2007

Retail Meat Report

National Antimicrobial Resistance Monitoring System

NARMS

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***ENTEROCOCCUS* DATA**

***ESCHERICHIA COLI* DATA**

APPENDICES

ABBREVIATIONS USED IN THE REPORT, 2007

General Abbreviations

AR	Antimicrobial Resistance
BAP	Blood Agar Plate
CCA	Campy-Cefex Agar Plate
CDC	Centers for Disease Control and Prevention
CLSI	Clinical and Laboratory Standards Institute
CVM	Center for Veterinary Medicine
EAP	Enterococcosel Agar Plate
EIP	Emerging Infections Program
EMB	Eosin Methylene Blue
FDA	Food and Drug Administration
FoodNet	Foodborne Diseases Active Surveillance Network
MIC	Minimum Inhibitory Concentration
NARMS	National Antimicrobial Resistance Monitoring System
PCR	Polymerase Chain Reaction
PFGE	Pulsed Field Gel Electrophoresis
PulseNet	National Molecular Subtyping Network for Foodborne Disease Surveillance
QC	Quality Control
RVR10	Rappaport-Vassiliadis Medium
USDA	United States Department of Agriculture
XLD	Xylose Lysine Deoxycholate

Antimicrobial Abbreviations

AMC	Amoxicillin/Clavulanic Acid	GEN	Gentamicin
AMI	Amikacin	KAN	Kanamycin
AMP	Ampicillin	LIN	Lincomycin
AXO	Ceftriaxone	LZD	Linezolid
AZI	Azithromycin	NAL	Nalidixic Acid
CHL	Chloramphenicol	NIT	Nitrofurantoin
CIP	Ciprofloxacin	PEN	Penicillin
CLI	Clindamycin	QDA	Quinupristin/Dalfopristin
COT	Trimethoprim/Sulfamethoxazole	STR	Streptomycin
DAP	Daptomycin	TEL	Telithromycin
DOX	Doxycycline	TET	Tetracycline
ERY	Erythromycin	TGC	Tigecycline
FFN	Florfenicol	TYL	Tylosin
FIS	Sulfisoxazole	TIO	Ceftiofur
FLA	Flavomycin	VAN	Vancomycin
FOX	Cefoxitin		

Meat Types Abbreviations

CB	Chicken Breast	GT	Ground Turkey
GB	Ground Beef	PC	Pork Chop

State Abbreviations

CA	California	MN	Minnesota
CO	Colorado	NM	New Mexico
CT	Connecticut	NY	New York
GA	Georgia	OR	Oregon
MD	Maryland	TN	Tennessee

NARMS Retail Meat Annual Report 2007

Introduction

The primary purpose of the NARMS retail meat surveillance program is to monitor the prevalence of antimicrobial resistance among foodborne bacteria, specifically, *Salmonella, Campylobacter, Enterococcus* and *Escherichia coli.* The results generated by the NARMS retail meat program serve as a reference point for identifying and analyzing trends in antimicrobial resistance among these organisms.

NARMS retail meat surveillance is an ongoing collaboration between the U.S. Food and Drug Administration/Center for Veterinary Medicine (FDA/CVM), the Centers for Disease Control and Prevention (CDC), and the 2007 FoodNet laboratories: California, Colorado, Connecticut, Georgia, Minnesota, New Mexico, New York, Oregon, and Tennessee. For calendar year 2007, all test sites began retail meat sampling in January. Each site purchased approximately 40 food samples per month, which are comprised of 10 samples each from chicken breast, ground turkey, ground beef, and pork chops. All FoodNet sites culture the meat and poultry samples for *Salmonella* and *Campylobacter*. In 2007, 3 of the 9 participating FoodNet laboratories (Georgia, Oregon, and Tennessee) also cultured samples for *E. coli* and *Enterococcus*. Bacterial isolates were sent to FDA/CVM for confirmation of species and serotypes, antimicrobial susceptibility testing, and genetic analysis.

As a public health monitoring system, the primary objectives of NARMS are to:

- Monitor trends in antimicrobial resistance among foodborne bacteria from humans, retail meats, and animals
- Disseminate timely information on antimicrobial resistance to promote interventions that reduce resistance among foodborne bacteria
- Conduct research to better understand the emergence, persistence, and spread of antimicrobial resistance
- Assist the FDA in making decisions related to the approval of safe and effective

antimicrobial drugs for animals

Changes in 2007

A total of 4,282 meat samples were collected in 2007, compared with 4,769 in 2006. No meat samples were collected from Maryland in 2007.

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Acknowledgements

Many thanks to Michelle Talley and Hung Dang for providing outstanding web support to the NARMS program.

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Surveillance and Laboratory Testing Methods

Sample Collection and Isolate Submission

For 2007, retail meat samples were collected from 9 CDC FoodNet sites including California, Colorado, Connecticut, Georgia, Minnesota, New Mexico, New York, Oregon, and Tennessee. Each site collected samples from a randomized list of area grocery stores derived from the Chain Store Guide (Tampa, FL). All 9 sites cultured the meat samples for *Campylobacter* and non-typhoidal *Salmonella*. In addition for 2007, only Tennessee, Georgia and Oregon cultured the same samples for *E. coli* and *Enterococcus*. Isolates from each culture-positive meat sample were submitted by the 9 FoodNet sites to the FDA/CVM for serotype or species confirmation. NARMS testing and reporting are based on a single isolate from each culture-positive meat sample.

Microbiological Analysis and Testing Methods at the FoodNet Site

In the FoodNet laboratories, meat samples were stored at 4°C and processed no later than 96 hours after purchase. Retail meat packages were kept intact until they were aseptically opened in the laboratory. For chicken and pork samples, one piece of meat microbiological sampling includes one chicken breast or one pork chop, aseptically removed from the total meat package. For ground beef and ground turkey, a 25 gram (g) sample is aseptically aliquot from the total meat product. Portions from each sample were placed in separate sterile plastic bags with 250 milliliters (mL) of buffered peptone water, and the bags were vigorously shaken. Fifty milliliters of the rinsate from each sample were transferred to individual sterile containers for bacterial isolation as outlined below.

Salmonella Isolation

Fifty milliliters of double strength lactose broth were added to the flasks containing 50 mL of rinsate. The contents were mixed thoroughly and incubated at 35°C for 24 hours. From each flask, 0.1 mL was transferred to 9.9 mL tubes of RVR10 medium. The tubes of RVR10 medium were incubated in a water bath at 42°C for 16-20 hours before transferring 1 mL to pre-warmed (35-37°C) 10 mL tubes of M Broth. The inoculated M Broth tubes were incubated in a water bath at 35-37°C for 6-8 hours. From each M Broth culture, 1 mL was heated at 100°C for 15 minutes, and the remaining portion was refrigerated. The heated portion from each culture was tested using the TECRA *Salmonella* Visual Immunoassay kit (International BioProducts, Bothell, WA) or the VIDAS® *Salmonella* Immunoassay kit (bioMerieux, Hazelwood, MO) according to the manufacturers' instructions. If the TECRA or VIDAS assay was negative, the sample was considered negative for *Salmonella*. If the TECRA or VIDAS assay was positive, a loopful of the corresponding unheated M Broth culture was streaked for isolation onto a Xylose Lysine Deoxycholate (XLD) agar plate. The inoculated plate was incubated at 35°C for 24 hours. Each XLD agar plate was examined for typical *Salmonella* colonies (pink colonies with or without black centers). If no *Salmonella*-like growth was

observed on XLD agar, the sample was considered negative. A typical *Salmonella* colony was streaked for purity onto a trypticase soy agar plate supplemented with 5% defibrinated sheep blood (BAP). The BAP(s) were incubated at 35°C for 18-24 hours before sub-culturing an isolated colony for further biochemical identification and serotyping using the FoodNet laboratory's standard procedures. *Salmonella* isolates were subsequently frozen at -70 to -80°C in Brucella broth with 20% glycerol and shipped on dry ice to FDA/CVM. Upon arrival at FDA/CVM, each isolate was streaked for purity on a BAP before being confirmed as *Salmonella* using the Vitek 2 Compact microbial identification system (bioMérieux, Hazelwood, MO). These isolates were further serotyped for O and H antigens using either commercially available (Difco-Becton Dickinson, Sparks, MD) antisera or antisera (Miravista Diagnostics, Indianapolis, IN) from the CDC.

***Campylobacter* Isolation**

Fifty milliliters of double-strength Bolton broth was added to the flasks containing 50 mL of rinsate to be used for *Campylobacter* isolation. The broth and rinsate were mixed thoroughly, but gently to avoid aeration, and incubated at 42°C for 24 hours in a reduced oxygen atmosphere that was obtained using a commercial gas-generating envelope or a gas mixture containing 85% nitrogen, 10% carbon dioxide, and 5% oxygen. The Bolton broth culture was inoculated onto Campy Cefex Agar (CCA) to obtain isolated colonies, and incubated at 42°C in the above atmosphere for 24 to 48 hours. Each CCA plate was examined for typical *Campylobacter* colonies (round to irregular with smooth edges; thick translucent white growth to spreading, film-like transparent growth). If no *Campylobacter*-like growth was observed on a CCA plate, the sample was considered negative. When *Campylobacter*-like growth was observed, one typical well-isolated colony from each CCA plate was sub-cultured to a BAP and incubated as described above. Following incubation, the purified culture was gram stained and tested for its reaction to catalase, oxidase, hippurate and/or motility. If the Gram stain showed small, Gram-negative curved rods, and the isolate was positive for catalase and oxidase, the isolate was presumptively identified as *Campylobacter*. Otherwise, the culture was considered negative. All isolates presumptively identified as *Campylobacter* were frozen at -70 to -80°C in Brucella broth with 20% glycerol and shipped in cryo-vials on dry ice to FDA/CVM. Upon arrival at FDA/CVM, isolates were streaked for purity on a BAP before being identified to the species level using PCR assays previously described (2, 6).

***Escherichia coli* Isolation (only Georgia, Oregon and Tennessee in 2007)**

Fifty milliliters of double strength MacConkey broth was added to flasks containing 50 mL of rinsate to be used for *E. coli* isolation. The contents were mixed thoroughly and incubated at 35°C for 16-20 hours. One loopful from each flask was transferred to an Eosin Methylene Blue (EMB) agar plate and streaked for isolation. Agar plates were incubated at 35°C for 16-20 hours in ambient air and examined for typical *E. coli* colonies (colonies having a dark center and usually a green metallic sheen). If no typical growth was observed on an EMB agar plate, the sample was considered

negative and the appropriate documentation was made on the log sheet accompanying the sample. When *E. coli*-like growth was present, one typical, well-isolated colony was streaked for isolation onto a BAP. The BAP(s) were incubated at 35°C for 16-20 hours in ambient air and examined for purity. Indole positive and oxidase negative isolates were presumptively identified as *E. coli*. These isolates were frozen at -70 to -80°C in Brucella broth with 20% glycerol and shipped in cryo-vials on dry ice to FDA/CVM. Upon arrival at FDA/CVM, every isolate was streaked for purity on a BAP before being confirmed as *E. coli* using the Vitek 2 Compact microbial identification system (bioMérieux, Hazelwood, MO).

Enterococcus **Isolation (only Georgia, Oregon and Tennessee in 2007)**

Fifty milliliters of double-strength Enterococcosel broth was added to the flasks containing 50 mL of rinsate to be used for *Enterococcus* isolation. The contents were mixed thoroughly and incubated at 45°C for 18-24 hours in ambient air. If no typical growth or blackening was observed in the flask, the sample was considered negative. If blackening of the broth was observed, a loopful was streaked for isolation onto an Enterococcosel Agar plate (EAP). The plates were incubated at 35°C for 18-24 hours in ambient air and examined for *Enterococcus*-like colonies (small colonies surrounded by a blackening of the agar). If no typical growth was observed on the EA plate, the sample was considered negative. If *Enterococcus*-like growth was present, one well-isolated colony was streaked for isolation onto a BAP, and incubated at 35°C for 18-24 hours in ambient air. Presumptive *Enterococcus* isolates were subsequently frozen at -70 to -80°C in Brucella broth with 20% glycerol and shipped in cryo-vials on dry ice to FDA/CVM. Upon arrival at FDA/CVM, every isolate was streaked for purity on a BAP before being confirmed as *Enterococcus* using the Vitek 2 Compact microbial identification system (bioMérieux, Hazelwood, MO).

Antimicrobial Susceptibility Testing

Antimicrobial minimal inhibitory concentrations (MICs) were determined by broth microdilution according to the Clinical and Laboratory Standards Institute (CLSI) standards (3, 4, 5) using a 96 microtiter plate (Sensititre, Trek Diagnostic Systems, Westlake, OH). *Salmonella* and *E. coli* isolates were tested using a custom plate developed for Gram-negative bacteria (catalog # CMV1AGNF); *Enterococcus* isolates were tested using a custom plate developed for Gram-positive bacteria (catalog # CMV2AGPF); and *Campylobacter* isolates were tested using a custom plate developed for *Campylobacter* testing (catalog # CAMPY) (Table 1). CLSI recommendations were followed by testing quality control organisms each time antimicrobial susceptibility testing was performed. The quality control organisms included *Escherichia coli* ATCC 25922, *Enterococcus faecalis* ATCC 29212, *Enterococcus faecalis* ATCC 51299 *Staphylococcus aureus* ATCC 29213, *Pseudomonas aeruginosa* ATCC 27853, and *Campylobacter jejuni* ATCC 33560 (3, 4, 5). CLSI approved interpretive criteria were used when available; otherwise provisional NARMS breakpoints were used (Table 1).

Pulsed-Field Gel Electrophoresis (PFGE*)*

Pulsed-field gel electrophoresis (PFGE) was used to assess genetic relatedness among *Salmonella* and *Campylobacter* isolates. All *Campylobacter* isolated from 2002 to 2005 were tested by PFGE. Since 2006, only those *Campylobacter* isolates that show resistance to ciprofloxacin or erythromycin have been tested by PFGE. PFGE was performed according to protocols developed by CDC (1). Agarose-embedded DNA was digested with the enzymes *Xba*I and BinI for *Salmonella* isolates and *Sma*I and *KpnI* for *Campylobacter* isolates. DNA restriction fragments were separated by electrophoresis using a CHEF Mapper electrophoresis system (Bio-Rad, Hercules, CA). Genomic-DNA profiles or "fingerprints" were analyzed using BioNumerics software (Applied-Maths, Kortrijk, Belgium), and banding patterns were compared using Dice coefficients with a 1.5% band position tolerance.

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Table 1. Antimicrobial Susceptibility Testing Method and Interpretive Criteria: NARMS Retail Meat, 2007

Genus: *Campylobacter*

Susceptibility Testing Method: Broth microdilution Sensititre™ Plate: CAMPY

QC Organism: *Campylobacter jejuni* ATCC 33560

Drug	Range (µg/ml)	Susceptible (µg/ml)	Intermediate (µg/ml)	Resistant (µg/ml)
Azithromycin*	0.015-64	≤ 2	4	≥ 8
Ciprofloxacin	0.015-64	≤ 1	2	≥ 4
Clindamycin*	0.03-16	≤ 2	4	≥ 8
Erythromycin	0.03-64	≤ 8	16	≥ 32
Florfenicol*^	0.03-64	≤ 4		
Gentamicin*	0.12-32	≤ 2	4	≥ 8
Nalidixic Acid*	4-64	≤ 16	32	≥ 64
Telithromycin*	0.015-8	≤ 4	8	≥ 16
Tetracycline	0.06-64	≤ 4	8	≥ 16

Genus: *Enterococcus*

Susceptibility Testing Method: Broth microdilution Sensititre™ Plate: CMV2AGPF

QC Organisms: *Enterococcus faecalis* ATCC 29212 and *Enterococcus faecalis* ATCC 51299

Drug	Range (µg/ml)	Susceptible (µg/ml)	Intermediate (µg/ml)	Resistant (µg/ml)
Chloramphenicol	2-32	≤ 8	16	≥ 32
Ciprofloxacin	0.12-4	≤ 1	2	≥ 4
Daptomycin*^	0.5-16	≤ 4		
Erythromycin	0.5-8	≤ 0.5	1,2,4	≥ 8
Flavomycin*	1-16	≤ 8	16	≥ 32
Gentamicin	128-1024	≤ 500		> 500
Kanamycin*	128-1024	≤ 512		≥ 1024
Lincomycin*	1-32	≤ 2	4	≥ 8
Linezolid	0.5-8	≤ 2	4	≥ 8
Nitrofurantoin	2-64	≤ 32	64	≥ 128
Penicillin	0.5-16	≤ 8		≥ 16
Streptomycin	512-2048	≤ 1000		> 1000
Quinupristin/Dalfopristin	1-32	≤ 1	2	≥ 4
Tetracycline	4-32	≤ 4	8	≥ 16
Tylosin*	0.25-32	≤ 8	16	≥ 32
Vancomycin	0.25-32	≤ 4	8,16	≥ 32
Tigecycline*^	0.015-0.5	≤ 0.25		

*No CLSI interpretative criteria for this bacterium / antimicrobial combination currently available.
^ Absence of resistant strains precludes defining any results category other than “susceptible.”

Genus: *Escherichia coli* and *Salmonella*

Susceptibility Testing Method: Broth microdilution Sensititre™ Plate: CMV1AGNF

QC Organisms: *Escherichia coli* ATCC 25922, *Staphylococcus aureus* ATCC 29213,
Pseudomonas aeruginosa ATCC 27853, and *Enterococcus faecalis* ATCC 29212

Drug	Range (µg/ml)	Susceptible (µg/ml)	Intermediate (µg/ml)	Resistant (µg/ml)
Amikacin	0.5-64	≤ 16	32	≥ 64
Amoxicillin/Clavulanic acid	1/0.5-32/16	≤ 8/4	16/8	≥ 32/16
Ampicillin	1-32	≤ 8	16	≥ 32
Cefoxitin	0.5-32	≤ 8	16	≥ 32
Ceftiofur	0.12-4	≤ 2	4	≥ 8
Ceftriaxone	0.25-64	≤ 8	16,32	≥ 64
Chloramphenicol	2-32	≤ 8	16	≥ 32
Ciprofloxacin	0.015-2	≤ 1	2	≥ 4
Gentamicin	0.25-16	≤ 4	8	≥ 16
Kanamycin	8-64	≤ 16	32	≥ 64
Nalidixic acid	0.5-32	≤ 16		≥ 32
Streptomycin*	32-64	≤ 32		≥ 64
Sulfisoxazole	16-256	≤ 256		≥ 512
Tetracycline	4-32	≤ 4	8	≥ 16
Trimethoprim/ Sulfamethoxazole	0.12/2.38-4/76	≤ 2/38		≥ 4/76

*No CLSI interpretative criteria for this bacterium / antimicrobial combination currently available.

Table 2a. Percent Positive Samples for Chicken Breast by Bacterium and Site, 2002-2007

		Campylobacter			*Salmonella*			*Enterococcus*			*Escherichia coli*		
Site[1]	Year	N[2]	# Isolates	% Positive[3]	N	# Isolates	% Positive	N	# Isolates	% Positive	N	# Isolates	% Positive
CA	2003	120	64	53.3%	120	4	3.3%						
	2004	120	96	80.0%	120	17	14.2%						
	2005	118	83	70.3%	118	21	17.8%						
	2006	118	96	81.4%	118	16	13.6%						
	2007	119	97	81.5%	120	12	10.0%						
	Total	**595**	**436**	**73.3%**	**596**	**70**	**11.7%**						
CO	2004	97	21	21.6%	97	1	1.0%						
	2005	116	38	32.8%	116	12	10.3%						
	2006	120	74	61.7%	120	7	5.8%						
	2007	120	62	51.7%	120	2	1.7%						
	Total	**453**	**195**	**43.0%**	**453**	**22**	**4.9%**						
CT	2002	120	74	61.7%	120	17	14.2%						
	2003	60	50	83.3%	60	9	15.0%						
	2004	120	86	71.7%	120	30	25.0%						
	2005	120	85	70.8%	120	19	15.8%						
	2006	120	79	65.8%	120	20	16.7%						
	2007	119	66	55.5%	120	15	12.5%						
	Total	**659**	**440**	**66.8%**	**660**	**110**	**16.7%**						
GA	2002	120	84	70.0%	120	14	11.7%	120	120	100.0%	120	104	86.7%
	2003	120	76	63.3%	120	8	6.7%	120	119	99.2%	120	120	100.0%
	2004	120	61	50.8%	120	6	5.0%	120	120	100.0%	120	115	95.8%
	2005	120	62	51.7%	120	10	8.3%	120	120	100.0%	120	119	99.2%
	2006	120	63	52.5%	120	15	12.5%	120	120	100.0%	120	117	97.5%
	2007	120	57	47.5%	120	8	6.7%	120	118	98.3%	120	114	95.0%
	Total	**720**	**403**	**56.0%**	**720**	**61**	**8.5%**	**720**	**717**	**99.6%**	**720**	**689**	**95.7%**
MD	2002	120	30	25.0%	120	8	6.7%	120	117	97.5%	120	107	89.2%
	2003	120	38	31.7%	120	18	15.0%	120	113	94.2%	120	113	94.2%
	2004	120	76	63.3%	120	24	20.0%	120	114	95.0%	120	110	91.7%
	2005	120	85	70.8%	120	22	18.3%	120	110	91.7%	120	100	83.3%
	2006	120	68	56.7%	120	18	15.0%	120	115	95.8%	120	102	85.0%
	2007												
	Total	**600**	**297**	**49.5%**	**600**	**90**	**15.0%**	**600**	**569**	**94.8%**	**600**	**532**	**88.7%**
MN	2002	106	33	31.1%	106	4	3.8%						
	2003	120	62	51.7%	120	13	10.8%						
	2004	120	73	60.8%	120	20	16.7%						
	2005	120	24	20.0%	120	24	20.0%						
	2006	120	43	35.8%	120	16	13.3%						
	2007	120	28	23.3%	120	11	9.2%						
	Total	**706**	**263**	**37.3%**	**706**	**88**	**12.5%**						
NM	2004	119	53	44.5%	119	3	2.5%						
	2005	120	31	25.8%	120	5	4.2%						
	2006	119	15	12.6%	120	18	15.0%						
	2007	120	52	43.3%	120	30	25.0%						
	Total	**478**	**151**	**31.6%**	**479**	**56**	**11.7%**						
NY	2003	120	75	62.5%	120	11	9.2%						
	2004	120	96	80.0%	120	16	13.3%						
	2005	116	50	43.1%	120	17	14.2%						
	2006	119	48	40.3%	120	15	12.5%						
	2007	120	33	27.5%	120	12	10.0%						
	Total	**595**	**302**	**50.8%**	**600**	**71**	**11.8%**						
OR	2002	40	1	2 5%	40	4	10.0%	40	40	100.0%	40	9	22.5%
	2003	120	45	37.5%	120	17	14.2%	120	119	99.2%	120	78	65.0%
	2004	120	73	60.8%	120	25	20.8%	120	118	98.3%	120	73	60.8%
	2005	120	37	30.8%	120	16	13.3%	110	109	99.1%	120	76	63.3%
	2006	119	50	42.0%	120	7	5.8%	120	119	99.2%	118	94	79.7%
	2007	120	52	43.3%	120	2	1.7%	120	119	99.2%	120	98	81.7%
	Total	**639**	**258**	**40.4%**	**640**	**71**	**11.1%**	**630**	**624**	**99.0%**	**638**	**428**	**67.1%**
TN	2002	110	66	60.0%	110	13	11.8%	110	104	94.5%	110	62	56.4%
	2003	117	59	50.4%	117	3	2.6%	117	115	98.3%	117	85	72.6%
	2004	116	71	61.2%	116	15	12.9%	116	114	98.3%	116	102	87.9%
	2005	120	59	49.2%	120	7	5.8%	120	118	98.3%	108	98	90.7%
	2006	118	36	30.5%	118	20	16.9%	118	115	97.5%	117	105	89.7%
	2007	112	28	25.0%	112	7	6.3%	111	105	94.6%	102	87	85.3%
	Total	**693**	**319**	**46.0%**	**693**	**65**	**9.4%**	**692**	**671**	**97.0%**	**670**	**539**	**80.4%**
		6138	**3064**	**49.9%**	**6147**	**704**	**11.5%**	**2642**	**2581**	**97.7%**	**2628**	**2188**	**83.3%**

[1] CT, GA, MD,OR joined surveillance in 2002, NY and CA in 2003 and CO and NM in 2004. MD did not participate in NARMS retail meat surveillance in 2007.

