes	Avian	Bovine	Porcine
<b>Group Poly</b>		1	24
<i>Salmonella</i> Gera			1
<i>Salmonella</i> Idikan			1
<i>Salmonella</i> Kedougou_			1
<i>Salmonella</i> Soerenga		1	
<i>Salmonella</i> Worthington			21
<b>Group R</b>	1		45
<i>Salmonella</i> Johannesburg	1		45
<b>Untypeable</b>	16	2	14
NOT <i>Salmonella</i> Enteritidis	1		
NOT <i>Salmonella</i> Enteritidis (S. Javiana)	1		
Not <i>Salmonella</i> Heidelberg	10		
<i>Salmonella</i> Ealing		1	
<i>Salmonella</i> Ill 13,23:gz51:-	4		
<i>Salmonella</i> Rough O:b:l,w			2
<i>Salmonella</i> Rough O:e,h: 1,6			1
<i>Salmonella</i> Rough O:z:l,w			1
<i>Salmonella</i> Rough_O:b:e,n,x			1
<i>Salmonella</i> Rough_O:c:1,5			6
<i>Salmonella</i> Rough_O:e,h:e,n,z15			1
<i>Salmonella</i> Rough_O:fg:-			1
<i>Salmonella</i> Rough_O:gms:-		1	
<i>Salmonella</i> untypeable			1
<b>Grand Total</b>	<b>124</b>	<b>196</b>	<b>1135</b>