[2] N= # of meat samples collected.

[3] Where % Positive = the number of isolates (n)/the number of meat samples (N).

Table 2b. Percent Positive Samples for Ground Turkey by Bacterium and Site, 2002-2007

		Campylobacter			*Salmonella*			*Enterococcus*			*Escherichia coli*		
Site[1]	Year	N[2]	# Isolates	% Positive[3]	N	# Isolates	% Positive	N	# Isolates	% Positive	N	# Isolates	% Positive
CA	2003	120	0	0.0%	120	6	5.0%						
	2004	120	0	0.0%	120	9	7.5%						
	2005	119	1	0.8%	119	15	12.6%						
	2006	120	0	0.0%	120	5	4.2%						
	2007	120	1	0.8%	120	8	6.7%						
	Total	**599**	**2**	**0.3%**	**599**	**43**	**7.2%**						
CO	2004	101	0	0.0%	101	8	7.9%						
	2005	116	0	0.0%	116	17	14.7%						
	2006	120	10	8.3%	120	17	14.2%						
	2007	120	10	8.3%	120	20	16.7%						
	Total	**457**	**20**	**4.4%**	**457**	**62**	**13.6%**						
CT	2002	120	2	1.7%	120	21	17.5%						
	2003	60	0	0.0%	60	8	13.3%						
	2004	120	2	1.7%	120	26	21.7%						
	2005	120	3	2.5%	120	12	10.0%						
	2006	120	2	1.7%	120	8	6.7%						
	2007	120	1	0.8%	120	14	11.7%						
	Total	**660**	**10**	**1.5%**	**660**	**89**	**13.5%**						
GA	2002	120	0	0.0%	120	19	15.8%	120	120	100.0%	120	103	85.8%
	2003	120	2	1.7%	120	27	22.5%	120	120	100.0%	120	117	97.5%
	2004	120	1	0.8%	120	38	31.7%	120	120	100.0%	120	119	99.2%
	2005	120	5	4.2%	120	32	26.7%	120	120	100.0%	120	117	97.5%
	2006	120	6	5.0%	120	28	23.3%	120	117	97.5%	120	116	96.7%
	2007	120	7	5.8%	120	48	40.0%	120	120	100.0%	120	120	100.0%
	Total	**720**	**21**	**2.9%**	**720**	**192**	**26.7%**	**720**	**717**	**99.6%**	**720**	**692**	**96.1%**
MD	2002	120	0	0.0%	120	9	7.5%	120	113	94.2%	120	110	91.7%
	2003	120	0	0.0%	120	25	20.8%	120	103	85.8%	120	103	85.8%
	2004	120	2	1.7%	120	13	10.8%	120	106	88.3%	120	109	90.8%
	2005	120	3	2.5%	120	12	10.0%	120	111	92.5%	120	105	87.5%
	2006	120	0	0.0%	120	12	10.0%	120	99	82.5%	120	95	79.2%
	2007												
	Total	**600**	**5**	**0.8%**	**600**	**71**	**11.8%**	**600**	**532**	**88.7%**	**600**	**522**	**87.0%**
MN	2002	127	1	0.8%	127	7	5.5%						
	2003	110	3	2.7%	110	11	10.0%						
	2004	120	6	5.0%	120	14	11.7%						
	2005	120	4	3.3%	120	28	23.3%						
	2006	120	4	3.3%	120	25	20.8%						
	2007	119	6	5.0%	120	27	22.5%						
	Total	**716**	**24**	**3.4%**	**717**	**112**	**15.6%**						
NM	2004	118	0	0.0%	118	9	7.6%						
	2005	120	2	1.7%	120	20	16.7%						
	2006	120	0	0.0%	120	19	15.8%						
	2007	118	5	4.2%	118	42	35.6%						
	Total	**476**	**7**	**1.5%**	**476**	**90**	**18.9%**						
NY	2003	120	0	0.0%	120	20	16.7%						
	2004	120	0	0.0%	120	11	9.2%						
	2005	120	1	0.8%	120	12	10.0%						
	2006	119	2	1.7%	119	15	12.6%						
	2007	120	2	1.7%	120	10	8.3%						
	Total	**599**	**5**	**0.8%**	**599**	**68**	**11.4%**						
OR	2002	40	0	0.0%	40	2	5.0%	40	40	100.0%	40	17	42.5%
	2003	120	0	0.0%	120	5	4.2%	120	108	90.0%	120	49	40.8%
	2004	120	0	0.0%	120	6	5.0%	120	105	87.5%	120	53	44.2%
	2005	120	0	0.0%	120	16	13.3%	110	103	93.6%	120	72	60.0%
	2006	120	0	0.0%	120	8	6.7%	120	115	95.8%	120	76	63.3%
	2007	120	0	0.0%	120	2	1.7%	120	113	94.2%	120	104	86.7%
	Total	**640**	**0**	**0.0%**	**640**	**39**	**6.1%**	**630**	**584**	**92.7%**	**640**	**371**	**58.0%**
TN	2002	115	1	0.9%	115	16	13.9%	115	114	99.1%	115	74	64.3%
	2003	87	0	0.0%	87	12	13.8%	87	87	100.0%	87	64	73.6%
	2004	106	1	0.9%	106	8	7.5%	106	106	100.0%	106	95	89.6%
	2005	120	1	0.8%	120	19	15.8%	120	118	98.3%	110	102	92.7%
	2006	106	0	0.0%	106	22	20.8%	105	104	99.0%	106	101	95.3%
	2007	108	2	1.9%	108	19	17.6%	108	108	100.0%	98	91	92.9%
	Total	**642**	**5**	**0.8%**	**642**	**96**	**15.0%**	**641**	**637**	**99.4%**	**622**	**527**	**84.7%**
		6109	**99**	**1.6%**	**6110**	**862**	**14.1%**	**2591**	**2470**	**95.3%**	**2582**	**2112**	**81.8%**

[1] CT, GA, MD,OR joined surveillance in 2002, NY and CA in 2003 and CO and NM in 2004. MD did not participate in NARMS retail meat for 2007.

[2] N= # of meat samples collected.

[3] Where % Positive = the number of isolates (n)/the number of meat samples (N).

Table 2c. Percent Positive Samples for Ground Beef by Bacterium and Site, 2002-2007

		Campylobacter			*Salmonella*			*Enterococcus*			*Escherichia coli*		
Site[1]	Year	N[2]	# Isolates	% Positive[3]	N	# Isolates	% Positive	N	# Isolates	% Positive	N	# Isolates	% Positive
CA	2003	120	0	0.0%	120	1	0.8%						
	2004	120	0	0.0%	120	1	0.8%						
	2005	120	0	0.0%	120	1	0.8%						
	2006	120	0	0.0%	120	1	0.8%						
	2007	119	0	0.0%	119	2	1.7%						
	Total	**599**	**0**	**0.0%**	**599**	**6**	**1.0%**						
CO	2004	106	0	0.0%	106	0	0.0%						
	2005	116	0	0.0%	116	0	0.0%						
	2006	120	0	0.0%	120	2	1.7%						
	2007	120	0	0.0%	120	1	0.8%						
	Total	**462**	**0**	**0.0%**	**462**	**3**	**0.6%**						
CT	2002	120	0	0.0%	120	5	4.2%						
	2003	60	0	0.0%	60	0	0.0%						
	2004	120	0	0.0%	120	5	4.2%						
	2005	120	0	0.0%	120	3	2.5%						
	2006	116	0	0.0%	116	2	1.7%						
	2007	120	0	0.0%	120	0	0.0%						
	Total	**656**	**0**	**0.0%**	**656**	**15**	**2.3%**						
GA	2002	120	0	0.0%	120	2	1.7%	120	118	98.3%	120	93	77.5%
	2003	120	0	0.0%	120	2	1.7%	120	119	99.2%	120	90	75.0%
	2004	120	0	0.0%	120	1	0.8%	120	117	97.5%	120	91	75.8%
	2005	120	0	0.0%	120	0	0.0%	120	118	98.3%	120	102	85.0%
	2006	120	0	0.0%	120	4	3.3%	120	118	98.3%	119	94	79.0%
	2007	120	0	0.0%	120	0	0.0%	120	120	100.0%	120	100	83.3%
	Total	**720**	**0**	**0.0%**	**720**	**9**	**1.3%**	**720**	**710**	**98.6%**	**719**	**570**	**79.3%**
MD	2002	120	0	0.0%	120	2	1.7%	120	107	89.2%	120	105	87.5%
	2003	120	1	0.8%	120	3	2.5%	120	92	76.7%	120	87	72.5%
	2004	120	0	0.0%	120	1	0.8%	120	100	83.3%	120	83	69.2%
	2005	120	0	0.0%	120	0	0.0%	120	113	94.2%	120	78	65.0%
	2006	120	0	0.0%	120	0	0.0%	120	100	83.3%	120	47	39.2%
	2007												
	Total	**600**	**1**	**0.2%**	**600**	**6**	**1.0%**	**600**	**512**	**85.3%**	**600**	**400**	**66.7%**
MN	2002	123	0	0.0%	123	0	0.0%						
	2003	110	0	0.0%	110	1	0.9%						
	2004	120	0	0.0%	120	0	0.0%						
	2005	120	0	0.0%	120	1	0.8%						
	2006	120	0	0.0%	120	1	0.8%						
	2007	120	0	0.0%	120	3	2.5%						
	Total	**713**	**0**	**0.0%**	**713**	**6**	**0.8%**						
NM	2004	120	0	0.0%	120	0	0.0%						
	2005	120	0	0.0%	120	1	0.8%						
	2006	120	0	0.0%	120	2	1.7%						
	2007	120	0	0.0%	120	3	2.5%						
	Total	**480**	**0**	**0.0%**	**480**	**6**	**1.3%**						
NY	2003	120	0	0.0%	120	0	0.0%						
	2004	120	0	0.0%	120	0	0.0%						
	2005	120	0	0.0%	120	0	0.0%						
	2006	120	0	0.0%	120	0	0.0%						
	2007	120	0	0.0%	120	0	0.0%						
	Total	**600**	**0**	**0.0%**	**600**	**0**	**0.0%**						
OR	2002	40	0	0.0%	40	0	0.0%	40	40	100.0%	40	22	55.0%
	2003	120	0	0.0%	120	2	1.7%	120	112	93.3%	120	57	47.5%
	2004	120	0	0.0%	120	6	5.0%	120	115	95.8%	120	99	82.5%
	2005	120	0	0.0%	120	1	0.8%	110	98	89.1%	120	61	50.8%
	2006	120	0	0.0%	120	2	1.7%	120	108	90.0%	119	69	58.0%
	2007	120	0	0.0%	120	1	0.8%	120	114	95.0%	120	82	68.3%
	Total	**640**	**0**	**0.0%**	**640**	**12**	**1.9%**	**630**	**587**	**93.2%**	**639**	**390**	**61.0%**
TN	2002	119	0	0.0%	119	0	0.0%	119	118	99.2%	119	75	63.0%
	2003	110	0	0.0%	110	1	0.9%	110	109	99.1%	110	77	70.0%
	2004	120	0	0.0%	120	0	0.0%	120	116	96.7%	120	65	54.2%
	2005	120	0	0.0%	120	1	0.8%	120	118	98.3%	108	75	69.4%
	2006	119	0	0.0%	120	5	4.2%	117	111	94.9%	112	84	75.0%
	2007	112	5	4.5%	112	3	2.7%	112	102	91.1%	103	74	71.8%
	Total	**701**	**5**	**0.7%**	**701**	**10**	**1.4%**	**699**	**675**	**96.6%**	**673**	**451**	**67.0%**
		6171	**6**	**0.1%**	**6171**	**73**	**1.2%**	**2649**	**2484**	**93.8%**	**2631**	**1811**	**68.8%**

[1] CT, GA, MD,OR joined surveillance in 2002, NY and CA in 2003 and CO and NM in 2004. MD did not participate in NARMS retail meat for 2007.

[2] N= # of meat samples collected.

[3] Where % Positive = the number of isolates (n)/the number of meat samples (N).

Table 2d. Percent Positive Samples for Pork Chop by Bacterium and Site, 2002-2007

		Campylobacter			*Salmonella*			*Enterococcus*			*Escherichia coli*		
Site[1]	Year	N[2]	# Isolates	% Positive[3]	N	# Isolates	% Positive	N	# Isolates	% Positive	N	# Isolates	% Positive
CA	2003	120	2	1.7%	120	1	0.8%						
	2004	120	1	0.8%	120	1	0.8%						
	2005	120	0	0.0%	120	2	1.7%						
	2006	120	0	0.0%	120	0	0.0%						
	2007	117	0	0.0%	117	1	0.9%						
	Total	**597**	**3**	**0.5%**	**597**	**5**	**0.8%**						
CO	2004	99	0	0.0%	99	0	0.0%						
	2005	116	0	0.0%	116	0	0.0%						
	2006	116	0	0.0%	116	0	0.0%						
	2007	120	2	1.7%	120	2	1.7%						
	Total	**451**	**4**	**0.4%**	**451**	**2**	**0.4%**						
CT	2002	120	1	0.8%	120	1	0.8%						
	2003	60	0	0.0%	60	0	0.0%						
	2004	120	1	0.8%	120	5	4.2%						
	2005	120	1	0.8%	120	1	0.8%						
	2006	120	0	0.0%	120	1	0.8%						
	2007	120	0	0.0%	120	0	0.0%						
	Total	**660**	**3**	**0.5%**	**660**	**8**	**1.2%**						
GA	2002	120	0	0.0%	120	2	1.7%	120	119	99.2%	120	55	45 8%
	2003	120	0	0.0%	120	0	0.0%	120	116	96.7%	120	68	56.7%
	2004	120	0	0.0%	120	0	0.0%	120	116	96.7%	120	64	53 3%
	2005	120	0	0.0%	120	2	1.7%	120	117	97.5%	120	71	59 2%
	2006	120	0	0.0%	120	0	0.0%	120	115	95.8%	120	65	54 2%
	2007	120	0	0.0%	120	3	2.5%	120	119	99.2%	120	71	59 2%
	Total	**720**	**0**	**0.0%**	**720**	**7**	**1.0%**	**720**	**702**	**97.5%**	**720**	**394**	**54.7%**
MD	2002	120	1	0.8%	120	6	5.0%	120	101	84.2%	120	66	55 0%
	2003	120	0	0.0%	120	1	0.8%	120	90	75.0%	120	71	59 2%
	2004	120	0	0.0%	120	0	0.0%	120	77	64.2%	120	62	51.7%
	2005	120	1	0.8%	120	3	2.5%	120	86	71.7%	120	58	48 3%
	2006	120	0	0.0%	120	0	0.0%	120	78	65.0%	120	36	30 0%
	2007												
	Total	**600**	**2**	**0.3%**	**600**	**10**	**1.7%**	**600**	**432**	**72.0%**	**600**	**293**	**48.8%**
MN	2002	103	0	0.0%	103	0	0.0%						
	2003	120	1	0.8%	120	0	0.0%						
	2004	120	0	0.0%	120	0	0.0%						
	2005	120	0	0.0%	120	0	0.0%						
	2006	120	0	0.0%	120	0	0.0%						
	2007	119	0	0.0%	120	0	0.0%						
	Total	**702**	**1**	**0.1%**	**703**	**0**	**0.0%**						
NM	2004	119	1	0.8%	119	0	0.0%						
	2005	120	0	0.0%	120	0	0.0%						
	2006	120	1	0.8%	120	2	1.7%						
	2007	120	0	0.0%	120	6	5.0%						
	Total	**479**	**2**	**0.4%**	**479**	**8**	**1.7%**						
NY	2003	120	0	0.0%	120	2	1.7%						
	2004	120	0	0.0%	120	3	2.5%						
	2005	120	0	0.0%	120	1	0.8%						
	2006	120	0	0.0%	120	1	0.8%						
	2007	120	1	0.8%	120	0	0.0%						
	Total	**600**	**1**	**0.2%**	**600**	**7**	**1.2%**						
OR	2002	40	0	0.0%	40	0	0.0%	40	39	97.5%	40	9	22 5%
	2003	120	1	0.8%	120	1	0.8%	120	103	85.8%	120	28	23 3%
	2004	120	0	0.0%	120	2	1.7%	120	108	90.0%	120	51	42 5%
	2005	120	0	0.0%	120	0	0.0%	110	95	86.4%	120	31	25 8%
	2006	120	2	1.7%	120	4	3.3%	120	93	77.5%	118	36	30 5%
	2007	120	1	0.8%	120	0	0.0%	120	101	84.2%	120	35	39 2%
	Total	**640**	**4**	**0.6%**	**640**	**7**	**1.1%**	**630**	**539**	**85.6%**	**638**	**190**	**29.8%**
TN	2002	110	3	2.7%	110	1	0.9%	110	110	100.0%	110	54	49.1%
	2003	119	0	0.0%	119	0	0.0%	119	117	98.3%	119	51	42 9%
	2004	118	0	0.0%	118	0	0.0%	118	103	87.3%	118	55	46.6%
	2005	120	0	0.0%	120	0	0.0%	120	111	92.5%	105	45	42 9%
	2006	116	0	0.0%	116	0	0.0%	112	103	92.0%	114	45	39 5%
	2007	116	0	0.0%	116	6	5.2%	116	93	80.2%	116	46	39.7%
	Total	**699**	**3**	**0.4%**	**699**	**7**	**1.0%**	**695**	**637**	**91.7%**	**682**	**296**	**43.4%**
		6148	**21**	**0.3%**	**6149**	**61**	**1.0%**	**2645**	**2310**	**87.3%**	**2640**	**1173**	**44.4%**

[1] CT, GA, MD,OR joined surveillance in 2002, NY and CA in 2003 and CO and NM in 2004.

[2] N= # of meat samples collected.

[3] Where % Positive = the number of isolates (n)/the number of meat samples (N).

Table 3. Percent Positive Samples by Bacterium and Meat Type, 2002-2007

2002	Chicken Breast		Ground Turkey		Ground Beef		Pork Chop	
Bacterium	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Campylobacter	288	(46.8)	4	(1.0)	0	(0.0)	5	(0.8)
Salmonella	60	(9.7)	74	(11.5)	9	(1.4)	10	(1.6)
Enterococcus	381	(97.7)	387	(98.0)	383	(96.0)	369	(94.6)
Escherichia coli	282	(72.3)	304	(77.0)	295	(73.9)	184	(47.2)

2513 = Total number of retail meats tested for *Salmonella* and *Campylobacter*
616 = Chicken Breast, 642 = Ground Turkey, 642 = Ground Beef, 613 = Pork Chop
1574 = Total number of retail meats tested for *Enterococcus* and *Escherichia coli*
390 = Chicken Breast, 395 = Ground Turkey, 399 = Ground Beef, 390 = Pork Chop

2003	Chicken Breast		Ground Turkey		Ground Beef		Pork Chop	
Bacterium	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Campylobacter	469	(52.3)	5	(0.6)	1	(0.1)	4	(0.4)
Salmonella	83	(9.3)	114	(13.3)	10	(1.1)	5	(0.6)
Enterococcus	466	(97.7)	418	(93.5)	432	(91.9)	426	(88.9)
Escherichia coli	396	(83.0)	333	(74.5)	311	(66.2)	218	(45.5)

3533 = Total number of retail meats tested for *Salmonella* and *Campylobacter*
897 = Chicken Breast, 857 = Ground Turkey, 880 = Ground Beef, 899 = Pork Chop
1873 = Total number of retail meats tested for *Enterococcus* and *Escherichia coli*
477 = Chicken Breast, 447 = Ground Turkey, 470 = Ground Beef, 479 = Pork Chop

2004	Chicken Breast		Ground Turkey		Ground Beef		Pork Chop	
Bacterium	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Campylobacter	706	(60.2)	12	(1.0)	0	(0.0)	3	(0.3)
Salmonella	157	(13.4)	142	(12.2)	14	(1.2)	11	(0.9)
Enterococcus	466	(97.9)	437	(93.8)	448	(93.3)	404	(84.5)
Escherichia coli	400	(84.0)	376	(80.7)	338	(70.4)	232	(48.5)

4699 = Total number of retail meats tested for *Salmonella* and *Campylobacter*
1172 = Chicken Breast, 1165 = Ground Turkey, 1186 = Ground Beef, 1176 = Pork Chop
1900 = Total number of retail meats tested for *Enterococcus* and *Escherichia coli*
476 = Chicken Breast, 466 = Ground Turkey, 480 = Ground Beef, 478 = Pork Chop

2005	Chicken Breast		Ground Turkey		Ground Beef		Pork Chop	
Bacterium	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Campylobacter	554	(46.6)	20	(1.7)	0	(0.0)	2	(0.2)
Salmonella	153	(12.8)	183	(15.3)	8	(0.7)	9	(0.8)
Enterococcus	457	(97.2)	452	(96.2)	447	(95.1)	409	(87.0)
Escherichia coli	393	(84.0)	396	(84.3)	316	(67.5)	205	(44.1)

4777 = Total number of retail meats tested for *Campylobacter*
1190 = Chicken Breast, 1195 = Ground Turkey, 1196 = Ground Beef, 1196 = Pork Chop
4781 = Total number of retail meats tested for *Salmonella*
1194 = Chicken Breast, 1195 = Ground Turkey, 1196 = Ground Beef, 1196 = Pork Chop
1880 = Total number of retail meats tested for *Enterococcus*
470 = Chicken Breast, 470 = Ground Turkey, 470 = Ground Beef, 470 = Pork Chop
1871 = Total number of retail meats tested *Escherichia coli*
468 = Chicken Breast, 470 = Ground Turkey, 468 = Ground Beef, 465 = Pork Chop

2006	Chicken Breast		Ground Turkey		Ground Beef		Pork Chop	
Bacterium	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Campylobacter	572	(47.9)	24	(2.0)	0	(0.0)	3	(0.3)
Salmonella	152	(12.7)	159	(13.4)	19	(1.6)	8	(0.7)
Enterococcus	469	(98.1)	435	(93.5)	438	(91.6)	389	(82.4)
Escherichia coli	418	(88.0)	388	(83.3)	295	(62.6)	182	(38.6)

4766= Total number of retail meats tested for *Campylobacter*
1193= Chicken Breast, 1185 = Ground Turkey, 1196 = Ground Beef, 1192 = Pork Chop
4769 = Total number of retail meats tested for *Salmonella*
1196= Chicken Breast, 1185 = Ground Turkey, 1196 = Ground Beef, 1192= Pork Chop
1893 = Total number of retail meats tested for *Enterococcus*
478 = Chicken Breast, 465 = Ground Turkey, 478 = Ground Beef, 472= Pork Chop
1884 = Total number of retail meats tested *Escherichia coli*
475 = Chicken Breast, 466 = Ground Turkey, 471 = Ground Beef, 472 = Pork Chop

2007	Chicken Breast		Ground Turkey		Ground Beef		Pork Chop	
Bacterium	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Campylobacter	475	(44.4)	34	(3.2)	5	(0.5)	4	(0.4)
Salmonella	99	(9.2)	190	(17.8)	13	(1.2)	18	(1.7)
Enterococcus	342	(97.4)	341	(98.0)	336	(95.5)	313	(87.9)
Escherichia coli	299	(87.4)	315	(93.2)	256	(74.6)	152	(42.7)

4282= Total number of retail meats tested for *Campylobacter*
1070= Chicken Breast, 1065 = Ground Turkey, 1071 = Ground Beef, 1072 = Pork Chop
4282 = Total number of retail meats tested for *Salmonella*
1072= Chicken Breast, 1066 = Ground Turkey, 1071 = Ground Beef, 1073= Pork Chop
1407 = Total number of retail meats tested for *Enterococcus*
351 = Chicken Breast, 348 = Ground Turkey, 352 = Ground Beef, 356= Pork Chop
1379 = Total number of retail meats tested *Escherichia coli*
342 = Chicken Breast, 338 = Ground Turkey, 343 = Ground Beef, 356 = Pork Chop

n= # of isolates
Where %= # of isolates/# of samples per meat type

Figure 1. Percent Positive Samples for *Campylobacter* by Meat Type, All Sites, 2002-2007

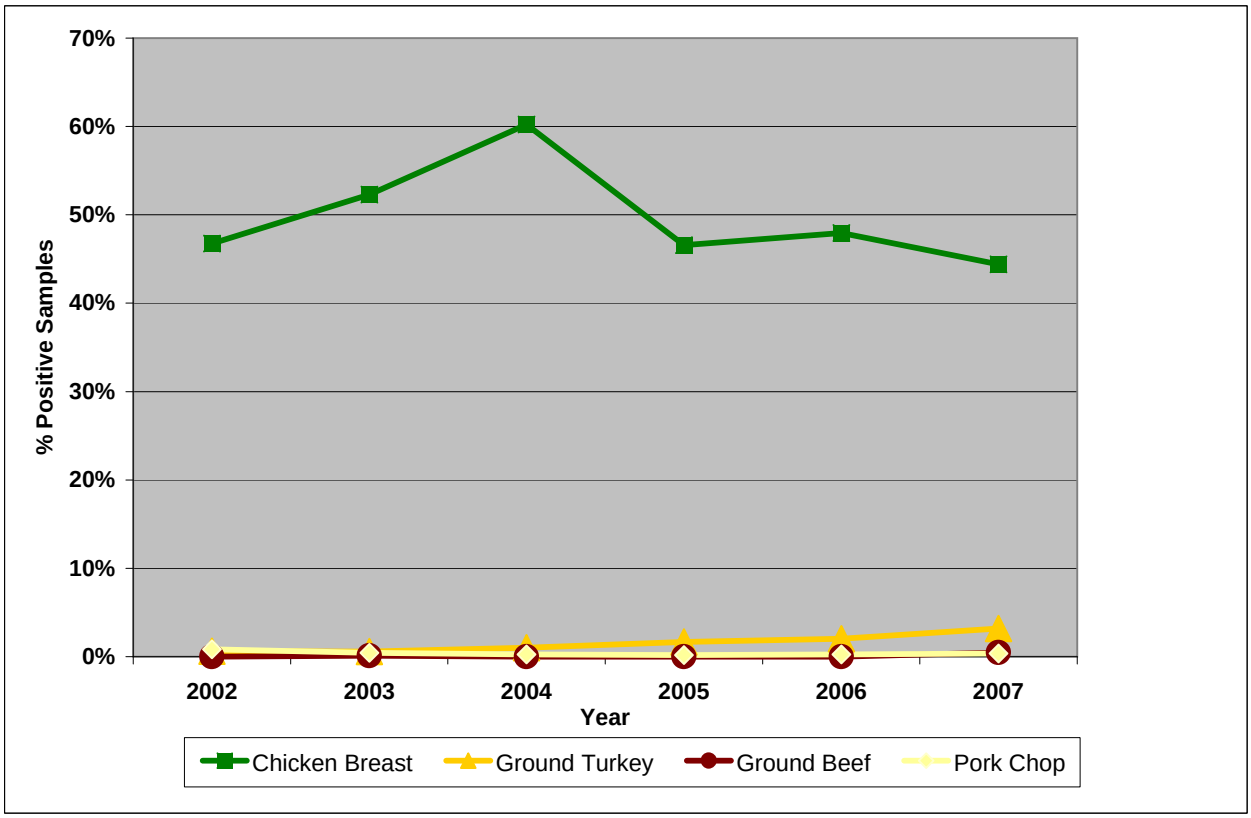


Figure 2. Percent Positive Samples for *Salmonella* by Meat Type, All Sites, 2002-2007

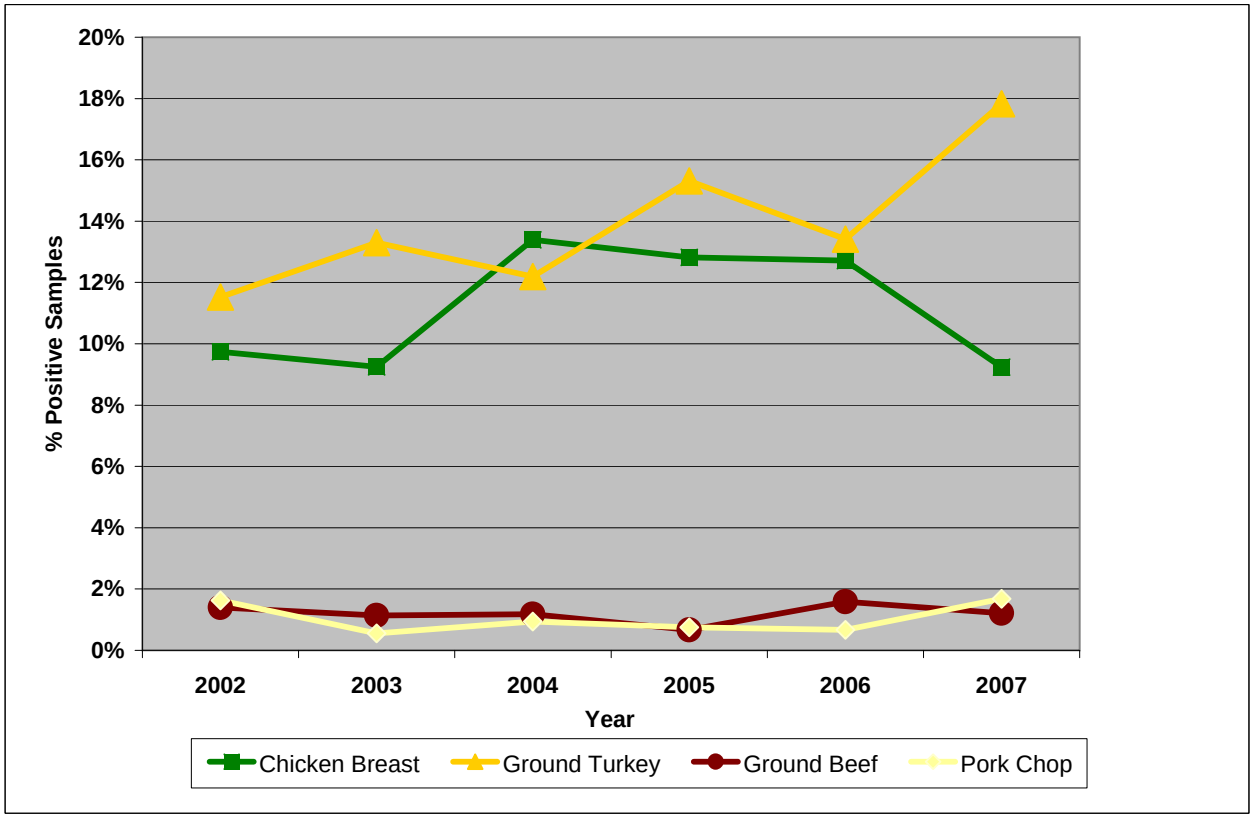


Table 4. Overall *Salmonella* Serotypes Identified, 2007

Serotype	n
1. Hadar	57
2. Heidelberg	55
3. Saintpaul	39
4. Typhimurium	32
5. Kentucky	25
6. Enteritidis	13
7. Montevideo	12
8. Reading	8
9. Schwarzengrund	7
10. Senftenberg	7
11. Agona	6
12. Infantis	6
13. Derby	5
14. Minnesota	5
15. Albany	4
16. Mbandaka	4
17. I 4,5,12:r:-	3
18. Muenchen	3
19. Anatum	2
20. Brandenburg	2
21. I 4,12:i:-	2
22. I 4,5,12:i:-	2
23. Muenster	2
24. Ohio	2
25. Oranienburg	2
26. Panama	2
27. Worthington	2
28. Berta	1
29. Blockley	1
30. Bredeney	1
31. Cerro	1
32. I 4,12:nonmotile	1
33. I 6,7:nonmotile	1
34. IIIa-:z4,z23:-	1
35. Litchfield	1
36. Livingstone	1
37. Tennessee	1
38. Thompson	1
Total	320

Table 5. *Salmonella* by Serotype and Meat Type, 2007

Serotype	Chicken Breast		Ground Turkey		Ground Beef		Pork Chop	
	n	%*	n	%	n	%	n	%
1. Hadar (n=57)	2	3.5%	54	94.7%			1	1.8%
2. Heidelberg (n=55)	14	25.5%	41	74.6%				
3. Saintpaul (n=39)	1	2.6%	36	92.3%	1	2.6%	1	2.6%
4. Typhimurium (n=32)	25	78.1%	1	3.1%	3	9.4%	3	9.4%
5. Kentucky (n=25)	23	92.0%	2	8.0%				
6. Enteritidis (n=13)	13	100.0%						
7. Montevideo (n=12)	6	50.0%	2	16.7%	3	25.0%	1	8.3%
8. Reading (n=8)			8	100.0%				
9. Schwarzengrund (n=7)			7	100.0%				
10. Senftenberg (n=7)	1	14.3%	6	85.7%				
11. Agona (n=6)	1	16.7%	5	83.3%				
12. Infantis (n=6)	1	16.7%					5	83.3%
13. Derby (n=5)			1	20.0%			4	80.0%
14. Minnesota (n=5)			5	100.0%				
15. Albany (n=4)			4	100.0%				
16. Mbandaka (n=4)	2	50.0%					2	50.0%
17. I 4,5,12:r:- (n=3)			3	100.0%				
18. Muenchen (n=3)			3	100.0%				
19. Anatum (n=2)			1	50.0%	1	50.0%		
20. Brandenburg (n=2)	1	50.0%	1	50.0%				
21. I 4,12:i:- (n=2)	1	50.0%			1	50.0%		
22. I 4,5,12:i:- (n=2)	1	50.0%			1	50.0%		
23. Muenster (n=2)					2	100.0%		
24. Ohio (n=2)			2	100.0%				
25. Oranienburg (n=2)	2	100.0%						
26. Panama (n=2)			2	100.0%				
27. Worthington (n=2)			2	100.0%				
28. Berta (n=1)			1	100.0%				
29. Blockley (n=1)	1	100.0%						
30. Bredeney (n=1)			1	100.0%				
31. Cerro (n=1)					1	100.0%		
32. I 4,12:nonmotile (n=1)	1	100.0%						
33. I 6,7:nonmotile (n=1)							1	100.0%
34. IIIa-:z4,z23:- (n=1)			1	100.0%				
35. Litchfield (n=1)			1	100.0%				
36. Livingstone (n=1)	1	100.0%						
37. Tennessee (n=1)	1	100.0%						
38. Thompson (n=1)	1	100.0%						
Total (N)	**99**	**30.9%**	**190**	**59.4%**	**13**	**4.1%**	**18**	**5.6%**

* Where % = # isolates per serotype per meat (n) / (total # isolates per serotype).

Figure 3a. Antimicrobial Resistance among *Salmonella* from Chicken Breast, 2002-2007

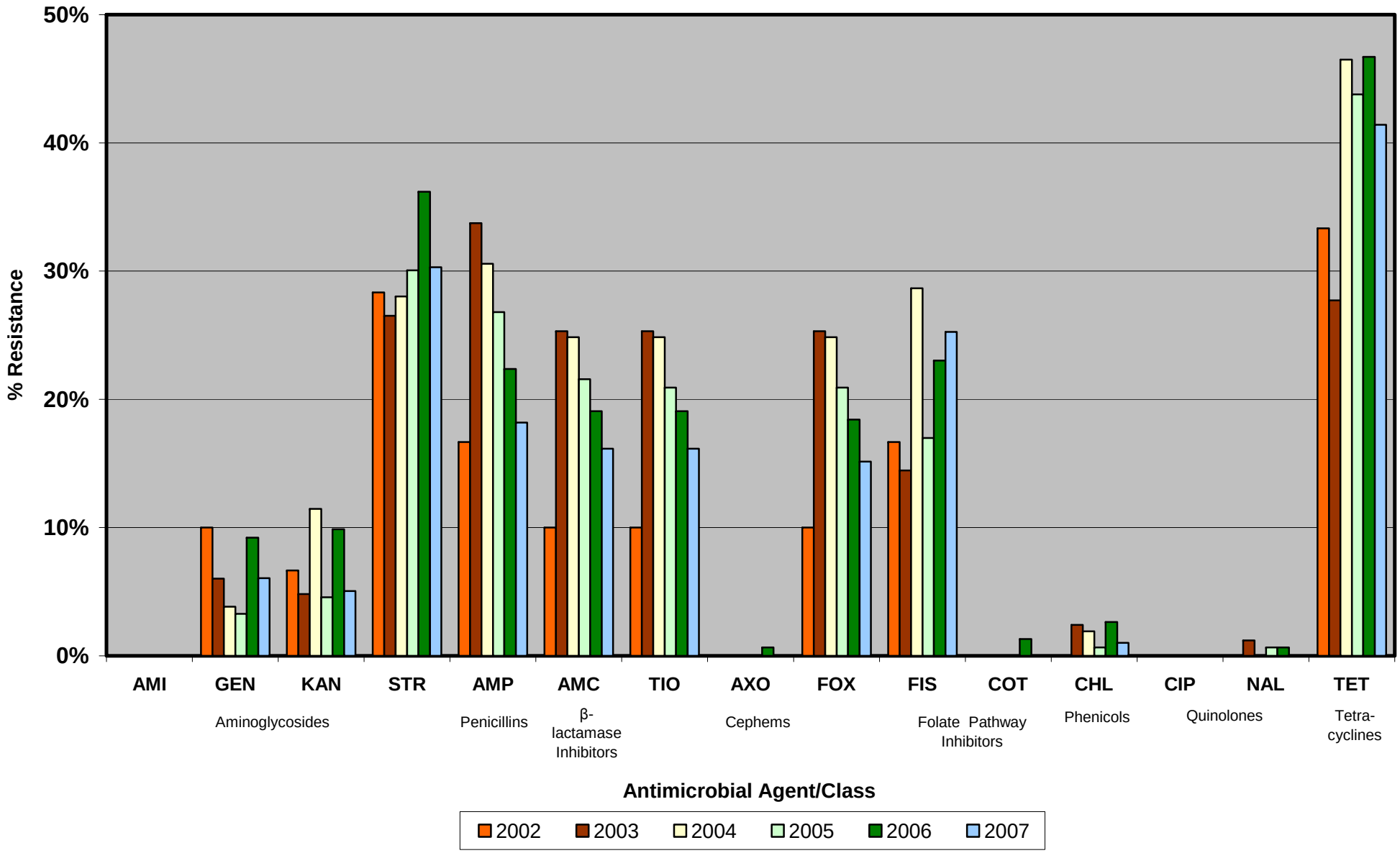


Table 6a. Trends in Resistance among *Salmonella* Isolates from Chicken Breast, 2002-2007

Class or Subclass	Antimicrobial/ Resistance Breakpoint (µg/ml)	2002 (N=60)		2003 (N=83)		2004 (N=157)		2005 (N=153)		2006 (N=152)		2007 (N=99)		Cochran-Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P value[3]
Aminoglycosides	AMI (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN (MIC≥ 16)	6	10.0%	5	6.0%	6	3.8%	5	3.3%	14	9.2%	6	6.1%	0.1212	0.9035
	KAN (MIC≥ 64)	4	6.7%	4	4.8%	18	11.5%	7	4.6%	15	9.9%	5	5.1%	0.1429	0.8864
	STR (MIC≥ 64)	17	28.3%	22	26.5%	44	28.0%	46	30.1%	55	36.2%	30	30.3%	1.2455	0.2130
Aminopenicillins	AMP (MIC≥ 32)	10	16.7%	28	33.7%	48	30.6%	41	26.8%	34	22.4%	18	18.2%	1.4670	0.1424
Beta-lactamase Inhibitor combinations	AMC (MIC≥ 32)	6	10.0%	21	25.3%	39	24.8%	33	21.6%	29	19.1%	16	16.2%	0.4230	0.6723
Cephalosporins (3^{rd} Gen)	TIO (MIC≥8)	6	10.0%	21	25.3%	39	24.8%	32	20.9%	29	19.1%	16	16.2%	0.4379	0.6615
	AXO (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.7%	0	0.0%	0.8226	0.4107
Cephamycins	FOX (MIC≥ 32)	6	10.0%	21	25.3%	39	24.8%	32	20.9%	28	18.4%	15	15.2%	0.6586	0.5101
Folate Pathway Inhibitors	FIS (MIC≥ 512)[4]	10	16.7%	12	14.5%	45	28.7%	26	17.0%	35	23.0%	25	25.3%	1.1880	0.2348
	COT (MIC≥ 4)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	1.3%	0	0.0%	1.1642	0.2443
Phenicols	CHL (MIC≥ 32)	0	0.0%	2	2.4%	3	1.9%	1	0.7%	4	2.6%	1	1.0%	0.2854	0.7753
Quinolones	CIP (MIC≥ 4)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	NAL (MIC≥ 32)	0	0.0%	1	1.2%	0	0.0%	1	0.7%	1	0.7%	0	0.0%	0.1360	0.8918
Tetracycline	TET (MIC≥ 16)	20	33.3%	23	27.7%	73	46.5%	67	43.8%	71	46.7%	41	41.4%	1.9660	0.0493

[1] Where % R = the number of resistance isolates (n)/ the number of positive isolates (N).
[2] N/A= No Z Statistic or P value could be calculated to this antibiotic.
[3] P value for percent resistant trend was calculated using the Cochran-Armitage Trend Test method.
[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004

Figure 3b. Antimicrobial Resistance among *Salmonella* from Ground Turkey, 2002-2007

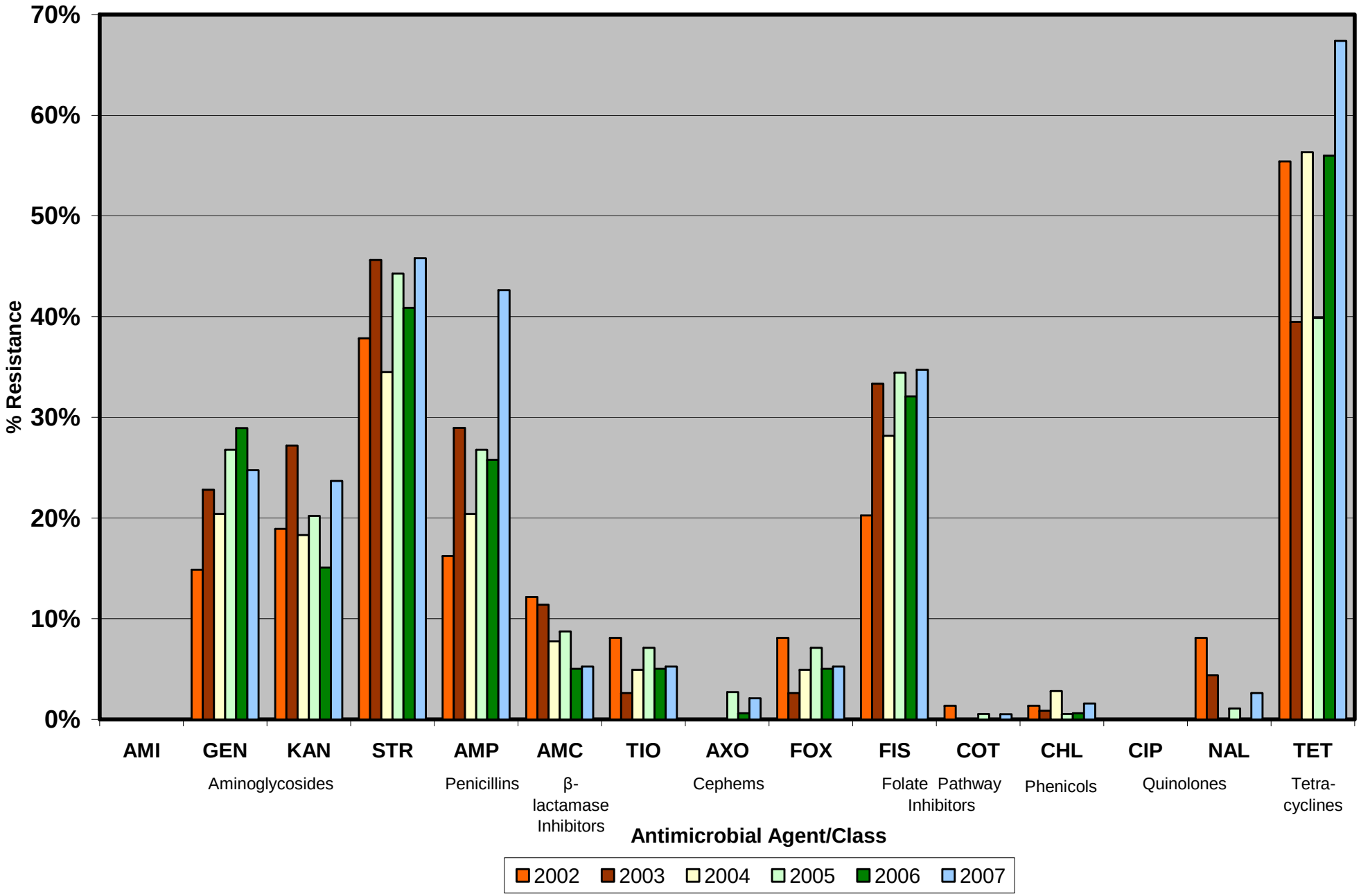


Table 6b. Trends in Resistance among *Salmonella* Isolates from Ground Turkey, 2002- 2007

Class or Subclass	Antimicrobial/ Resistance Breakpoint (µg/ml)	2002 (N=74)		2003 (N=114)		2004 (N=142)		2005 (N=183)		2006 (N=159)		2007 (N=190)		Cochran-Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P value[3]
Aminoglycosides	AMI (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN (MIC≥ 16)	11	14.9%	26	22.8%	29	20.4%	49	26.8%	46	28.9%	47	24.7%	1.9417	0.0522
	KAN (MIC≥ 64)	14	18.9%	31	27.2%	26	18.3%	37	20.2%	24	15.1%	45	23.7%	0.2713	0.7861
	STR (MIC≥ 64)	28	37.8%	52	45.6%	49	34.5%	81	44.3%	65	40.9%	87	45.8%	1.0527	0.2925
Aminopenicillins	AMP (MIC≥ 32)	12	16.2%	33	28.9%	29	20.4%	49	26.8%	41	25.8%	81	42.6%	4.1344	<0.0001
Beta-lactamase Inhibitor combinations	AMC (MIC≥ 32)	9	12.2%	13	11.4%	11	7.7%	16	8.7%	8	5.0%	10	5.3%	2.5504	0.0108
Cephalosporins (3rd Gen)	TIO (MIC≥8)	6	8.1%	3	2.6%	7	4.9%	13	7.1%	8	5.0%	10	5.3%	0.0104	0.9917
	AXO (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	5	2.7%	1	0.6%	4	2.1%	1.9232	0.0545
Cephamycins	FOX (MIC≥ 32)	6	8.1%	3	2.6%	7	4.9%	13	7.1%	8	5.0%	10	5.3%	0.0104	0.9917
Folate Pathway Inhibitors	FIS (MIC≥ 512)[4]	15	20.3%	38	33.3%	40	28.2%	63	34.4%	51	32.1%	66	34.7%	1.7858	0.0741
	COT (MIC≥ 4)	1	1.4%	0	0.0%	0	0.0%	1	0.5%	0	0.0%	1	0.5%	0.2966	0.7668
Phenicols	CHL (MIC≥ 32)	1	1.4%	1	0.9%	4	2.8%	1	0.5%	1	0.6%	3	1.6%	0.2526	0.8006
Quinolones	CIP (MIC≥ 4)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	NAL (MIC≥ 32)	6	8.1%	5	4.4%	0	0.0%	2	1.1%	0	0.0%	5	2.6%	2.5305	0.0114
Tetracycline	TET (MIC≥ 16)	41	55.4%	45	39.5%	80	56.3%	73	39.9%	89	56.0%	128	67.4%	3.4344	0.0006

[1] Where % R = the number of resistance isolates (n)/ the number of positive isolates (N).
[2] N/A= No Z Statistic or P value could be calculated to this antibiotic.
[3] P value for percent resistant trend was calculated using the Cochran-Armitage Trend Test method.
[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004

Figure 3c. Antimicrobial Resistance among *Salmonella* from Ground Beef, 2002-2007

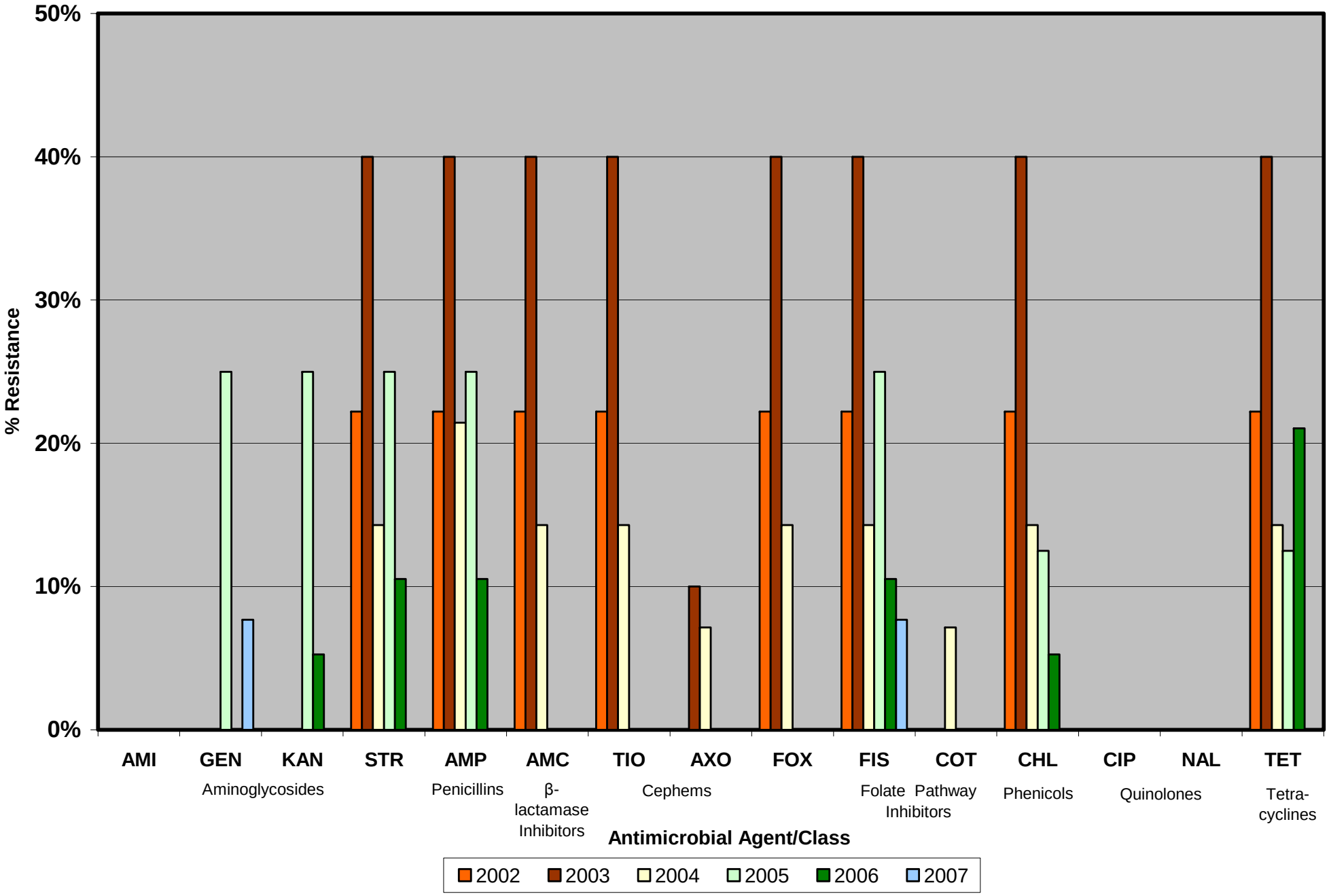


Table 6c. Trends in Resistance among *Salmonella* Isolates from Ground Beef, 2002-2007

Class or Subclass	Antimicrobial/ Resistance Breakpoint (µg/ml)	2002 (N=9)		2003 (N=10)		2004 (N=14)		2005 (N=8)		2006 (N=19)		2007 (N=13)		Cochran-Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P value[3]
Aminoglycosides	AMI (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN (MIC≥ 16)	0	0.0%	0	0.0%	0	0.0%	2	25.0%	0	0.0%	1	7.7%	0.9408	0.3468
	KAN (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	2	25.0%	1	5.3%	0	0.0%	0.5868	0.5574
	STR (MIC≥ 64)	2	22.2%	4	40.0%	2	14.3%	2	25.0%	2	10.5%	0	0.0%	2.1558	0.0311
Aminopenicillins	AMP (MIC≥ 32)	2	22.2%	4	40.0%	3	21.4%	2	25.0%	2	10.5%	0	0.0%	2.2319	0.0256
Beta-lactamase Inhibitor combinations	AMC (MIC≥ 32)	2	22.2%	4	40.0%	2	14.3%	0	0.0%	0	0.0%	0	0.0%	3.2050	0.0014
Cephalosporins (3rd Gen)	TIO (MIC≥8)	2	22.2%	4	40.0%	2	14.3%	0	0.0%	0	0.0%	0	0.0%	3.2050	0.0014
	AXO (MIC≥ 64)	0	0.0%	1	10.0%	1	7.1%	0	0.0%	0	0.0%	0	0.0%	1.1028	0.2701
Cephamycins	FOX (MIC≥ 32)	2	22.2%	4	40.0%	2	14.3%	0	0.0%	0	0.0%	0	0.0%	3.2050	0.0014
Folate Pathway Inhibitors	FIS (MIC≥ 512)[4]	2	22.2%	4	40.0%	2	14.3%	2	25.0%	2	10.5%	1	7.7%	1.6808	0.0928
	COT (MIC≥ 4)	0	0.0%	0	0.0%	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0.4721	0.6369
Phenicols	CHL (MIC≥ 32)	2	22.2%	4	40.0%	2	14.3%	1	12.5%	1	5.3%	0	0.0%	2.6178	0.0088
Quinolones	CIP (MIC≥ 4)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	NAL (MIC≥ 32)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
Tetracycline	TET (MIC≥ 16)	2	22.2%	4	40.0%	2	14.3%	1	12.5%	4	21.1%	0	0.0%	1.6808	0.0928

[1] Where % R = the number of resistance isolates (n)/ the number of positive isolates (N).
[2] N/A= No Z Statistic or P value could be calculated to this antibiotic.
[3] P value for percent resistant trend was calculated using the Cochran-Armitage Trend Test method.
[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004

Figure 3d. Antimicrobial Resistance among *Salmonella* from Pork Chop, 2002-2007

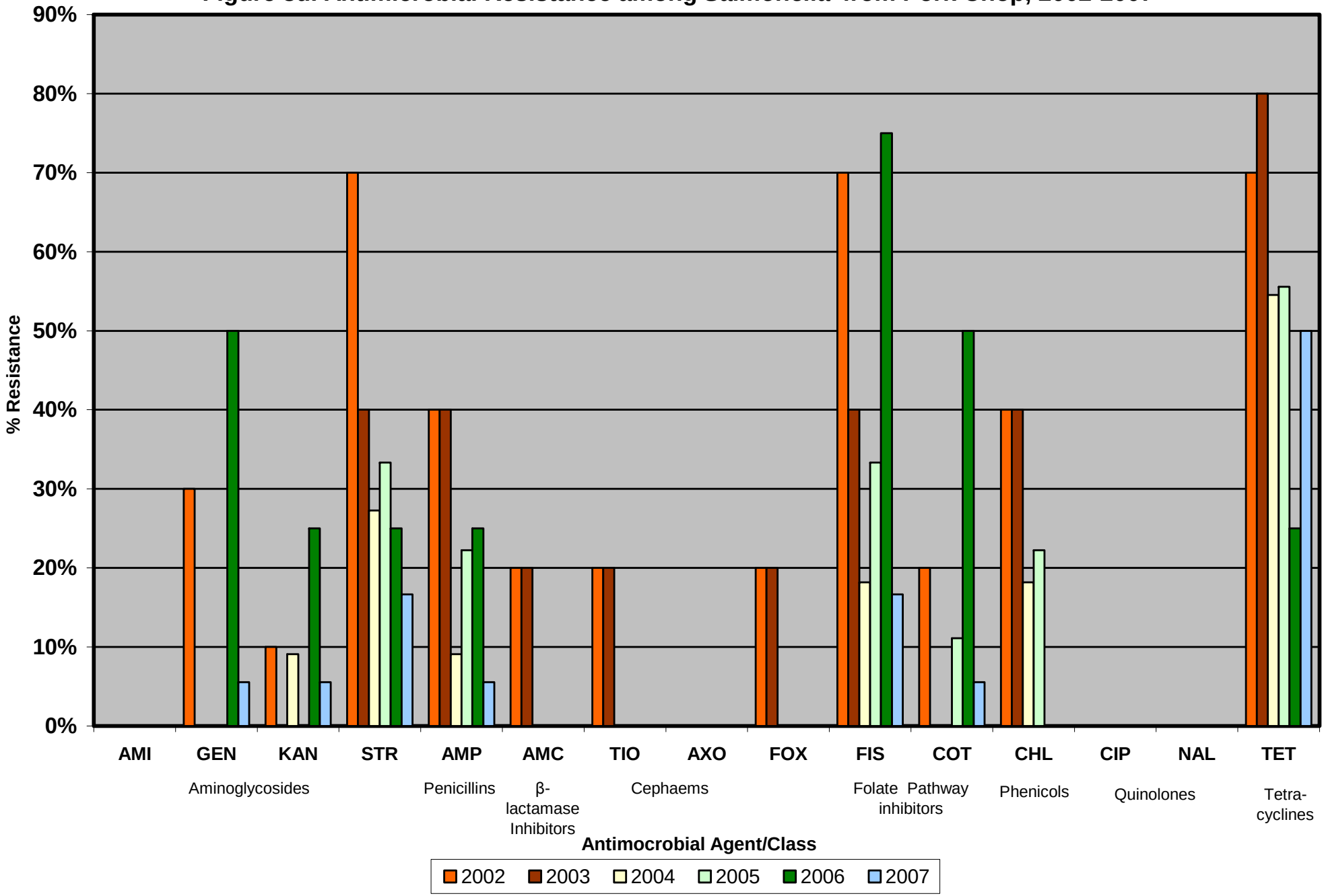


Table 6d. Trends in Resistance among *Salmonella* Isolates from Pork Chop, 2002-2007

Class or Subclass	Antimicrobial/ Resistance Breakpoint (µg/ml)	2002 (N=10)		2003 (N=5)		2004 (N=11)		2005 (N=9)		2006 (N=8)		2007 (N=18)		Cochran-Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P value[3]
Aminoglycosides	AMI (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN (MIC≥ 16)	3	30.0%	0	0.0%	0	0.0%	0	0.0%	4	50.0%	1	5.6%	0.4359	0.6629
	KAN (MIC≥ 64)	1	10.0%	0	0.0%	1	9.1%	0	0.0%	2	25.0%	1	5.6%	0.1478	0.8825
	STR (MIC≥ 64)	7	70.0%	2	40.0%	3	27.3%	3	33.3%	2	25.0%	3	16.7%	2.6656	0.0077
Aminopenicillins	AMP (MIC≥ 32)	4	40.0%	2	40.0%	1	9.1%	2	22.2%	2	25.0%	1	5.6%	2.0665	0.0388
Beta-lactamase Inhibitor combinations	AMC (MIC≥ 32)	2	20.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2.5022	0.0123
Cephalosporins (3rd Gen)	TIO (MIC≥8)	2	20.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2.5022	0.0123
	AXO (MIC≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
Cephamycins	FOX (MIC≥ 32)	2	20.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2.5022	0.0123
Folate Pathway Inhibitors	FIS (MIC≥ 512)[4]	7	70.0%	2	40.0%	2	18.2%	3	33.3%	6	75.0%	3	16.7%	1.8025	0.0715
	COT (MIC≥ 4)	2	20.0%	0	0.0%	0	0.0%	1	11.1%	4	50.0%	1	5.6%	0.1922	0.8476
Phenicols	CHL (MIC≥ 32)	4	40.0%	2	40.0%	2	18.2%	2	22.2%	0	0.0%	0	0.0%	3.2172	0.0013
Quinolones	CIP (MIC≥ 4)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	NAL (MIC≥ 32)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
Tetracycline	TET (MIC≥ 16)	7	70.0%	4	80.0%	6	54.5%	5	55.6%	2	25.0%	9	50.0%	1.5903	0.1118

[1] Where % R = the number of resistance isolates (n)/ the number of positive isolates (N).
[2] N/A= No Z Statistic or P value could be calculated to this antibiotic.
[3] P value for percent resistant trend was calculated using the Cochran-Armitage Trend Test method.
[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004

Table 7. Antimicrobial Resistance[1] among *Salmonella* by Top 6 Serotypes within Meat Type, 2007

Meat Type	Serotype	Antimicrobial Agent Class														
		Aminoglycosides				Penicillins	β-lactamase inhibitors	Cephems			Folate Pathway inhibitors		Phenicols	Quinolones		Tetra-cyclines
		AMI	GEN	KAN	STR	AMP	AMC	TIO	AXO	FOX	FIS	COT	CHL	CIP	NAL	TET
Chicken Breast	***Typhimurium* (n=25)**	-	-	12.0%	28.0%	48.0%	44.0%	44.0%	-	40.0%	68.0%	-	-	-	-	72.0%
	***Kentucky* (n=23)**	-	-	4.3%	60.9%	8.7%	8.7%	8.7%	-	8.7%	4.3%	-	-	-	-	73.9%
	***Heidelberg* (n=14)**	-	7.1%	7.1%	21.4%	21.4%	21.4%	21.4%	-	21.4%	7.1%	-	7.1%	-	-	7.1%
	***Enteritidis* (n=13)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	***Montevideo* (n=6)**	-	50.0%	-	50.0%	-	-	-	-	-	50.0%	-	-	-	-	-
	***Hadar* (n=2)**	-	-	-	100.0%	-	-	-	-	-	-	-	-	-	-	100.0%
Ground Turkey	***Hadar* (n=54)**	-	22.2%	14.8%	81.5%	50.0%	-	-	-	-	29.6%	1.9%	-	-	3.7%	92.6%
	***Heidelberg* (n=41)**	-	24.4%	56.1%	39.0%	53.7%	9.8%	9.8%	-	9.8%	26.8%	-	-	-	-	70.7%
	***Saintpaul* (n=36)**	-	22.2%	13.9%	27.8%	44.4%	2.8%	2.8%	2.8%	2.8%	36.1%	-	-	-	-	61.1%
	***Reading* (n=8)**	-	-	-	-	37.5%	25.0%	25.0%	25.0%	25.0%	-	-	-	-	-	12.5%
	***Schwarzengrund* (n=7)**	-	-	-	-	-	-	-	-	-	14.3%	-	-	-	-	14.3%
	***Seftenberg* (n=6)**	-	83.3%	50.0%	50.0%	83.3%	33.3%	33.3%	16.7%	33.3%	50.0%	-	33.3%	-	-	50.0%
Ground Beef	***Typhimurium* (n=3)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	***Montevideo* (n=3)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	***Muenster* (n=2)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	***Saintpaul* (n=1)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	***Anatum* (n=1)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	***I 4,12:i:-* (n=1)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pork Chop	***Infantis* (n=5)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	***Derby* (n=4)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%
	***Typhimurium* (n=3)**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7%
	***Mbandaka* (n=2)**	-	-	-	-	-	-	-	-	-	50.0%	50.0%	-	-	-	50.0%
	***Hadar* (n=1)**	-	-	100.0%	100.0%	-	-	-	-	-	-	-	-	-	-	100.0%
	***Saintpaul* (n=1)**	-	-	-	100.0%	100.0%	-	-	-	-	100.0%	-	-	-	-	100.0%

[1] Where % Resistance= (# isolates per serotype resistant to antimicrobial) / (total # isolates per serotype).

Table 8. Multidrug Resistance Patterns among *Salmonella* Isolates by Year, 2002-2007

Year		2002	2003	2004	2005	2006	2007
Number of Isolates Tested	**Chicken Breast**	60	83	157	153	152	99
	Ground Turkey	74	114	142	183	159	190
	Ground Beef	9	10	14	8	19	13
	Pork Chop	10	5	11	9	8	18
Resistance Pattern	**Isolate Source**						
1. No Resistance Detected	**Chicken Breast**	51.7% 31	47.0% 39	40.1% 63	46.4% 71	38.8% 59	47.5% 47
	Ground Turkey	37.8% 28	34.2% 39	28.9% 41	30.1% 55	17.6% 28	15.3% 29
	Ground Beef	77.8% 7	60.0% 6	78.6% 11	75.0% 6	73.7% 14	92.3% 12
	Pork Chop	20.0% 2	20.0% 1	45.5% 5	44.4% 4	25.0% 2	44.4% 8
2. At Least ACSSuT[1] Resistant	**Chicken Breast**	0.0% 0	2.4% 2	1.9% 3	0.7% 1	2.6% 4	0.0% 0
	Ground Turkey	1.4% 1	0.9% 1	2.8% 4	0.5% 1	0.6% 1	1.6% 3
	Ground Beef	22.2% 2	40.0% 4	14.3% 2	12.5% 1	5.3% 1	0.0% 0
	Pork Chop	40.0% 4	40.0% 2	9.1% 1	22.2% 2	0.0% 0	0.0% 0
3. At Least ACT/S[2] Resistant	**Chicken Breast**	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0
	Ground Turkey	1.4% 1	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0
	Ground Beef	0.0% 0	0.0% 0	7.4% 1	0.0% 0	0.0% 0	0.0% 0
	Pork Chop	20.0% 2	0.0% 0	0.0% 0	11.1% 1	0.0% 0	0.0% 0
4. At Least ACSSuTAuCf[3] Resistant	**Chicken Breast**	0.0% 0	0.0% 0	1.9% 3	0.0% 0	2.6% 4	0.0% 0
	Ground Turkey	1.4% 1	0.9% 1	2.1% 3	0.5% 1	0.0% 0	1.1% 2
	Ground Beef	22.2% 2	40.0% 4	14.3% 2	0.0% 0	0.0% 0	0.0% 0
	Pork Chop	20.0% 2	20.0% 1	0.0% 0	0.0% 0	0.0% 0	0.0% 0
5. At Least Ceftiofur and Nalidixic Acid Resistant	**Chicken Breast**	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0
	Ground Turkey	0.0% 0	0.9% 1	0.0% 0	0.0% 0	0.0% 0	0.5% 1
	Ground Beef	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0
	Pork Chop	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0

[1] ACSSuT = ampicillin, chloramphenicol, streptomycin, sulfamethoxazole/sulfisoxazole, and tetracycline.
[2] ACT/S = ampicillin, chloramphenicol, and trimethoprim-sulfamethoxazole.
[3] ACSSuTAuCf = ACSSuT, amoxicillin-clavulanic acid, and ceftiofur.

Table 9a. MIC Distribution among *Salmonella* from Chicken Breast

Antimicrobial	Year (# 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	2002 (n=60)	0.0%	0.0%	(0.0 - 6.0)						6.7	58.3	30.0	5.0								
	2003 (n=83)	0.0%	0.0%	(0.0 - 4.3)						8.4	47.0	41.0	3.6								
	2004 (n=157)	0.0%	0.0%	(0.0 - 2.3)						7.6	46.5	40.1	5.7								
	2005 (n=153)	0.0%	0.0%	(0.0 - 2.4)						7.2	69.3	20.3	3.3								
	2006 (n=152)	0.0%	0.0%	(0.0 - 2.4)						1.3	44.1	44.1	10.5								
	2007 (n=99)	0.0%	0.0%	(0.0 - 3.7)						9.1	42.4	45.5	2.0	1.0							
Gentamicin	2002 (n=60)	0.0%	10.0%	(3.8 - 20.5)					36.7	48.3	5.0				**1.7**	**8.3**					
	2003 (n=83)	1.2%	6.0%	(2.0 - 13.5)					33.7	54.2	4.8			1.2	**2.4**	**3.6**					
	2004 (n=157)	0.6%	3.8%	(1.4 - 8.1)					46.5	45.2	3.8			0.6	**1.9**	**1.9**					
	2005 (n=153)	0.0%	3.3%	(1.1 - 7.5)					64.7	30.1	2.0				**0.7**	**2.6**					
	2006 (n=152)	1.3%	9.2%	(5.1 - 15.0)					42.1	46.1	1.3			1.3		**9.2**					
	2007 (n=99)	1.0%	6.1%	(2.3 - 12.7)					52.5	35.4	4.0	1.0		1.0	**2.0**	**4.0**					
Kanamycin	2002 (n=60)	0.0%	6.7%	(1.8 - 16.2)										91.7	1.7			**6.7**			
	2003 (n=83)	1.2%	4.8%	(1.3 - 11.9)										94.0		1.2		**4.8**			
	2004 (n=157)	0.6%	11.5%	(6.9 - 17.5)										84.7	3.2	0.6		**11.5**			
	2005 (n=153)	0.0%	4.6%	(1.9 - 9.2)										95.4				**4.6**			
	2006 (n=152)	0.0%	9.9%	(5.6 - 15.8)										88.8	1.3			**9.9**			
	2007 (n=99)	0.0%	5.1%	(1.7 - 11.4)										91.9	3.0			**5.1**			
Streptomycin	2002 (n=60)	0.0%	28.3%	(17.5 - 41.4)												71.7	**10.0**	**18.3**			
	2003 (n=83)	0.0%	26.5%	(17.4 - 37.3)												73.5	**14.5**	**12.0**			
	2004 (n=157)	0.0%	28.0%	(21.2 - 35.7)												72.0	**16.6**	**11.5**			
	2005 (n=153)	0.0%	30.1%	(22.9 - 38.0)												69.9	**21.6**	**8.5**			
	2006 (n=152)	0.0%	36.2%	(28.6 - 44.4)												63.8	**23.0**	**13.2**			
	2007 (n=99)	0.0%	30.3%	(21.5 - 40.4)												69.7	**21.2**	**9.1**			
Aminopenicillins																					
Ampicillin	2002 (n=60)	0.0%	16.7%	(8.3 - 28.5)							53.3	30.0					**16.7**				
	2003 (n=83)	0.0%	33.7%	(23.7 - 44.9)							43.4	22.9					**33.7**				
	2004 (n=157)	0.0%	30.6%	(23.5 - 38.4)							60.5	8.9					**30.6**				
	2005 (n=153)	0.0%	26.8%	(20.0 - 34.5)							69.3	3.3	0.7				**26.8**				
	2006 (n=152)	0.0%	22.4%	(16.0 - 29.8)							74.3	2.6	0.7				**22.4**				
	2007 (n=99)	0.0%	18.2%	(11.1 - 27.2)							68.7	12.1	1.0				**18.2**				
β-Lactam/β-Lactamase Inhibitor combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=60)	1.7%	10.0%	(3.8 - 20.5)							76.7	6.7		5.0	1.7		**10.0**				
	2003 (n=83)	6.0%	25.3%	(16.4 - 36.0)							65.1	1.2		2.4	6.0		**25.3**				
	2004 (n=157)	1.3%	24.8%	(18.3 - 32.4)							61.8	7.6		4.5	1.3		**24.8**				
	2005 (n=153)	3.9%	21.6%	(15.3 - 28.9)							70.6	2.0		2.0	3.9	**2.0**	**19.6**				
	2006 (n=152)	0.7%	19.1%	(13.2 - 26.2)							75.7	1.3	0.7	2.6	0.7	**0.7**	**18.4**				
	2007 (n=99)	1.0%	16.2%	(9.5 - 24.9)							77.8	3.0	1.0	1.0	1.0	**1.0**	**15.2**				
Cephalosporins																					
Ceftiofur	2002 (n=60)	0.0%	10.0%	(3.8 - 20.5)					1.7	71.7	16.7	0.0			**10.0**						
	2003 (n=83)	0.0%	25.3%	(16.4 - 36.0)						51.8	21.7	1.2			**25.3**						
	2004 (n=157)	0.0%	24.8%	(18.3 - 32.4)					0.6	47.1	27.4				**24.8**						
	2005 (n=153)	0.0%	20.9%	(14.8 - 28.2)					2.6	61.4	15.0	0.0			**20.9**						
	2006 (n=152)	0.0%	19.1%	(13.2 - 26.2)						17.8	62.5	0.7		**0.7**	**18.4**						
	2007 (n=99)	0.0%	16.2%	(9.5 - 24.9)						22.2	58.6	3.0		**1.0**	**15.2**						
Ceftriaxone	2002 (n=60)	5.0%	0.0%	(0.0 - 6.0)					90.0					5.0	3.3	1.7					
	2003 (n=83)	24.1%	0.0%	(0.0 - 4.3)					73.5				1.2	1.2	16.9	7.2					
	2004 (n=157)	22.9%	0.0%	(0.0 - 2.3)					75.2					1.9	18.5	4.5					
	2005 (n=153)	19.6%	0.0%	(0.0 - 2.4)					77.8	0.7				2.0	17.0	2.6					
	2006 (n=152)	17.1%	0.7%	(0.0 - 3.6)					80.9				0.7	0.7	13.8	3.3	**0.7**				
	2007 (n=99)	14.1%	0.0%	(0.0 - 3.7)					83.8					2.0	10.1	4.0					

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance.

Table 9a. MIC Distribution among *Salmonella* from Chicken Breast continued

Antimicrobial	Year (# 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	2002 (n=60)	0.0%	10.0%	(3.8 - 20.5)								60.2	13.3	1.2		**25.3**					
	2003 (n=83)	0.0%	25.3%	(16.4 - 36.0)								60.2	13.3	1.2		**25.3**					
	2004 (n=157)	0.0%	24.8%	(18.3 - 32.4)							2.5	56.7	14.6	1.3		**5.7**	**19.1**				
	2005 (n=153)	0.7%	20.9%	(14.8 - 28.2)							25.5	48.4	4.6	0.0	0.7	**11.1**	**9.8**				
	2006 (n=152)	0.7%	18.4%	(12.6 - 25.5)								58.6	21.1	1.3	0.7	**6.6**	**11.8**				
	2007 (n=99)	2.0%	15.2%	(8.7 - 23.8)							3.0	55.6	22.2	2.0	2.0	**3.0**	**12.1**				
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=60)	0.0%	16.7%	(8.3 - 28.5)											38.3	31.7	13.3				**16.7**
	2003 (n=83)	0.0%	14.5%	(7.7 - 23.9)											32.5	33.7	15.7	3.6			**14.5**
Sulfisoxazole	2004 (n=157)	0.0%	28.7%	(21.7 - 36.4)											12.1	14.6	43.3	1.3		**28.7**	
	2005 (n=153)	0.0%	17.0%	(11.4 - 23.9)											11.1	28.1	41.8	2.0		**17.0**	
	2006 (n=152)	0.0%	23.0%	(16.6 - 30.5)											5.3	16.4	53.9	1.3		**23.0**	
	2007 (n=99)	0.0%	25.3%	(17.1 - 35.0)											13.1	20.2	31.3	10.1		**25.3**	
Trimethoprim-Sulfamethoxazole	2002 (n=60)	0.0%	0.0%	(0.0 - 6.0)				98.3	1.7												
	2003 (n=83)	0.0%	0.0%	(0.0 - 4.3)				97.6	2.4												
	2004 (n=157)	0.0%	0.0%	(0.0 - 2.3)				96.8	3.2												
	2005 (n=153)	0.0%	0.0%	(0.0 - 2.4)				98.7	1.3												
	2006 (n=152)	0.0%	1.3%	(0.2 - 4.7)				94.7	3.3	0.7				**1.3**							
	2007 (n=99)	0.0%	0.0%	(0.0 - 3.7)				84.8	15.2												
Phenicols																					
Chloramphenicol	2002 (n=60)	0.0%	0.0%	(0.0 - 6.0)								1.7	68.3	30.0							
	2003 (n=83)	0.0%	2.4%	(0.3 - 8.4)									32.5	65.1			**2.4**				
	2004 (n=157)	0.6%	1.9%	(0.4 - 5.5)								2.5	14.6	80.3	0.6		**1.9**				
	2005 (n=153)	0.0%	0.7%	(0.0 - 3.6)								1.3	65.4	32.7			**0.7**				
	2006 (n=152)	0.7%	2.6%	(0.7 - 6.6)								0.7	32.9	63.2	0.7		**2.6**				
	2007 (n=99)	5.1%	1.0%	(0.0 - 5.5)									28.3	65.7	5.1	1.0					
Quinolones																					
Ciprofloxacin	2002 (n=60)	0.0%	0.0%	(0.0 - 6.0)	90.0	10.0															
	2003 (n=83)	0.0%	0.0%	(0.0 - 4.3)	83.1	14.5	1.2		1.2												
	2004 (n=157)	0.0%	0.0%	(0.0 - 2.3)	96.2	3.8															
	2005 (n=153)	0.0%	0.0%	(0.0 - 2.4)	88.2	11.1		0.7													
	2006 (n=152)	0.0%	0.0%	(0.0 - 2.4)	68.4	30.9			0.7												
	2007 (n=99)	0.0%	0.0%	(0.0 - 3.7)	85.9	14.1															
Nalidixic Acid	2002 (n=60)	0.0%	0.0%	(0.0 - 6.0)									68.3	31.7							
	2003 (n=83)	0.0%	1.2%	(0.0 - 6.5)							1.2	1.2	84.3	12.0			**1.2**				
	2004 (n=157)	0.0%	0.0%	(0.0 - 2.3)								12.1	82.8	5.1							
	2005 (n=153)	0.0%	0.0%	(0.0 - 2.3)							0.7	27.5	69.3	1.3	0.7	0.7					
	2006 (n=152)	0.0%	0.7%	(0.0 - 3.6)								25.0	71.1	3.3			**0.7**				
	2007 (n=99)	0.0%	0.0%	(0.0 - 3.7)								33.3	62.6	4.0							
Tetracyclines																					
Tetracycline	2002 (n=60)	1.7%	33.3%	(21.7 - 46.7)									65.0	1.7			**33.3**				
	2003 (n=83)	0.0%	27.7%	(18.4 - 38.6)									72.3			**1.2**	**26.5**				
	2004 (n=157)	0.6%	46.5%	(38.5 - 54.6)									52.9	0.6			**46.5**				
	2005 (n=153)	0.0%	43.8%	(35.8 - 52.0)									56.2			**0.7**	**43.1**				
	2006 (n=152)	0.0%	46.7%	(38.6 - 55.0)									53.3			**1.3**	**45.4**				
	2007 (n=99)	0.0%	41.4%	(31.6 - 51.8)									58.6				**41.4**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance.

Table 9b. MIC Distribution among *Salmonella* from Ground Turkey

Antimicrobial	Year (# 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	2002 (n=74)	0.0%	0.0%	(0.0 - 4.9)						6.8	55.4	32.4	5.4								
	2003 (n=114)	0.0%	0.0%	(0.0 - 3.2)							52.6	44.7	2.6								
	2004 (n=142)	0.0%	0.0%	(0.0 - 2.6)						2.1	50.0	44.4	3.5								
	2005 (n=183)	0.0%	0.0%	(0.0 - 2.0)						0.0	62.3	35.5	1.6	0.5							
	2006 (n=159)	0.0%	0.0%	(0.0 - 2.3)							34.6	59.1	5.7	0.6							
	2007 (n=190)	0.0%	0.0%	(0.0 - 1.9)						1.1	46.8	42.6	8.9	0.5							
Gentamicin	2002 (n=74)	2.7%	14.9%	(7.7 - 25.0)					40.5	39.2	2.7			2.7	**5.4**	**9.5**					
	2003 (n=114)	5.3%	22.8%	(15.5 - 31.6)					25.4	37.7	5.3	3.5		5.3	**14.9**	**7.9**					
	2004 (n=142)	2.8%	20.4%	(14.1 - 28.0)					33.8	37.3	4.9	0.7		2.8	**9.2**	**11.3**					
	2005 (n=183)	5.5%	26.8%	(20.5 - 33.8)					36.6	29.0	1.1		1.1	5.5	**14.2**	**12.6**					
	2006 (n=159)	1.3%	28.9%	(22.0 - 36.6)					18.9	45.3	4.4	1.3		1.3	**6.9**	**22.0**					
	2007 (n=190)	2.1%	24.7%	(18.8 - 31.5)					27.9	41.1	3.7	0.5		2.1	**5.8**	**18.9**					
Kanamycin	2002 (n=74)	2.7%	18.9%	(10.7 - 29.7)										74.3	4.1	2.7	**2.7**	**16.2**			
	2003 (n=114)	2.6%	27.2%	(19.3 - 36.3)										70.2		2.6	**14.0**	**13.2**			
	2004 (n=142)	1.4%	18.3%	(12.3 - 25.7)										78.9	1.4	1.4	**7.0**	**11.3**			
	2005 (n=183)	0.0%	20.2%	(14.7 - 26.8)										77.6	2.2		**3.3**	**16.9**			
	2006 (n=159)	1.3%	15.1%	(9.9 - 21.6)										81.1	2.5	1.3	**3.1**	**11.9**			
	2007 (n=190)	1.6%	23.7%	(17.8 - 30.4)										69.5	5.3	1.6	**2.1**	**21.6**			
Streptomycin	2002 (n=74)	0.0%	37.8%	(26.8 - 49.9)												62.2	**8.1**	**29.7**			
	2003 (n=114)	0.0%	45.6%	(36.3 - 55.2)												54.4	**20.2**	**25.4**			
	2004 (n=142)	0.0%	34.5%	(26.7 - 42.9)												65.5	**21.1**	**13.4**			
	2005 (n=183)	0.0%	44.3%	(36.9 - 51.8)												55.7	**23.5**	**20.8**			
	2006 (n=159)	0.0%	40.9%	(33.2 - 48.9)												59.1	**20.1**	**20.8**			
	2007 (n=190)	0.0%	45.8%	(38.6 - 53.2)												54.2	**27.9**	**17.9**			
Aminopenicillins																					
Ampicillin	2002 (n=74)	0.0%	16.2%	(8.7 - 26.6)							41.9	36.5	4.1	1.4			**16.2**				
	2003 (n=114)	0.0%	28.9%	(20.8 - 38.2)							36.8	31.6	1.8	0.9			**28.9**				
	2004 (n=142)	0.0%	20.4%	(14.1 - 28.0)							64.1	14.1	1.4				**20.4**				
	2005 (n=183)	0.0%	26.8%	(20.5 - 33.8)							63.9	8.7	0.5				**26.8**				
	2006 (n=159)	0.0%	25.8%	(19.2 - 33.3)							67.9	6.3					**25.8**				
	2007 (n=190)	0.0%	42.6%	(35.5 - 50.0)							49.5	7.9					**42.6**				
β-Lactam/β-Lactamase Inhibitor combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=74)	1.4%	12.2%	(5.7 - 21.8)							73.0	9.5	2.7	1.4	1.4	**5.4**	**6.8**				
	2003 (n=114)	15.8%	11.4%	(6.2 - 18.7)							58.8	11.4	0.9	10.8	15.8	**8.8**	**2.6**				
	2004 (n=142)	8.5%	7.7%	(3.9 - 13.4)							71.8	8.5		3.5	8.5	**2.8**	**4.9**				
	2005 (n=183)	10.4%	8.7%	(5.1 - 13.8)							69.4	3.8		7.7	10.4	**2.7**	**6.0**				
	2006 (n=159)	11.3%	5.0%	(2.2 - 9.7)							71.7	2.5		9.4	11.3		**5.0**				
	2007 (n=190)	22.6%	5.3%	(2.6 - 9.5)							53.2	3.7	0.5	14.7	22.6	**1.1**	**4.2**				
Cephalosporins																					
Ceftiofur	2002 (n=74)	0.0%	8.1%	(3.0 - 16.8)						51.4	35.1	5.4		**1.4**	**6.8**						
	2003 (n=114)	0.0%	2.6%	(0.5 - 7.5)						41.2	54.4	1.8			**2.6**						
	2004 (n=142)	0.0%	4.9%	(2.0 - 9.9)						43.0	47.9	4.2			**4.9**						
	2005 (n=183)	0.0%	7.1%	(3.8 - 11.8)						44.8	46.4	1.6			**7.1**						
	2006 (n=159)	0.0%	5.0%	(2.2 - 9.7)						4.4	87.4	3.1			**5.0**						
	2007 (n=190)	0.0%	5.3%	(2.6 - 9.5)						9.5	82.6	2.6			**5.3**						
Ceftriaxone	2002 (n=74)	1.4%	0.0%	(0.0 - 4.9)					91.9	0.5			1.4	5.4	1.4						
	2003 (n=114)	1.8%	0.0%	(0.0 - 3.2)					97.4					0.9		1.8					
	2004 (n=142)	5.6%	0.0%	(0.0 - 2.6)					94.4						2.1	3.5					
	2005 (n=183)	4.4%	2.7%	(0.9 - 6.3)					92.9						3.3	1.1	**1.6**	**1.1**			
	2006 (n=159)	3.8%	0.6%	(0.0 - 3.5)					95.0					0.6	3.1	0.6	**0.6**				
	2007 (n=190)	3.7%	2.1%	(0.6 - 5.3)					93.7	0.5					1.1	2.6	**1.6**	**0.5**			

[1] Percent of isolates with intermediate susceptibility

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 9b. MIC Distribution among *Salmonella* from Ground Turkey continued

Antimicrobial	Year (# 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	2002 (n=74)	1.4%	8.1%	(3.0 - 16.8)							1.8	55.3	31.6	7.0	1.8	**2.6**					
	2003 (n=114)	1.8%	2.6%	(0.5 - 7.5)							1.8	55.3	31.6	7.0	1.8	**2.6**					
	2004 (n=142)	1.4%	4.9%	(2.0 - 9.9)							1.4	60.6	28.2	3.5	1.4	**0.7**	**4.2**				
	2005 (n=183)	0.0%	7.1%	(3.8 - 11.8)							23.5	46.4	20.8	2.2		**3.8**	**3.3**				
	2006 (n=159)	0.0%	5.0%	(2.2 - 9.7)								54.7	38.4	1.9		**3.1**	**1.9**				
	2007 (n=190)	0.5%	5.3%	(2.6 - 9.5)							2.6	65.3	24.7	1.6	0.5	**0.5**	**4.7**				
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=74)	0.0%	20.3%	(11.8 - 31.2)											20.3	51.4	6.8	1.4			**20.3**
	2003 (n=114)	0.0%	33.3%	(24.8 - 42.8)											18.4	33.3	13.2	1.8		**0.9**	**32.5**
Sulfisoxazole	2004 (n=142)	0.0%	28.2%	(20.9 - 36.3)											4.9	17.6	49.3			**28.2**	
	2005 (n=183)	0.0%	34.4%	(27.6 - 41.8)											3.3	23.0	39.3			**34.4**	
	2006 (n=159)	0.0%	32.1%	(24.9 - 39.9)											1.9	10.7	51.6	3.1	0.6	**32.1**	
	2007 (n=190)	0.0%	34.7%	(28.0 - 42.0)											4.2	23.7	27.9	7.9	1.6	**34.7**	
Trimethoprim-Sulfamethoxazole	2002 (n=74)	0.0%	1.4%	(0.0 - 7.3)				89.2	8.1	1.4				**1.4**							
	2003 (n=114)	0.0%	0.0%	(0.0 - 3.2)				86.0	13.2	0.9											
	2004 (n=142)	0.0%	0.0%	(0.0 - 2.6)				89.4	6.3	4.2											
	2005 (n=183)	0.0%	0.5%	(0.0 - 3.0)				96.2	2.7	0.5				**0.5**							
	2006 (n=159)	0.0%	0.0%	(0.0 - 2.3)				93.1	5.7	1.3											
	2007 (n=190)	0.0%	0.5%	(0.0 - 2.9)				78.4	20.5	0.5				**0.5**							
Phenicols																					
Chloramphenicol	2002 (n=74)	6.8%	1.4%	(0.0 - 7.3)									39.2	52.7	6.8		**1.4**				
	2003 (n=114)	2.6%	0.9%	(0.0 - 4.8)									13.2	83.3	2.6		**0.9**				
	2004 (n=142)	4.2%	2.8%	(0.8 - 7.1)									12.7	80.3	4.2		**2.8**				
	2005 (n=183)	2.7%	0.5%	(0.0 - 3.0)									41.0	55.7	2.7		**0.5**				
	2006 (n=159)	0.6%	0.6%	(0.0 - 3.5)									27.7	71.1	0.6		**0.6**				
	2007 (n=190)	1.6%	1.6%	(0.3 - 4.5)									32.1	64.7	1.6		**1.6**				
Quinolones																					
Ciprofloxacin	2002 (n=74)	0.0%	0.0%	(0.0 - 4.9)	71.6	17.6	2.7	1.4	1.4	2.7	2.7										
	2003 (n=114)	0.0%	0.0%	(0.0 - 3.2)	86.0	8.8	0.9		3.5	0.9											
	2004 (n=142)	0.0%	0.0%	(0.0 - 2.6)	93.7	4.9	1.4														
	2005 (n=183)	0.0%	0.0%	(0.0 - 2.0)	80.9	16.4	1.6	0.5	0.5												
	2006 (n=159)	0.0%	0.0%	(0.0 - 2.3)	74.8	24.5				0.6											
	2007 (n=190)	0.0%	0.0%	(0.0 - 1.9)	87.4	10.0			2.6												
Nalidixic Acid	2002 (n=74)	0.0%	8.1%	(3.0 - 16.8)							1.4		64.9	24.3	1.4		**8.1**				
	2003 (n=114)	0.0%	4.4%	(1.4 - 9.9)								0.9	82.5	11.4	0.9		**4.4**				
	2004 (n=142)	0.0%	0.0%	(0.0 - 2.6)								4.2	85.2	9.9	0.7						
	2005 (n=183)	0.0%	1.1%	(0.1 - 3.9)								14.2	80.9	3.8			**1.1**				
	2006 (n=159)	0.0%	0.0%	(0.0 - 2.3)								10.1	86.2	3.1	0.6						
	2007 (n=190)	0.0%	2.6%	(0.9 - 6.0)							1.1	28.4	67.4	0.5			**2.6**				
Tetracyclines																					
Tetracycline	2002 (n=74)	0.0%	55.4%	(43.4 - 67.0)									44.6		**1.4**	**2.7**	**51.4**				
	2003 (n=114)	2.6%	39.5%	(30.4 - 49.1)									57.9	2.6			**39.5**				
	2004 (n=142)	7.7%	56.3%	(47.8 - 64.6)									35.9	7.7	**4.2**	**0.7**	**51.4**				
	2005 (n=183)	0.0%	39.9%	(32.7 - 47.4)									60.1			**0.5**	**39.3**				
	2006 (n=159)	0.0%	56.0%	(47.9 - 63.8)									44.0			**0.6**	**55.3**				
	2007 (n=190)	0.5%	67.4%	(60.2 - 74.0)									32.1	0.5	**0.5**	**3.7**	**63.2**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 9c. MIC Distribution among *Salmonella* from Ground Beef

Antimicrobial	Year (# 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	2002 (n=9)	0.0%	0.0%	(0.0 - 33.6)						1.1	66.7	22.2									
	2003 (n=10)	0.0%	0.0%	(0.0 - 30.8)							60.0	40.0									
	2004 (n=14)	0.0%	0.0%	(0.0 - 23.2)							64.3	28.6	7.1								
	2005 (n=8)	0.0%	0.0%	(0.0 - 36.9)						12.5	75.0	12.5									
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)							15.8	73.7	5.3	5.3							
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)							46.2	46.2	7.7								
Gentamicin	2002 (n=9)	0.0%	0.0%	(0.0 - 33.6)					55.6	44.4											
	2003 (n=10)	0.0%	0.0%	(0.0 - 30.8)					30.0	40.0	30.0										
	2004 (n=14)	0.0%	0.0%	(0.0 - 23.2)					57.1	42.9											
	2005 (n=8)	0.0%	25.0%	(3.2 - 65.1)					37.5	37.5					**25.0**						
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)					15.8	68.5	15.8										
	2007 (n=13)	0.0%	7.7%	(0.2 - 36.0)					15.4	76.9					**7.7**						
Kanamycin	2002 (n=9)	0.0%	0.0%	(0.0 - 33.6)										100.0							
	2003 (n=10)	0.0%	0.0%	(0.0 - 30.8)										100.0							
	2004 (n=14)	0.0%	0.0%	(0.0 - 23.2)										100.0							
	2005 (n=8)	0.0%	25.0%	(3.2 - 65.1)										75.0				**25.0**			
	2006 (n=19)	0.0%	5.3%	(0.1 - 26.0)										94.7				**5.3**			
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)										100.0							
Streptomycin	2002 (n=9)	0.0%	22.2%	(2.8 - 60.0)												77.8		**22.2**			
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)												60.0		**40.0**			
	2004 (n=14)	0.0%	14.3%	(1.8 - 42.8)												85.7		**14.3**			
	2005 (n=8)	0.0%	25.0%	(3.2 - 65.1)												75.0	**12.5**	**12.5**			
	2006 (n=19)	0.0%	10.5%	(1.3 - 33.1)												89.2	**5.3**	**5.3**			
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)												100.0					
Aminopenicillins																					
Ampicillin	2002 (n=9)	0.0%	22.2%	(2.8 - 60.0)							33.3	33.3	11.1				**22.2**				
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)							10.0	50.0						40.0			
	2004 (n=14)	0.0%	21.4%	(4.7 - 50.8)							78.6						**21.4**				
	2005 (n=8)	0.0%	25.0%	(3.2 - 65.1)							75.0						**25.0**				
	2006 (n=19)	0.0%	10.5%	(1.3 - 33.1)							84.2	5.3					**10.5**				
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)							76.9	23.1									
β-Lactam/β-Lactamase Inhibitor combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=9)	0.0%	22.2%	(2.8 - 60.0)							55.6	22.2					**22.2**				
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)							50.0	10.0					**40.0**				
	2004 (n=14)	0.0%	14.3%	(1.8 - 42.8)							71.4	7.1		7.1			**14.3**				
	2005 (n=8)	25.0%	0.0%	(0.0 - 36.9)							75.0				25.0						
	2006 (n=19)	5.3%	0.0%	(0.0 - 17.6)							84.2	5.3		5.3	5.3						
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)							92.3	7.7									
Cephalosporins																					
Ceftiofur	2002 (n=9)	0.0%	22.2%	(2.8 - 60.0)						44.4	33.3				**22.2**						
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)				30.0	30.0						**40.0**						
	2004 (n=14)	0.0%	14.3%	(1.8 - 42.8)						50.0	35.7				**14.3**						
	2005 (n=8)	0.0%	0.0%	(0.0 - 36.9)						37.5	62.5										
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)						10.5	89.5										
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)						30.8	61.5	7.7									
Ceftriaxone	2002 (n=9)	22.2%	0.0%	(0.0 - 33.6)					77.8						11.1	11.1					
	2003 (n=10)	30.0%	10.0%	(0.3 - 44.5)					60.0						30.0		**10.0**				
	2004 (n=14)	7.1%	7.1%	(0.2 - 33.9)					85.7							7.1	**7.1**				
	2005 (n=8)	0.0%	0.0%	(0.0 - 36.9)					100.0												
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)					100.0												
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)					100.0												

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance.

Table 9c. MIC Distribution among *Salmonella* from Ground Beef continued

Antimicrobial	Year (# 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	2002 (n=9)	11.1%	22.2%	(2.8 - 60.0)								40.0	20.0			**40.0**					
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)								40.0	20.0			**40.0**					
	2004 (n=14)	0.0%	14.3%	(1.8 - 42.8)								50.0	14.3	21.4			**14.3**				
	2005 (n=8)	0.0%	0.0%	(0.0 - 36.9)								50.0	37.5	12.5							
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)								52.6	47.4								
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)								61.5	38.5								
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=9)	0.0%	22.2%	(2.8 - 60.0)											22.2	44.44	11.1				**22.2**
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)											20.0	30.0	10.0				**40.0**
Sulfisoxazole	2004 (n=14)	0.0%	14.3%	(1.8 - 42.8)											7.1	7.1	71.4			**14.3**	
	2005 (n=8)	0.0%	25.0%	(3.2 - 65.1)											0.0	12.5	62.5			**25.0**	
	2006 (n=19)	0.0%	10.5%	(1.3 - 33.1)											5.3	21.1	57.9	5.3		**10.5**	
	2007 (n=13)	0.0%	7.7%	(0.2 - 36.0)												38.5	30.8	7.7	15.4	**7.7**	
Trimethoprim-Sulfamethoxazole	2002 (n=9)	0.0%	0.0%	(0.0 - 33.6)				100.0													
	2003 (n=10)	0.0%	0.0%	(0.0 - 30.8)				60.0	40.0												
	2004 (n=14)	0.0%	7.1%	(0.2 - 33.9)				92.9						**7.1**							
	2005 (n=8)	0.0%	0.0%	(0.0 - 36.9)				87.5	12.5												
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)				94.7	5.3												
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)				76.9	23.1												
Phenicols																					
Chloramphenicol	2002 (n=9)	0.0%	22.2%	(2.8 - 60.0)									11.1	66.7			**22.2**				
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)									10.0	50.0			**40.0**				
	2004 (n=14)	0.0%	14.3%	(1.8 - 42.8)									7.1	78.6			**14.3**				
	2005 (n=8)	0.0%	12.5%	(0.3 - 52.7)									12.5	75.0			**12.5**				
	2006 (n=19)	5.3%	5.3%	(0.1 - 26.0)									10.5	78.9	5.3		**5.3**				
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)										100.0							
Quinolones																					
Ciprofloxacin	2002 (n=9)	0.0%	0.0%	(0.0 - 33.6)	66.7	22.2	11.1														
	2003 (n=10)	0.0%	0.0%	(0.0 - 30.8)	70.0	30.0															
	2004 (n=14)	0.0%	0.0%	(0.0 - 23.2)	100.0																
	2005 (n=8)	0.0%	0.0%	(0.0 - 36.9)	75.0	25.0															
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)	68.4	31.6															
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)	76.9	23.1															
Nalidixic Acid	2002 (n=9)	0.0%	0.0%	(0.0 - 33.6)									66.7	22.2	11.1						
	2003 (n=10)	0.0%	0.0%	(0.0 - 30.8)								10.0	70.0	20.0							
	2004 (n=14)	0.0%	0.0%	(0.0 - 23.2)								7.1	92.9								
	2005 (n=8)	0.0%	0.0%	(0.0 - 36.9)									100.0								
	2006 (n=19)	0.0%	0.0%	(0.0 - 17.6)								10.5	89.5								
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)								30.8	69.2								
Tetracyclines																					
Tetracycline	2002 (n=9)	0.0%	22.2%	(2.8 - 60.0)									77.8				**22.2**				
	2003 (n=10)	0.0%	40.0%	(12.2 - 73.8)									60.0				**40.0**				
	2004 (n=14)	0.0%	14.3%	(1.8 - 42.8)									85.7				**14.3**				
	2005 (n=8)	0.0%	12.5%	(0.3 - 52.7)									87.5				**12.5**				
	2006 (n=19)	0.0%	21.1%	(6.1 - 45.6)									78.9			**15.8**	**5.3**				
	2007 (n=13)	0.0%	0.0%	(0.0 - 24.7)									100.0								

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 9d. MIC Distribution among *Salmonella* from Pork Chop

Antimicrobial	Year (# of Isolates)	%I[1]	%R[2]	(95% CI)[3]	Distribution (%) of MICs (µg/ml)[4] 0.015	0.03	0.060	0.125	0.25	0.50	1	2	4	8	16	32	64	128	256	512	1024
Aminoglycosides																					
Amikacin	2002 (n=10)	0.0%	0.0%	(0.0 - 30.8)							80.0	20.0									
	2003 (n=5)	0.0%	0.0%	(0.0 - 52.2)							100.0										
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)							63.6	27.3	9.1								
	2005 (n=9)	0.0%	0.0%	(0.0 - 33.6)							55.6	33.3	11.1								
	2006 (n=8)	0.0%	0.0%	(0.0 - 36.9)							12.5	87.5									
	2007 (n=18)	0.0%	0.0%	(0.0 - 18.5)							33.3	50.0	16.7								
Gentamicin	2002 (n=10)	0.0%	30.0%	(6.7 - 65.2)					30.0	40.0						**30.0**					
	2003 (n=5)	20.0%	0.0%	(0.0 - 52.2)					40.0	40.0				20.0							
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)					63.6	36.4											
	2005 (n=9)	0.0%	0.0%	(0.0 - 33.6)					55.6	33.3		11.1									
	2006 (n=8)	12.5%	50.0%	(15.7 - 84.3)					12.5	25.0				12.5	**25.0**	**25.0**					
	2007 (n=18)	0.0%	5.6%	(0.1 - 27.3)					27.8	50.0	16.7					**5.6**					
Kanamycin	2002 (n=10)	0.0%	10.0%	(0.3 - 44.5)										70.0	20.0			**10.0**			
	2003 (n=5)	20.0%	0.0%	(0.0 - 52.2)										80.0		20.0					
	2004 (n=11)	0.0%	9.1%	(0.2 - 41.3)										81.8	9.1			**9.1**			
	2005 (n=9)	0.0%	0.0%	(0.0 - 33.6)										100.0							
	2006 (n=8)	0.0%	25.0%	(3.2 - 65.1)										75.0				**25.0**			
	2007 (n=18)	0.0%	5.6%	(0.1 - 27.3)										94.4				**5.6**			
Streptomycin	2002 (n=10)	0.0%	70.0%	(34.8 - 93.3)												30.0	**10.0**	**60.0**			
	2003 (n=5)	0.0%	40.0%	(5.3 - 85.3)												60.0	**20.0**	**20.0**			
	2004 (n=11)	0.0%	27.3%	(6.0 - 61.0)												72.7		**27.3**			
	2005 (n=9)	0.0%	33.3%	(7.5 - 70.1)												66.7	**22.2**	**11.1**			
	2006 (n=8)	0.0%	25.0%	(3.2 - 65.1)												75.0		**25.0**			
	2007 (n=18)	0.0%	16.7%	(3.6 - 41.4)												83.3	**11.1**	**5.6**			
Aminopenicillins																					
Ampicillin	2002 (n=10)	0.0%	40.0%	(12.2 - 73.8)							50.0	10.0					**40.0**				
	2003 (n=5)	0.0%	40.0%	(5.3 - 85.3)							40.0	20.0					**40.0**				
	2004 (n=11)	0.0%	9.1%	(0.2 - 41.3)							81.8		9.1				**9.1**				
	2005 (n=9)	0.0%	22.2%	(2.8 - 60.0)							66.7		11.1				**22.2**				
	2006 (n=8)	0.0%	25.0%	(3.2 - 65.1)							50.0		25.0				**25.0**				
	2007 (n=18)	0.0%	5.6%	(0.1 - 27.3)							44.4	22.2	27.8				**5.6**				
β-Lactam/β-Lactamase Inhibitor combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=10)	20.0%	20.0%	(2.5 - 55.6)							60.0				20.0		**20.0**				
	2003 (n=5)	20.0%	20.0%	(0.5 - 71.6)							40.0	20.0			20.0		**20.0**				
	2004 (n=11)	18.2%	0.0%	(0.0 - 28.5)							72.7	9.1			18.2						
	2005 (n=9)	22.2%	0.0%	(0.0 - 33.6)							66.7	11.1		22.2							
	2006 (n=8)	25.0%	0.0%	(0.0 - 36.9)							50.0	25.0			25.0						
	2007 (n=18)	5.6%	0.0%	(0.0 - 18.5)							66.7	27.8			5.6						
Cephalosporins																					
Ceftiofur	2002 (n=10)	0.0%	20.0%	(2.5 - 55.6)						50.0	30.0				**20.0**						
	2003 (n=5)	0.0%	20.0%	(0.5 - 71.6)						60.0		20.0			**20.0**						
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)						72.7	27.3										
	2005 (n=9)	0.0%	0.0%	(0.0 - 33.6)						22.2	66.7	11.0									
	2006 (n=8)	0.0%	0.0%	(0.0 - 36.9)							62.5	37.5									
	2007 (n=18)	0.0%	0.0%	(0.0 - 18.5)						5.6	66.7	27.8									
Ceftriaxone	2002 (n=10)	20.0%	0.0%	(0.0 - 30.8)					80.0						20.0						
	2003 (n=5)	20.0%	0.0%	(0.0 - 52.2)					80.0							20.0					
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)					100.0												
	2005 (n=9)	0.0%	0.0%	(0.0 - 33.6)					100.0												
	2006 (n=8)	0.0%	0.0%	(0.0 - 36.9)					100.0												
	2007 (n=18)	0.0%	0.0%	(0.0 - 18.5)					94.4	5.6											

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 9d. MIC Distribution among *Salmonella* from Pork Chop continued

Antimicrobial	Year (# of Isolates)	%I[1]	%R[2]	(95% CI)[3]	Distribution (%) of MICs (µg/ml)[4] 0.015	0.03	0.060	0.125	0.25	0.50	1	2	4	8	16	32	64	128	256	512	1024
Cephamycins																					
Cefoxitin	2002 (n=10)	0.0%	20.0%	(2.5 - 55.6)								20.0	20.0	40.0		**20.0**					
	2003 (n=5)	0.0%	20.0%	(0.5 - 71.6)								20.0	20.0	40.0		**20.0**					
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)								81.8	18.2								
	2005 (n=9)	11.1%	0.0%	(0.0 - 33.6)							11.1	22.2	55.6		11.1						
	2006 (n=8)	25.0%	0.0%	(0.0 - 36.9)								62.5	12.5		25.0						
	2007 (n=18)	27.8%	0.0%	(0.0 - 18.5)								22.2	50.0		27.8						
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=10)	0.0%	70.0%	(34.8 - 93.3)											10.0		20.0				**70.0**
	2003 (n=5)	0.0%	40.0%	(5.3 - 85.3)											20.0	40.0					**40.0**
Sulfisoxazole	2004 (n=11)	0.0%	18.2%	(2.3 - 51.8)												9.1	72.7			**18.2**	
	2005 (n=9)	0.0%	33.3%	(7.5 - 70.1)											11.1	22.2	33.3			**33.3**	
	2006 (n=8)	0.0%	75.0%	(34.9 - 96.8)												12.5	12.5			**75.0**	
	2007 (n=18)	0.0%	16.7%	(3.6 - 41.4)												11.1	33.3	38.9		**16.7**	
Trimethoprim-Sulfamethoxazole	2002 (n=10)	0.0%	20.0%	(2.5 - 55.6)				70.0	10.0					**20.0**							
	2003 (n=5)	0.0%	0.0%	(0.0 - 52.2)				60.0	40.0												
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)				100.0													
	2005 (n=9)	0.0%	11.1%	(0.3 - 48.2)				77.8	11.1					**11.1**							
	2006 (n=8)	0.0%	50.0%	(15.7 - 84.3)				37.5	12.5				**50.0**								
	2007 (n=18)	0.0%	5.6%	(0.0 - 18.5)				88.9	5.6					**5.6**							
Phenicols																					
Chloramphenicol	2002 (n=10)	0.0%	40.0%	(12.2 - 73.8)									30.0	30.0			**40.0**				
	2003 (n=5)	0.0%	40.0%	(5.3 - 85.3)										60.0			**40.0**				
	2004 (n=11)	0.0%	18.2%	(2.3 - 51.8)										81.8			**18.2**				
	2005 (n=9)	11.1%	22.2%	(2.8 - 60.0)								11.1	22.2	33.3	11.1		**22.2**				
	2006 (n=8)	37.5%	0.0%	(0.0 - 36.9)										62.5	37.5						
	2007 (n=18)	33.3%	0.0%	(0.0 - 18.5)									5.6	61.1	33.3						
Quinolones																					
Ciprofloxacin	2002 (n=10)	0.0%	0.0%	(0.0 - 30.8)	80.0	20.0															
	2003 (n=5)	0.0%	0.0%	(0.0 - 52.2)	60.0	20.0	20.0														
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)	100.0																
	2005 (n=9)	0.0%	0.0%	(0.0 - 33.6)	77.8	22.2															
	2006 (n=8)	0.0%	0.0%	(0.0 - 36.9)	62.5	12.5	25.0														
	2007 (n=18)	0.0%	0.0%	(0.0 - 18.5)	66.7	5.6	27.8														
Nalidixic Acid	2002 (n=10)	0.0%	0.0%	(0.0 - 30.8)									60.0	40.0							
	2003 (n=5)	0.0%	0.0%	(0.0 - 52.2)									80.0		20.0						
	2004 (n=11)	0.0%	0.0%	(0.0 - 28.5)									100.0								
	2005 (n=9)	0.0%	0.0%	(0.0 - 33.6)								11.1	77.8	11.1							
	2006 (n=8)	0.0%	0.0%	(0.0 - 36.9)									75.0	25.0							
	2007 (n=18)	0.0%	0.0%	(0.0 - 18.5)								22.2	44.4	27.8	5.6						
Tetracyclines																					
Tetracycline	2002 (n=10)	0.0%	70.0%	(34.8 - 93.3)									30.0			**10.0**	**60.0**				
	2003 (n=5)	0.0%	80.0%	(28.4 - 99.5)									20.0				**80.0**				
	2004 (n=11)	0.0%	54.5%	(23.4 - 83.3)									45.5			**18.2**	**36.4**				
	2005 (n=9)	0.0%	55.6%	(21.2 - 86.3)									44.4			**11.1**	**44.4**				
	2006 (n=8)	0.0%	25.0%	(3.2 - 65.1)									75.0				**25.0**				
	2007 (n=18)	0.0%	50.0%	(26.0 - 74.0)									50.0			**5.6**	**44.4**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 10. *Campylobacter* Species by Meat Type, 2002-2007

Total (a) Isolates in that year	Species	2002		2003		2004		2005		2006		2007	
	C. jejuni	202		330		517		414		439		356	
	C. coli	95		147		204		160		157		162	
	C. lari	0		2		0		2		3		0	
Total (A)		**297**		**479**		**721**		**576**		**599**		**518**	
Meat Type[1]	**Species**	**n**	**%[2]**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Chicken Breast	*C. jejuni*	198	98.0%	325	98.5%	510	98.6%	403	97.3%	426	97.0%	332	93.3%
	C. coli	90	94.7%	142	96.6%	196	96.1%	151	94.4%	145	92.4%	143	88.3%
	C. lari			2	100.0%					1	33.3%		
	Total (N)[3]	**288**	**97.0%**	**469**	**97.9%**	**706**	**97.9%**	**554**	**96.2%**	**572**	**95.5%**	**475**	**91.7%**
Ground Turkey	*C. jejuni*	2	1.0%	4	1.2%	7	1.4%	10	2.4%	12	2.7%	20	5.6%
	C. coli	2	2.1%	1	0.7%	5	2.5%	9	5.6%	10	6.4%	14	8.6%
	C. lari							1	50.0%	2	66.7%		
	Total (N)	**4**	**1.3%**	**5**	**1.0%**	**12**	**1.7%**	**20**	**3.5%**	**24**	**4.0%**	**34**	**6.6%**
Ground Beef	*C. jejuni*			1	0.3%							4	1.1%
	C. coli											1	0.6%
	Total (N)			**1**	**0.2%**							**5**	**1.0%**
Pork Chop	*C. jejuni*	2	1.0%					1	0.2%	1	0.2%		
	C. coli	3	3.2%	4	2.7%	3	1.5%			2	1.3%	4	2.5%
	C. lari							1	50.0%				
	Total (N)	**5**	**1.7%**	**4**	**0.8%**	**3**	**0.4%**	**2**	**0.3%**	**3**	**0.5%**	**4**	**0.8%**

[1] Blank areas indicate no isolates were found for this species per meat type.
[2] Where % =Number of isolates per species per meat type (n) / total # of isolates per species (a).
[3] Where % = total # of isolates in meat type (N) / total # of isolates in that year (A).

Table 11a. *Campylobacter jejuni* Isolates from Chicken Breast by Month for All Sites, 2002-2007

	2002		2003		2004		2005		2006		2007	
Month	**n**	**%[1]**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
January	13	6.6	26	8.0	42	8.2	30	7.4	32	7.5	29	8.7
February	25	12.6	26	8.0	40	7.8	44	10.9	42	9.9	24	7.2
March	23	11.6	21	6.5	32	6.3	37	9.2	49	11.5	32	9.6
April	16	8.1	15	4.6	27	5.3	31	7.7	20	4.7	25	7.5
May	15	7.6	29	8.9	41	8.0	37	9.2	30	7.0	18	5.4
June	7	3.5	30	9.2	49	9.6	28	6.9	45	10.6	26	7.8
July	17	8.6	29	8.9	51	10.0	36	8.9	36	8.5	32	9.6
August	24	12.1	24	7.4	45	8.8	41	10.2	35	8.2	33	9.9
September	19	9.6	30	9.2	52	10.2	28	6.9	44	10.3	17	5.1
October	11	5.6	39	12.0	55	10.8	28	6.9	32	7.5	35	10.5
November	19	9.6	22	6.8	33	6.5	31	7.7	29	6.8	35	10.5
December	9	4.5	34	10.5	43	8.4	32	7.9	32	7.5	26	7.8
Total	**198**	**100.0**	**325**	**100.0**	**510**	**100.0**	**403**	**100.0**	**426**	**100.0**	**332**	**100.0**

Table 11b. *Campylobacter coli* Isolates from Chicken Breast by Month for All Sites, 2002-2007

	2002		2003		2004		2005		2006		2007	
Month	**n**	**%[2]**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
January	5	5.6	4	2.8	18	9.2	15	9.9	7	4.8	5	3.5
February	4	4.4	5	3.5	19	9.7	16	10.6	8	5.5	10	7.0
March	6	6.7	6	4.2	15	7.7	9	6.0	10	6.9	10	7.0
April	6	6.7	15	10.6	8	4.1	11	7.3	11	7.6	12	8.4
May	11	12.2	11	7.7	10	5.1	10	6.6	12	8.3	14	9.8
June	17	18.9	11	7.7	10	5.1	17	11.3	12	8.3	10	7.0
July[2]			24	16.9	16	8.2	15	9.9	16	11.0	14	9.8
August	7	7.8	5	3.5	17	8.7	6	4.0	7	4.8	11	7.7
September	8	8.9	20	14.1	20	10.2	7	4.6	14	9.7	10	7.0
October	10	11.1	19	13.4	18	9.2	19	12.6	14	9.7	16	11.2
November	2	2.2	4	2.8	25	12.8	11	7.3	23	15.9	14	9.8
December	14	15.6	18	12.7	20	10.2	15	9.9	11	7.6	17	11.9
Total	**90**	**100.0**	**142**	**100.0**	**196**	**100.0**	**151**	**100.0**	**145**	**100.0**	**143**	**100.0**

[1] Where % = (# of isolates that month) / (total # of isolates that year).
[2] Where % = (# of isolates that month) / (total # of isolates that year).

Figure 4a. Antimicrobial Resistance among *Campylobacter jejuni* from Chicken Breast, 2002-2007

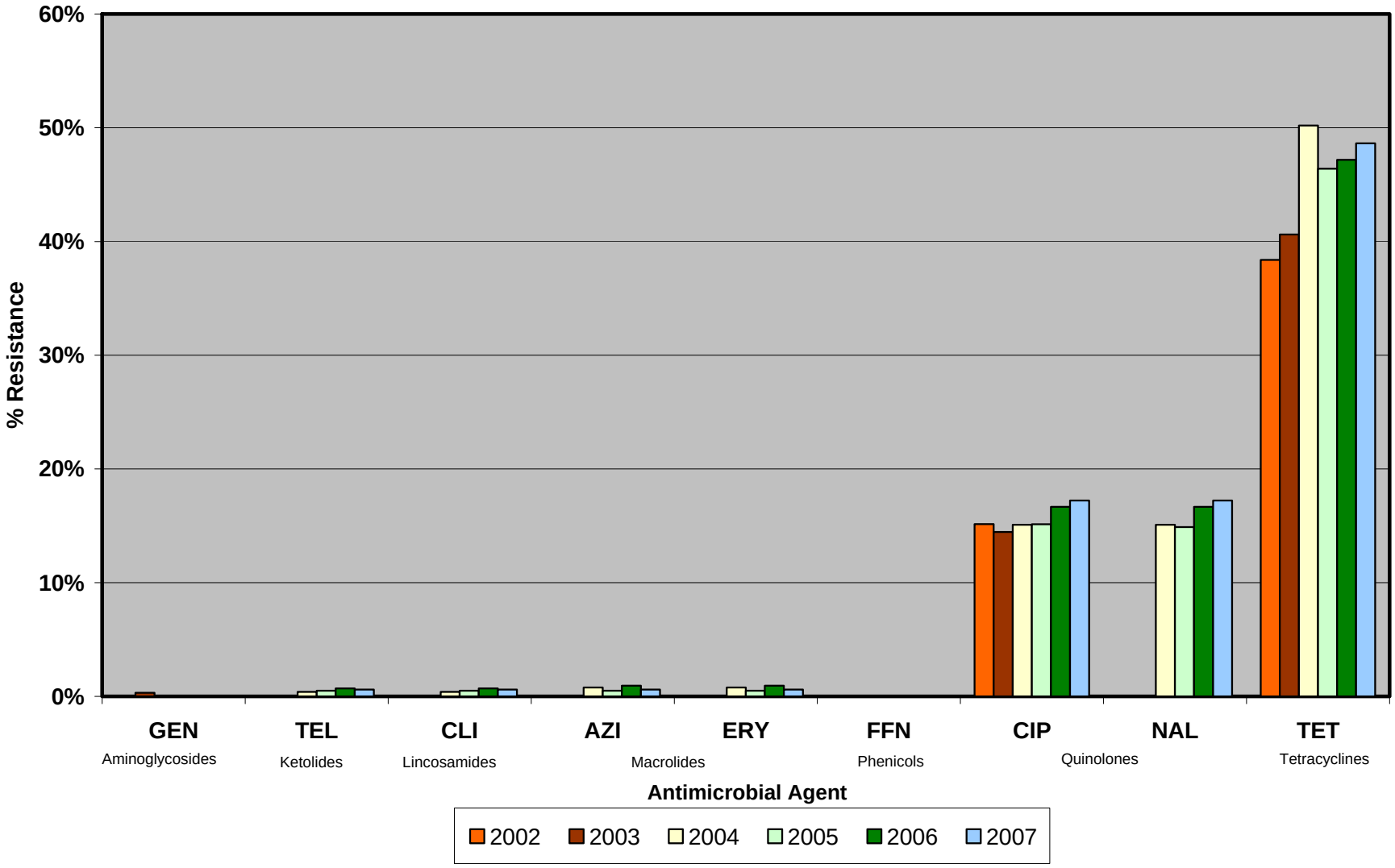


Table 12a. Trends in Resistance among *Campylobacter jejuni* Isolates from Chicken Breast, 2002-2007

Antimicrobial Class	Antimicrobial/ Resistance Breakpoint (µg/ml)	2002 (N=198)		2003 (N=325)		2004 (N=510)		2005 (N=403)		2006 (N=426)		2007 (N=332)		Cochran-Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic	P value[2]
Aminoglycosides	**GEN (MIC ≥8)**	0	0.0%	1	0.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	-1.1087	0.2676
Ketolides	**TEL (MIC ≥16)**	Not Tested		Not Tested		2	0.4%	2	0.5%	3	0.7%	2	0.6%	0.5644	0.5725[3]
Lincosamides	**CLI (MIC ≥8)**	Not Tested		Not Tested		2	0.4%	2	0.5%	3	0.7%	2	0.6%	0.5644	0.5725[3]
Macrolides	**AZI (MIC ≥8)**	Not Tested		Not Tested		4	0.8%	2	0.5%	4	0.9%	2	0.6%	-0.0431	0.9656[3]
	ERY (MIC ≥32)	0	0.0%	0	0.0%	4	0.8%	2	0.5%	4	0.9%	2	0.6%	1.4426	0.1491
Phenicols	**FFN[4]**	Not Tested		Not Tested		0	-	0	-	0	-	0	-	N/A[5]	N/A
Quinolones	**CIP (MIC≥4)**	30	15.2%	47	14.5%	77	15.1%	61	15.1%	71	16.7%	57	17.2%	1.0674	0.2858
	NAL (MIC≥64)	Not Tested		Not Tested		77	15.1%	60	14.9%	71	16.7%	57	17.2%	0.9656	0.3343[3]
Tetracycline[6]	**TET (MIC≥16)**	76	38.4%	132	40.6%	256	50.2%	187	46.4%	201	47.2%	161	48.6%	2.2813	0.0225

[1] % R = the number of resistant isolates (n) / the number of positive isolates (N).
[2] P value for percent resistant for trend was calculated using Cochran-Armitage trend test method.
[3] Z statistic and P value calculated based on 3 years data.
[4] Percent non susceptible is reported rather than percent resistant as no CLSI breakpoint has been established. NARMS breakpoint established to determine resistance. Dashes indicate 0.0% resistance.
[5] N/A= Z Statistic and P value could not be calculated due to insufficient data or no resistance observed.
[6] Results for 2002 and 2003 are for Doxycycline.

Figure 4b. Antimicrobial Resistance among *Campylobacter coli* from Chicken Breast, 2002-2007

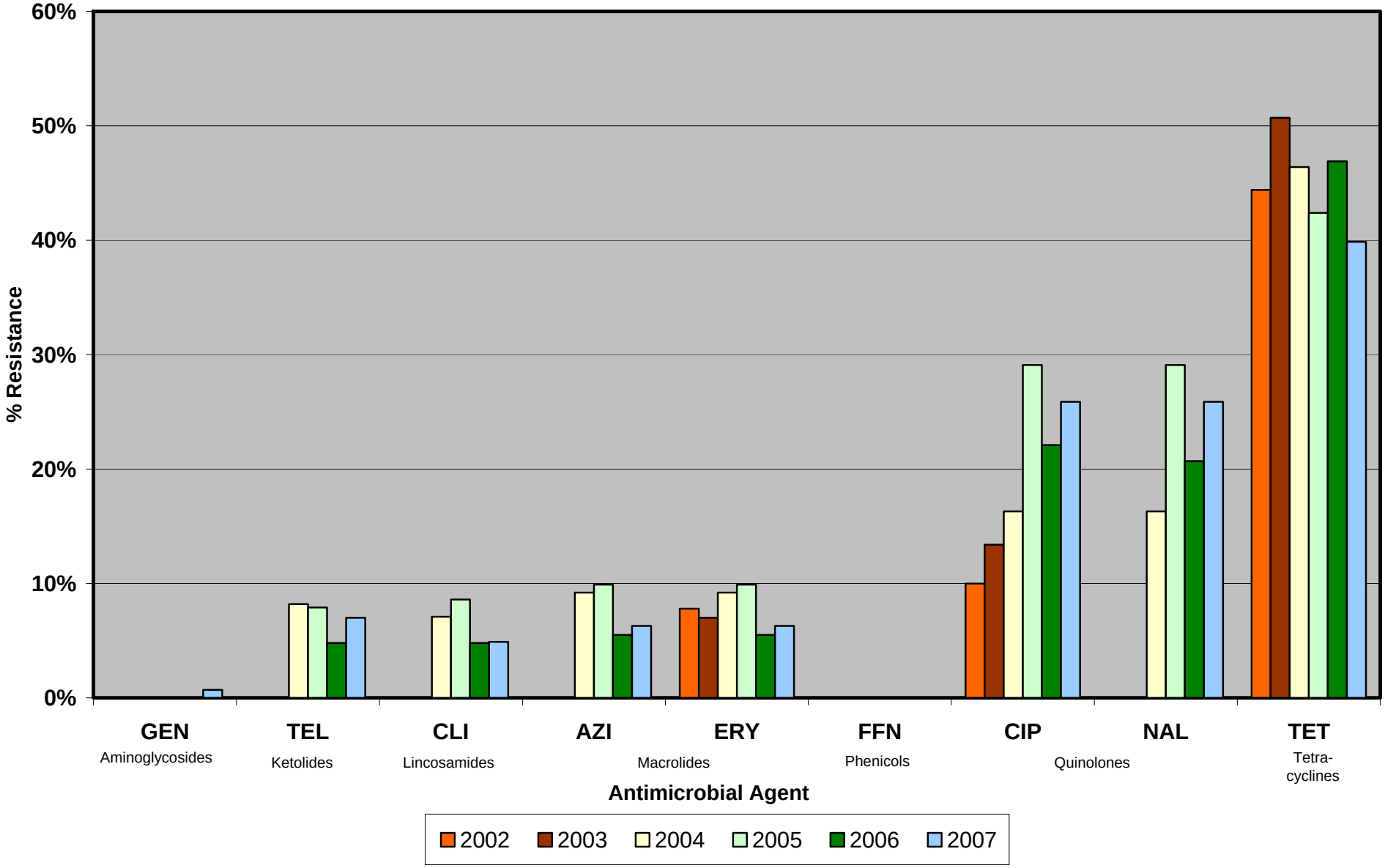


Table 12b. Trends in Resistance among *Campylobacter coli* Isolates from Chicken Breast, 2002-2007

Antimicrobial Class	Antimicrobial/ Resistance Breakpoint (µg/ml)	2002 (N=90)		2003 (N=142)		2004 (N=196)		2005 (N=151)		2006 (N=145)		2007 (N=143)		Cochran-Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic	P value[2]
Aminoglycosides	**GEN (MIC ≥8)**	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.7%	1.4964	0.1346
Ketolides	**TEL (MIC ≥16)**	Not Tested		Not Tested		16	8.2%	12	7.9%	7	4.8%	10	7.0%	-0.7666	0.4433[3]
Lincosamides	**CLI (MIC ≥8)**	Not Tested		Not Tested		14	7.1%	13	8.6%	7	4.8%	7	4.9%	-1.1571	0.2472[3]
Macrolides	**AZI (MIC ≥8)**	Not Tested		Not Tested		18	9.2%	15	9.9%	8	5.5%	9	6.3%	-1.3570	0.1748[3]
	ERY (MIC ≥32)	7	7.8%	10	7.0%	18	9.2%	15	9.9%	8	5.5%	9	6.3%	-0.6706	0.5025
Phenicols	**FFN[4]**	Not Tested		Not Tested		0	-	0	-	0	-	0	-	N/A[5]	N/A
Quinolones	**CIP (MIC≥4)**	9	10.0%	19	13.4%	32	16.3%	44	29.1%	32	22.1%	37	25.9%	3.8992	<0.0001
	NAL (MIC≥64)	Not Tested		Not Tested		32	16.3%	44	29.1%	30	20.7%	37	25.9%	1.5892	0.1120[3]
Tetracycline[6]	**TET (MIC≥16)**	40	44.4%	72	50.7%	91	46.4%	64	42.4%	68	46.9%	57	39.9%	-1.2398	0.2150

[1] % R = the number of resistant isolates (n) / the number of positive isolates (N).
[2] P value for percent resistant for trend was calculated using Cochran-Armitage trend test method.
[3] Z statistic and P value calculated based on 4 years data.
[4] Percent non susceptible is reported rather than percent resistant as no CLSI breakpoint has been established. NARMS breakpoint established to determine resistance. Dashes indicate 0.0% resistance.
[5] N/A= Z Statistic and P value could not be calculated due to insufficient data or no resistance observed.
[6] Results for 2002 and 2003 are for Doxycycline.

Table 13. Antimicrobial Resistance among *Campylobacter* Species by Meat Type, 2002-2007

Meat Type[1]	Species	Year	Aminoglycosides	Ketolides	Lincosamides	Macrolides		Phenicols	Quinolones		Tetracyclines	
			GEN	TEL	CLI	AZI	ERY	FFN	CIP	NAL	DOX	TET
Chicken Breast	*C. jejuni*	2002 (n=198)	-[2]				-		15.20%		38.40%	
		2003 (n=325)	0.3%				-		14.5%		40.6%	
		2004 (n=510)	-	0.4%	0.4%	0.8%	0.8%	-	15.1%	15.1%		50.2%
		2005 (n=403)	-	0.5%	0.5%	0.5%	0.5%	-	15.1%	14.9%		46.4%
		2006 (n=426)	-	0.7%	0.7%	0.9%	0.9%	-	16.7%	16.7%		47.2%
		2007 (n=332)	-	0.6%	0.6%	0.6%	0.6%	-	17.2%	17.2%		48.6%
		Total (n=2194)	0.1%	0.5%	0.5%	0.7%	0.5%	-	15.6%	15.9%	39.8%	48.2%
	C. coli	2002 (n=90)	-				7.8%		10.0%		44.4%	
		2003 (n=142)	-				7.0%		13.4%		50.7%	
		2004 (n=196)	-	8.2%	7.1%	9.2%	9.2%	-	16.3%	16.3%		46.4%
		2005 (n=151)	-	7.9%	8.6%	9.9%	9.9%	-	29.1%	29.1%		42.4%
		2006 (n=145)	-	4.8%	4.8%	5.5%	5.5%	-	22.1%	20.7%		46.9%
		2007 (n=143)	0.7%	7.0%	4.9%	6.3%	6.3%	-	25.9%	25.9%		39.9%
		Total (n=867)	0.1%	7.1%	6.5%	7.9%	7.7%	-	20.0%	22.5%	48.3%	44.1%
	C. lari	2003 (n=2)	-				-		-		-	
		2006 (n=1)	-	-	-	-	-	-	100.0%	100.0%		-
		Total (n=3)	-	-	-	-	-	-	33.3%	100.0%	-	-
	Total (n=3064)		0.1%	2.3%	2.2%	2.7%	2.6%	-	16.9%	17.7%	42.3%	47.0%
Ground Turkey	*C. jejuni*	2002 (n=2)	-				-		50.0%		100.0%	
		2003 (n=4)	-				-		-		75.0%	
		2004 (n=7)	-	-	-	-	-	-	28.6%	28.6%		42.9%
		2005 (n=10)	-	-	-	-	-	-	10.0%	10.0%		70.0%
		2006 (n=12)	-	-	-	-	-	-	50.0%	50.0%		75.0%
		2007 (n=20)	-	5.0%	5.0%	5.0%	5.0%	-	30.0%	30.0%		90.0%
		Total (n=55)	-	2.0%	2.0%	2.0%	1.8%	-	29.1%	30.6%	83.3%	75.5%
	C. coli	2002 (n=2)	-				-		50.0%		50.0%	
		2003 (n=1)	-				-		100.0%		100.0%	
		2004 (n=5)	-	-	-	-	-	-	-	-		-
		2005 (n=9)	-	22.2%	-	22.2%	22.2%	-	55.6%	55.6%		88.9%
		2006 (n=10)	-	-	-	-	-	-	30.0%	30.0%		80.0%
		2007 (n=14)	-	-	-	-	-	-	50.0%	50.0%		64.3%
		Total (n=41)	-	5.3%	-	5.3%	4.9%	-	41.5%	39.5%	66.7%	65.8%
	C. lari	2005 (n=1)	-	-	-	-	-	-	100.0%	100.0%		-
		2006 (n=2)	-	-	-	-	-	-	100.0%	100.0%		-
		Total (n=3)	-	-	-	-	-	-	100.0%	100.0%	-	-
	Total (n=99)		-	3.3%	1.1%	3.3%	3.0%	-	36.4%	36.7%	-	68.9%
Ground Beef	*C. jejuni*	2003 (n=1)	-				-		-		-	
		2007 (n=4)	-	-	-	-	-	-	50.0%	50.0%		-
		Total (n=5)	-	-	-	-	-	-	40.0%	50.0%	-	-
	C. coli	2007 (n=1)	-	-	-	-	-	-	-	-		100.0%
		Total (n=1)	-	-	-	-	-	-	-	-		100.0%
	Total (n=6)		-	-	-	-	-	-	33.3%	40.0%	-	20.0%
Pork Chop	*C. jejuni*	2002 (n=2)	-				-		-		-	
		2005 (n=1)	-	-	-	-	-	-	100.0%	100.0%		-
		2006 (n=1)	-	-	-	-	-	-	-	-		-
		Total (n=4)	-	-	-	-	-	-	25.0%	50.0%	-	-
	C. coli	2002 (n=3)	-				33.3%		-		33.3%	
		2003 (n=4)	-				75.0%		-		75.0%	
		2004 (n=3)	-	-	33.3%	33.3%	33.3%	-	-	-		66.7%
		2006 (n=2)	-	50.0%	50.0%	50.0%	50.0%	-	-	-		-
		2007 (n=4)	-	25.0%	25.0%	25.0%	25.0%	-	-	-		100.0%
		Total (n=16)	-	22.2%	33.3%	33.3%	43.8%	-	-	-	57.1%	66.7%
	C. lari	2005 (n=1)	-	-	-	-	-	-	-	100.0%		-
		Total (n=1)	-	-	-	-	-	-	-	100.0%		-
	Total (n=21)		-	16.7%	25.0%	25.0%	33.3%	-	4.8%	16.7%	44.4%	50.0%
Total (n=3190)			0.1%	2.4%	2.2%	2.8%	2.8%	-	17.4%	18.5%	42.7%	47.8%

[1] Gray areas indicate antimicrobial not included in testing in that year.

[2] Dashes indicate that 0.0% resistance to antimicrobial.

Table 14a. Number of *Campylobacter jejuni* Resistant to Multiple Antimicrobial Agents, 2002-2007

Meat Type	Number of Antimicrobials	2002 (n=202)	2003 (n=330)	2004 (n=517)	2005 (n=414)	2006 (n=439)	2007 (n=356)	Total
Chicken Breast	**0**	131	215	209	175	187	134	**1051**
	1	63	98	220	166	164	139	**850**
	2-4	4	12	79	61	72	59	**287**
	5-7	0	0	2	1	3	0	**6**
	≥8	N/A*	N/A	0	0	0	0	**0**
	Total	**198**	**325**	**510**	**403**	**426**	**332**	**2194**
Ground Turkey	**0**	0	1	3	3	2	2	**11**
	1	2	3	2	6	4	12	**28**
	2-4	0	0	2	1	6	5	**14**
	5-7	0	0	0	0	0	1	**1**
	≥8	N/A	N/A	0	0	0	0	**0**
	Total	**2**	**4**	**7**	**10**	**12**	**20**	**54**
Ground Beef	**0**	0	1	0	0	0	2	**3**
	1	0	0	0	0	0	0	**0**
	2-4	0	0	0	0	0	2	**2**
	5-7	0	0	0	0	0	0	**0**
	≥8	N/A	N/A	0	0	0	0	**0**
	Total	**0**	**1**	**0**	**0**	**0**	**4**	**5**
Pork Chop	**0**	2	0	0	0	1	0	**3**
	1	0	0	0	0	0	0	**0**
	2-4	0	0	0	1	0	0	**1**
	5-7	0	0	0	0	0	0	**0**
	≥8	N/A	N/A	0	0	0	0	**0**
	Total	**2**	**0**	**0**	**1**	**1**	**0**	**4**

* N/A indicates not more than five antimicrobial tested for 2002 and 2003.

Table 14b. Number of *Campylobacter coli* Resistant to Multiple Antimicrobial Agents, 2002-2007

Meat Type	Number of Antimicrobials	2002 (n=95)	2003 (n=147)	2004 (n=204)	2005 (n=160)	2006 (n=157)	2007 (n=162)	Total
Chicken Breast	0	41	66	75	55	56	65	**358**
	1	35	61	72	39	51	34	**292**
	2-4	14	15	46	49	35	40	**199**
	5-7	0	0	3	8	3	4	**18**
	≥8	N/A*	N/A	0	0	0	0	**0**
	Total	**90**	**142**	**196**	**151**	**145**	**143**	**867**
Ground Turkey	0	1	0	5	1	2	4	**13**
	1	1	1	0	3	5	3	**13**
	2-4	0	0	0	3	3	7	**13**
	5-7	0	0	0	2	0	0	**2**
	≥8	N/A	N/A	0	0	0	0	**0**
	Total	**2**	**1**	**5**	**9**	**10**	**14**	**41**
Ground Beef	0	0	0	0	0	0	0	**0**
	1	0	0	0	0	0	1	**1**
	2-4	0	0	0	0	0	0	**0**
	5-7	0	0	0	0	0	0	**0**
	≥8	N/A	N/A	0	0	0	0	**0**
	Total	**0**	**0**	**0**	**0**	**0**	**1**	**1**
Pork Chop	0	2	1	1	0	1	0	**5**
	1	0	1	1	0	0	3	**5**
	2-4	1	2	1	0	1	0	**5**
	5-7	0	0	0	0	0	1	**1**
	≥8	N/A	N/A	0	0	0	0	**0**
	Total	**3**	**4**	**3**	**0**	**2**	**4**	**16**

* N/A indicates not more than five antimicrobial tested for 2002 and 2003.

Table 15a. MIC Distribution among *Campylobacter jejuni* from Chicken Breast, 2002-2007

Antimicrobial	Year (# of Isolates)	%I[1]	%R[2]	(95% CI)[3]	Distribution (%) of MICs (µg/ml)[4] 0.008	0.015	0.03	0.06	0.125	0.25	0.50	1	2	4	8	16	32	64	128
Aminoglycosides																			
Gentamicin	2002 (n=198)	0.0%	0.0%	(0.0 - 1.8)				1.0	3.5	24.7	65.7	5.1							
	2003 (n=325)	0.0%	0.3%	(0.0 - 1.7)					0.9	15.4	67.7	15.7							
	2004 (n=510)	0.0%	0.0%	(0.0 - 0.7)					1.8	5.1	85.1	8.0							
	2005 (n=403)	0.0%	0.0%	(0.0 - 0.9)						5.5	89.1	5.5							
	2006 (n=426)	0.0%	0.0%	(0.0 - 0.9)					0.2	12.9	82.9	3.8	0.2						
	2007 (n=332)	0.0%	0.0%	(0.0 - 1.1)					0.6	17.2	79.8	2.4							
Ketolides																			
Telithromycin	2004 (n=510)	0.4%	0.4%	(0.0 - 1.4)		0.2		0.4	0.2	13.1	56.5	23.7	4.9	0.2	0.4	**0.4**			
	2005 (n=403)	0.0%	0.5%	(0.1 - 1.8)		0.2			1.0	11.4	45.4	35.7	5.7			**0.5**			
	2006 (n=426)	0.2%	0.7%	(0.1 - 2.0)					0.9	11.5	50.0	31.7	4.9		0.2	**0.7**			
	2007 (n=332)	0.0%	0.6%	(0.1 - 2.2)					0.6	11.4	39.8	40.1	6.6	0.9		**0.6**			
Lincosamides																			
Clindamycin	2004 (n=510)	0.0%	0.4%	(0.0 - 1.4)			0.6	10.2	55.5	29.6	2.0	1.2	0.6			**0.4**			
	2005 (n=403)	0.0%	0.5%	(0.1 - 1.8)			0.5	8.4	55.1	30.3	4.5	0.7			**0.5**				
	2006 (n=426)	0.0%	0.7%	(0.1 - 2.0)			1.6	14.1	46.9	32.4	4.2				**0.7**				
	2007 (n=332)	0.0%	0.6%	(0.1 - 2.2)			1.2	12.7	58.4	24.7	2.4						**0.6**		
Macrolides																			
Azithromycin	2004 (n=510)	0.0%	0.8%	(0.2 - 2.0)		4.9	49.6	38.2	5.3	0.2	0.2	0.6	0.2						**0.8**
	2005 (n=403)	0.0%	0.5%	(0.1 - 1.8)			49.9	46.4	3.0	0.2									**0.5**
	2006 (n=426)	0.0%	0.9%	(0.3 - 2.4)			54.5	39.4	5.2										**0.9**
	2007 (n=332)	0.0%	0.6%	(0.1 - 2.2)			46.4	48.5	4.5										**0.6**
Erythromycin	2002 (n=198)	93.9%	0.0%	(0.0 - 1.8)							6.1	48.0	39.4	6.6					
	2003 (n=325)	80.6%	0.0%	(0.0 - 1.1)						0.9	18.5	55.7	21.2	3.7					
	2004 (n=510)	0.0%	0.8%	(0.2 - 2.0)				0.4	2.5	53.1	35.3	7.8							**0.8**
	2005 (n=403)	0.0%	0.5%	(0.1 - 1.8)				0.5	4.5	36.7	46.2	11.2	0.5						**0.5**
	2006 (n=426)	0.0%	0.9%	(0.3 - 2.4)					8.0	39.4	39.0	12.7							**0.9**
	2007 (n=332)	0.0%	0.6%	(0.1 - 2.2)				0.3	6.9	43.7	34.3	13.6	0.6						**0.6**
Phenicols																			
Florfenicol[5]	2004 (n=510)	0.0%	0.0%	(0.0 - 0.7)					0.6		5.1	85.9	8.0	0.4					
	2005 (n=403)	0.0%	0.0%	(0.0 - 0.9)							10.4	77.7	11.7	0.2					
	2006 (n=426)	0.0%	0.0%	(0.0 - 0.9)					0.2		8.2	77.9	13.6						
	2007 (n=332)	0.0%	0.0%	(0.0 - 1.1)							9.3	80.7	9.9						
Quinolones																			
Ciprofloxacin	2002 (n=198)	0.0%	15.2%	(10.5 - 20.9)				2.0	41.9	29.8	9.1	2.0				**12.1**	**2.5**	**0.5**	
	2003 (n=325)	0.3%	14.5%	(10.8 - 18.8)				2.2	58.2	21.5	3.4		0.3	**0.6**	**2.5**	**6.2**	**4.9**	**0.3**	
	2004 (n=510)	0.0%	15.1%	(12.1 - 18.5)			0.2	39.8	37.3	7.6				**0.4**	**9.0**	**4.5**	**1.2**		
	2005 (n=403)	0.0%	15.1%	(11.8 - 19.0)				24.8	50.9	8.9	0.2			**0.5**	**6.2**	**6.7**	**1.7**		
	2006 (n=426)	0.0%	16.7%	(13.3 - 20.6)			0.7	29.8	44.8	8.0				**0.2**	**7.0**	**7.5**	**1.9**		
	2007 (n=332)	0.0%	17.2%	(13.3 - 21.7)			0.9	30.1	44.0	7.8					**6.3**	**7.5**	**3.3**		
Nalidixic acid	2004 (n=510)	0.2%	15.1%	(12.1 - 18.5)										64.3	20.4		0.2	**0.4**	**14.7**
	2005 (n=403)	0.2%	14.9%	(11.6 - 18.7)										69.0	15.9		0.2	**0.2**	**14.6**
	2006 (n=426)	0.0%	16.7%	(13.3 - 20.6)										71.4	12.0			**0.5**	**16.2**
	2007 (n=332)	0.0%	17.2%	(13.3 - 21.7)										69.3	13.6			**0.3**	**16.9**
Tetracyclines																			
Doxycycline	2002 (n=198)	9.1%	38.4%	(31.6 - 45.5)				15.2	16.2	6.6	4.0	2.5	8.1	9.1	**17.7**	**11.1**	**9.6**		
	2003 (n=325)	6.2%	40.6%	(35.2 - 46.2)				23.4	20.9	4.0	1.5	0.6	2.8	6.2	**17.8**	**16.6**	**6.2**		
Tetracycline	2004 (n=510)	0.2%	50.2%	(45.8 - 54.6)				0.6	24.3	15.3	7.6	1.8			0.2	**2.2**	**4.9**	**25.9**	**17.3**
	2005 (n=403)	0.0%	46.4%	(41.5 - 51.4)				0.7	19.1	20.6	9.4	3.2	0.5			**1.0**	**3.2**	**17.9**	**24.3**
	2006 (n=426)	0.0%	47.2%	(42.4 - 52.0)				1.4	23.2	13.8	10.3	2.8	0.7	0.5		**1.2**	**3.3**	**17.4**	**25.4**
	2007 (n=332)	0.0%	48.5%	(43.0 - 54.0)				1.2	13.3	21.1	10.5	5.1		0.3		**2.4**	**6.3**	**14.5**	**25.3**

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance. 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 Azithromycin, Clindamycin, Gentamicin, Nalidixic Acid and Teltihromycin.

[5] For Florfenicol, percent non-susceptible is reported rather than percent resistant because a resistance breakpoint has not been established.

Table 15b. MIC Distribution among *Campylobacter coli* from Chicken Breast, 2002-2007

Antimicrobial	Year (# of Isolates)	%I[1]	%R[2]	(95% CI)3	Distribution (%) of MICs (µg/ml)[4] 0.008	0.015	0.03	0.06	0.125	0.25	0.50	1	2	4	8	16	32	64	128
Aminoglycosides																			
Gentamicin	2002 (n=90)	0.0%	0.0%	(0.0 - 4.0)						23.3	75.6	1.1							
	2003 (n=142)	0.0%	0.0%	(0.0 - 2.6)					1.4	36.6	52.8	9.2							
	2004 (n=196)	0.0%	0.0%	(0.0 - 1.9)					0.5	4.1	85.7	9.7							
	2005 (n=151)	0.0%	0.0%	(0.0 - 2.4)						4.0	88.1	7.9							
	2006 (n=145)	0.0%	0.0%	(0.0 - 2.5)						2.8	93.1	4.1							
	2007 (n=143)	0.0%	0.7%	(0.0 - 3.8)					0.7	2.8	88.8	7.0					**0.7**		
Ketolides																			
Telithromycin	2004 (n=196)	2.6%	8.2%	(4.7 - 12.9)		0.5			1.0	20.4	5.6	18.9	35.7	7.1	2.6	**8.2**			
	2005 (n=151)	2.0%	7.9%	(4.2 - 13.5)					4.0	17.2	5.3	17.2	33.1	13.2	2.0	**7.9**			
	2006 (n=145)	0.7%	4.8%	(2.0 - 9.7)					1.4	13.1	2.1	11.7	47.6	18.6	0.7	**4.8**			
	2007 (n=143)	0.0%	7.0%	(3.4 - 12.5)						11.2	8.4	17.5	48.3	7.7		**7.0**			
Lincosamides																			
Clindamycin	2004 (n=196)	2.0%	7.1%	(4.0 - 11.7)				1.5	19.4	51.0	14.3	4.6		2.0	**3.1**	**4.1**			
	2005 (n=151)	1.3%	8.6%	(4.7 - 14.3)			0.7	0.7	20.5	42.4	25.2		0.7	1.3	**5.3**	**3.3**			
	2006 (n=145)	0.7%	4.8%	(2.0 - 9.7)			0.7	0.7	22.8	44.1	15.9	5.5	4.8	0.7	**4.8**				
	2007 (n=143)	1.4%	4.9%	(2.0 - 9.8)				0.7	16.8	60.8	11.9	3.5		1.4	**2.1**	**2.8**			
Macrolides																			
Azithromycin	2004 (n=196)	0.0%	9.2%	(5.5 - 14.1)			14.3	42.9	29.6	3.1	0.5	0.5							**9.2**
	2005 (n=151)	0.0%	9.9%	(5.7 - 15.9)			13.2	44.4	29.1	3.3									**9.9**
	2006 (n=145)	0.0%	5.5%	(2.4 - 10.6)			11.7	37.9	37.9	5.5	0.7	0.7							**5.5**
	2007 (n=143)	0.0%	6.3%	(2.9 - 11.6)			9.1	61.5	21.7	0.7		0.7							**6.3**
Erythromycin	2002 (n=90)	52.2%	18.9%	(11.4 - 28.5)						2.2	26.7	10.0	26.7	15.6	11.1				**7.8**
	2003 (n=142)	73.9%	9.2%	(5.0 - 15.1)						5.6	11.3	16.9	27.5	29.6	1.4	0.7			**7.0**
	2004 (n=196)	0.0%	9.2%	(5.5 - 14.1)					1.0	21.9	17.3	39.8	8.7	1.5	0.5				**9.2**
	2005 (n=151)	0.0%	9.9%	(5.7 - 15.9)					2.6	21.2	10.6	39.1	15.9	0.7					**9.9**
	2006 (n=145)	0.0%	5.5%	(2.4 - 10.6)					2.1	13.1	10.3	49.0	17.9	2.1					**5.5**
	2007 (n=143)	0.7%	6.3%	(2.9 - 11.6)				0.7	1.4	19.6	11.2	46.2	14.0			0.7		**6.3**	
Phenicols																			
Florfenicol[5]	2004 (n=196)	0.0%	0.0%	(0.0 - 1.9)							1.5	64.3	33.7	0.5					
	2005 (n=151)	0.0%	0.0%	(0.0 - 2.4)							3.3	55.6	39.1	2.0					
	2006 (n=145)	0.0%	0.0%	(0.0 - 2.5)							1.4	61.4	33.8	3.4					
	2007 (n=143)	0.0%	0.0%	(0.0 - 2.5)							2.1	78.3	19.6						
Quinolones																			
Ciprofloxacin	2002 (n=90)	0.0%	10.0%	(4.7 - 18.1)				1.1	27.8	36.7	16.7	7.8				**5.6**	**4.4**		
	2003 (n=142)	0.0%	13.4%	(8.3 - 20.1)				1.4	28.2	37.3	19.7				**0.7**	**0.7**	**11.3**	**0.7**	
	2004 (n=196)	0.0%	16.3%	(11.4 - 22.3)				23.0	36.7	23.5		0.5			**2.0**	**12.8**	**1.5**		
	2005 (n=151)	0.0%	29.1%	(22.0 - 37.1)				11.3	29.1	29.1	0.7	0.7			**7.3**	**15.2**	**6.6**		
	2006 (n=145)	0.0%	22.1%	(15.6 - 29.7)				6.2	36.6	31.7	3.4				**2.8**	**13.8**	**5.5**		
	2007 (n=143)	0.0%	25.9%	(18.9 - 33.9)				9.8	34.3	30.1					**3.5**	**18.2**	**4.2**		
Nalidixic acid	2004 (n=196)	0.0%	16.3%	(11.4 - 22.3)										47.4	34.7	1.5		**3.6**	**14.7**
	2005 (n=151)	0.0%	29.1%	(22.0 - 37.1)										44.4	26.5			**5.3**	**23.8**
	2006 (n=145)	0.0%	20.7%	(14.4 - 28.2)										51.0	24.8	3.4		**4.8**	**15.9**
	2007 (n=143)	0.0%	25.9%	(18.9 - 33.9)										50.3	22.4	1.4		**6.3**	**19.6**
Tetracyclines																			
Doxycycline	2002 (n=90)	0.0%	44.4%	(34.0 - 55.3)				4.4	32.2	12.2	4.4	2.2			**2.2**	**7.8**	**26.7**	**7.8**	
	2003 (n=142)	0.7%	50.7%	(42.2 - 59.2)				3.5	30.3	7.7	2.1	2.8	2.1	0.7	**5.6**	**14.8**	**23.9**	**6.3**	
Tetracycline	2004 (n=196)	0.0%	46.4%	(39.3 - 53.7)					6.6	21.4	9.7	9.7	5.6	0.5			**1.0**	**2.6**	**42.9**
	2005 (n=151)	0.0%	42.4%	(34.4 - 50.7)					2.6	22.5	11.3	13.9	5.3	2.0			**1.3**	**4.6**	**36.4**
	2006 (n=145)	0.0%	46.9%	(38.6 - 55.4)					2.8	19.3	18.6	6.9	5.5					**3.4**	**43.4**
	2007 (n=143)	0.0%	39.9%	(31.8 - 48.4)				0.7	0.7	32.9	18.2	6.3	1.4					**3.5**	**36.4**

[1] Percent of isolates with intermediate susceptibility.
[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.
[3] 95% confidence intervals for percent resistant (%R) were calculated using the Clopper-Pearson exact method.
[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Black vertical bars indicate the breakpoints for susceptibility, while red vertical bars indicate the breakpoints for resistance. 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 Azithromycin, Clindamycin, Gentamicin, Nalidixic Acid and Teltihromycin.
[5] For Florfenicol, percent non-susceptible is reported rather than percent resistant because a resistance breakpoint has not been established.

Table 16. *Enterococcus* Species by Meat Type, 2002 - 2007

	Species	2002		2003		2004		2005		2006		2007	
Total (a) Isolates In that Year	*E. faecalis*	893		1014		855		1001		945		852	
	E. faecium	506		575		757		618		649		357	
	E. hirae	102		129		129		117		115		87	
	Total (A)[1]	1520		1742		1755		1765		1731		1312	
Meat Type	**Species**	**n**	**%[2]**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Chicken Breast	*E. faecalis*	134	15.0%	188	18.5%	88	10.3%	116	11.6%	126	13.3%	123	14.4%
	E. faecium	231	45.7%	248	43.1%	348	46.0%	307	49.7%	315	48.5%	189	52.9%
	E. hirae	12	11.8%	28	21.7%	27	20.9%	30	25.6%	27	23.5%	22	25.3%
	Total (N)[3]	**381**	**25.1%**	**466**	**26.8%**	**466**	**26.6%**	**457**	**25.9%**	**469**	**27.1%**	**339**	**25.8%**
Ground Turkey	*E. faecalis*	294	32.9%	289	28.5%	260	30.4%	339	33.9%	291	30.8%	261	30.6%
	E. faecium	89	17.6%	118	20.5%	172	22.7%	107	17.3%	139	21.4%	65	18.2%
	E. hirae	2	2.0%	3	2.3%			1	0.9%	3	2.6%	2	2.3%
	Total (N)	**387**	**25.5%**	**418**	**24.0%**	**437**	**24.9%**	**452**	**25.6%**	**435**	**25.1%**	**329**	**25.1%**
Ground Beef	*E. faecalis*	210	23.5%	224	22.1%	194	22.7%	226	22.6%	227	13.1%	205	24.1%
	E. faecium	93	18.4%	112	19.5%	162	21.4%	129	20.9%	125	19.3%	70	19.6%
	E. hirae	76	74.5%	84	65.1%	88	68.2%	82	70.1%	77	67.0%	57	65.5%
	Total (N)	**383**	**25.2%**	**432**	**24.8%**	**448**	**25.5%**	**447**	**25.3%**	**438**	**25.3%**	**334**	**25.5%**
Pork Chop	*E. faecalis*	255	28.6%	313	30.9%	313	36.6%	320	32.0%	301	31.9%	263	30.9%
	E. faecium	93	18.4%	97	16.9%	75	9.9%	75	12.1%	70	10.8%	33	9.2%
	E. hirae	12	11.8%	14	10.9%	14	10.9%	4	3.4%	8	7.0%	6	6.9%
	Total (N)	**369**	**24.3%**	**426**	**24.5%**	**404**	**23.0%**	**409**	**23.2%**	**389**	**22.5%**	**310**	**23.6%**

[1] Totals reflect all species found not just those shown on chart.
[2] Where % = Number of Isolates per species per meat type (n) / total # of isolates per species (a).
[3] Where % = total # of isolates in meat type (N) / total # of isolates in that year (A).

Figure 5a. Antimicrobial Resistance among *Enterococcus* from Chicken Breast, 2002-2007

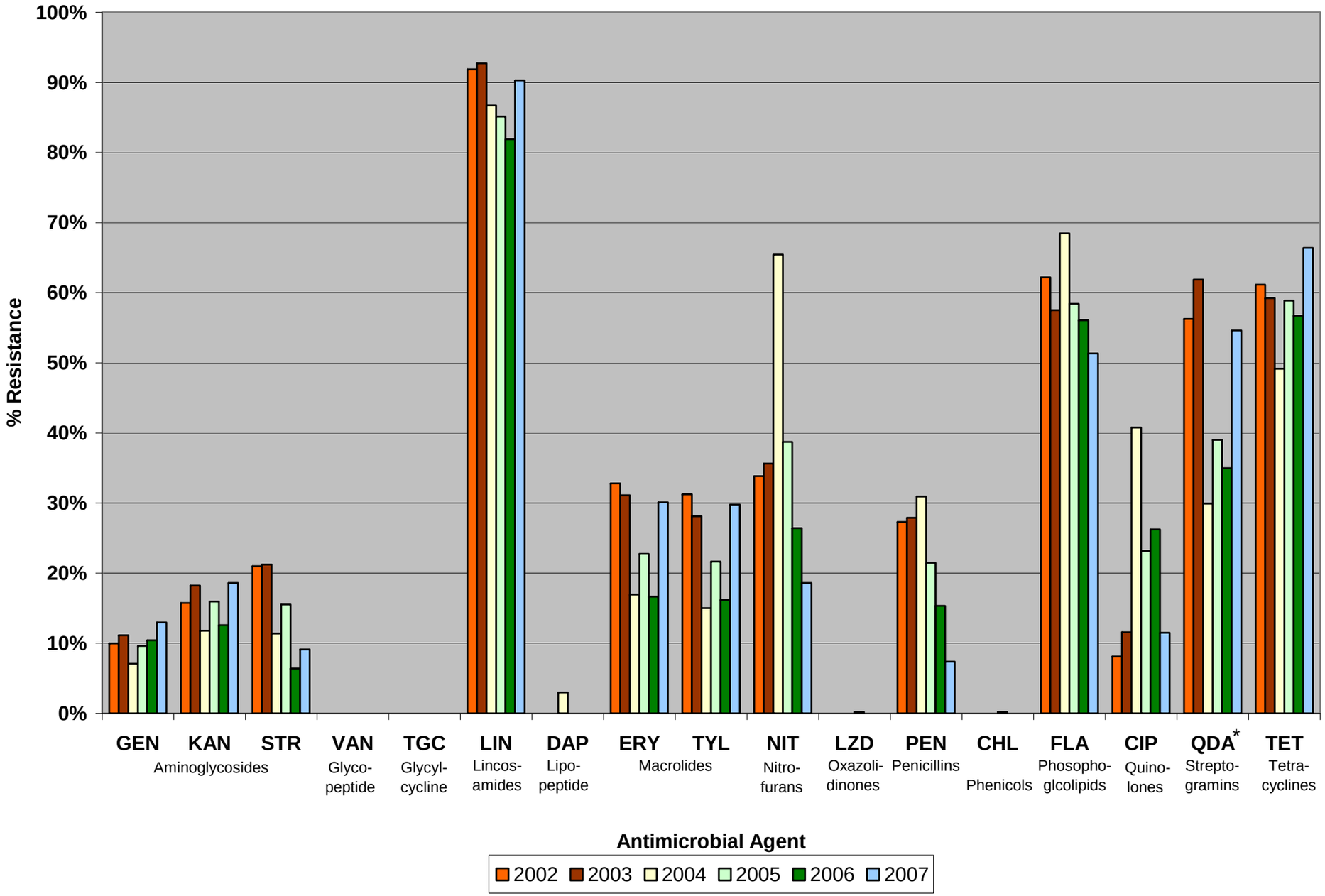


Table 17a. Trends in Resistance by Year and Antimicrobial Class among *Enterococcus* Isolates from Chicken Breast, 2002 - 2007

Class	Antimicrobial/Resistance Breakpoint (µg/ml)[1]	2002 (N=381)		2003 (N=466)		2004 (N=466)		2005 (N=457)		2006 (N=469)		2007 (N=339)		Cochran-Armitage Trend	
		n	%R[2]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic	P Value[3]
Aminoglycosides	GEN (MIC>500)	38	10.0%	52	11.2%	33	7.1%	44	9.6%	49	10.4%	44	13.0%	1.0684	0.2853
	KAN (MIC≥1024)	60	15.7%	85	18.2%	55	11.8%	73	16.0%	59	12.6%	63	18.6%	-0.2154	0.8295
	STR (MIC>1000)	80	21.0%	99	21.2%	53	11.4%	71	15.5%	30	6.4%	31	9.1%	-7.0251	<0.0001
Glycopeptides	VAN (MIC≥32)	0	-[4]	0	-	0	-	0	-	0	-	0	-	N/A[5]	N/A
Glycylcycline	TGC (MIC≥1)[6]	Not Tested		Not Tested		Not Tested		0	-	0	-	0	-	N/A	N/A
Lincosamides	LIN (MIC≥8)	350	91.9%	432	92.7%	404	86.7%	389	85.1%	384	81.9%	306	90.3%	-3.6028	0.0003
Lipopeptides	DAP (MIC≥16)[6]	Not Tested		Not Tested		14	3.0%	0	-	0	-	0	-	N/A	N/A
Macrolides	ERY (MIC≥8)	125	32.8%	145	31.1%	79	17.0%	104	22.8%	78	16.6%	102	30.1%	-3.3656	0.0008
	TYL (MIC≥32)	119	31.2%	131	28.1%	70	15.0%	99	21.7%	76	16.2%	101	29.8%	-2.5465	0.0109
Nitrofurans	NIT (MIC≥128)	129	33.9%	166	35.6%	305	65.5%	177	38.7%	124	26.4%	63	18.6%	-6.3204	<0.0001
Oxazolidinones	LZD (MIC≥8)	0	-	0	-	0	-	1	0.2%	0	-	0	-	0.3323	0.7397
Penicillins	PEN (MIC≥16)	104	27.3%	130	27.9%	144	30.9%	98	21.4%	72	15.4%	25	7.4%	-8.2698	<0.0001
Phenicols	CHL (MIC≥32)	0	-	0	-	0	-	1	0.2%	0	-	0	-	0.3323	0.7397
Phosphoglycolipids	FLA (MIC≥32)	237	62.2%	268	57.5%	319	68.5%	267	58.4%	263	56.1%	174	51.3%	-3.1711	0.0015
Quinolones	CIP (MIC≥4)	31	8.1%	54	11.6%	190	40.8%	106	23.2%	123	26.2%	39	11.5%	3.0748	0.0021
Streptogramins	QDA[7] (MIC≥4)	139	56.3%	172	61.9%	113	29.9%	133	39.0%	120	35.0%	118	54.6%	-3.6497	0.0003
Tetracyclines	TET (MIC≥16)	233	61.2%	276	59.2%	229	49.1%	269	58.9%	266	56.7%	225	66.4%	1.1284	0.2591

[1] Blank gray areas indicate antibiotic not tested in that year.
[2] Where %R = the number of resistant isolates (n) / the number of positive isolates (N).
[3] P Value for percent resistant for trend was calculated using Cochran-Armitage trend test method.
[4] Dashes indicate 0.0% resistance.
[5] N/A = No Z statistic or P value could be calculated for this antibiotic.
[6] Percent non susceptible is reported rather than percent resistant as no CLSI breakpoint has been established. NARMS breakpoint established to determine resistance.
[7] Data presented for all species except *E. faecalis,* which is considered intrinsically resistant to Quinupristin-Dalfopristin.

Figure 5b. Antimicrobial Resistance among *Enterococcus* from Ground Turkey, 2002-2007

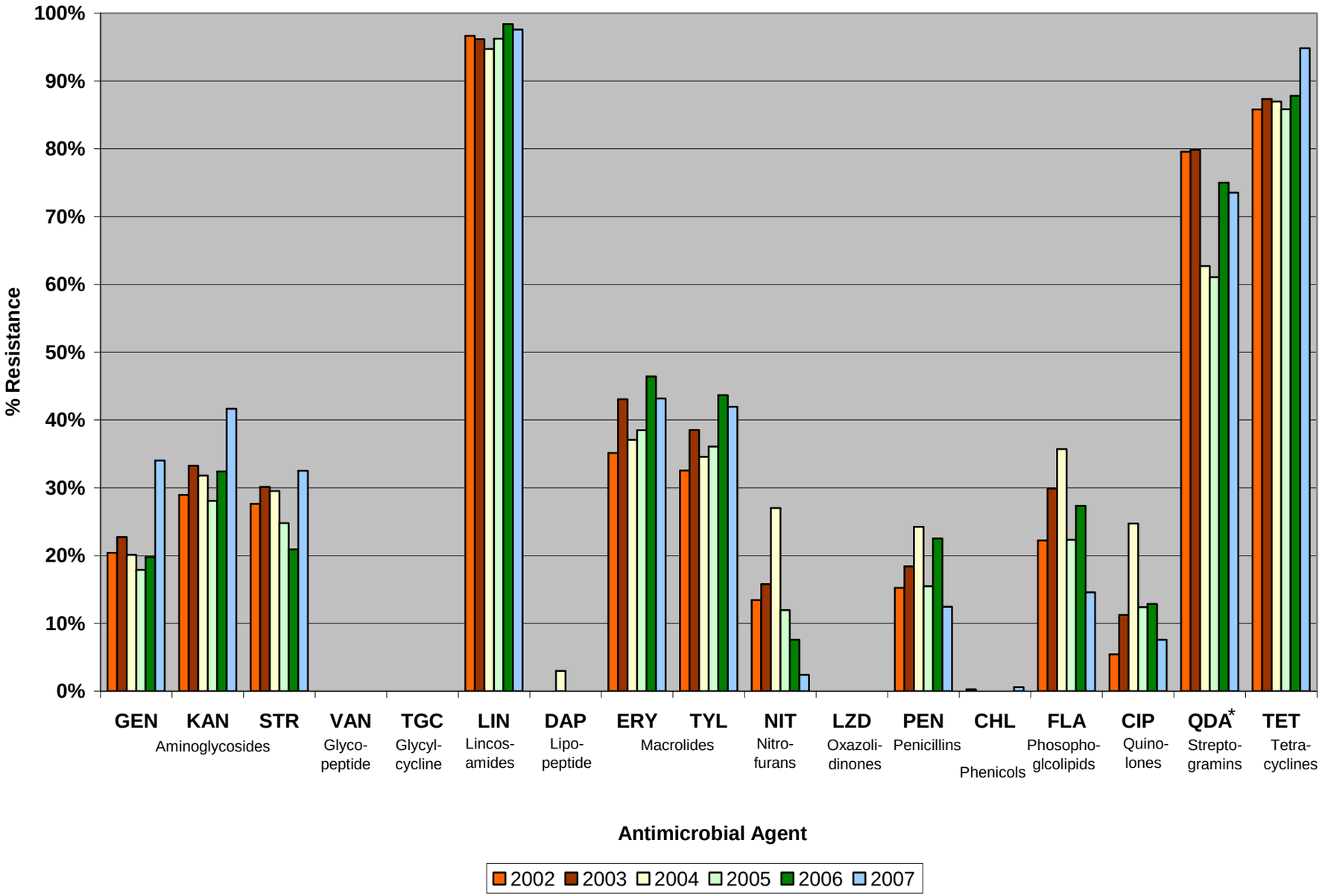


Table 17b. Trends in Resistance by Year and Antimicrobial Class among *Enterococcus* Isolates from Ground Turkey, 2002 - 2007

Class	Antimicrobial/Resistance Breakpoint (µg/ml)[1]	2002 (N=387)		2003 (N=418)		2004 (N=437)		2005 (N=452)		2006 (N=435)		2007 (N=329)		Cochran-Armitage Trend	
		n	%R[2]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic	P Value[3]
Aminoglycosides	GEN (MIC>500)	79	20.4%	95	22.7%	88	20.1%	81	17.9%	86	19.8%	112	34.0%	2.6761	0.0074
	KAN (MIC≥1024)	112	28.9%	139	33.3%	139	31.8%	127	28.1%	141	32.4%	137	41.6%	2.5167	0.0118
	STR (MIC>1000)	107	27.6%	126	30.1%	129	29.5%	112	24.8%	91	20.9%	107	32.5%	-0.8383	0.4019
Glycopeptides	VAN (MIC≥32)	0	-[4]	0	-	0	-	0	-	0	-	0	-	N/A[5]	N/A
Glycylcycline	TGC (MIC≥1)[6]	Not Tested		Not Tested		Not Tested		0	-	0	-	0	-	N/A	N/A
Lincosamides	LIN (MIC≥8)	374	96.6%	402	96.2%	414	94.7%	435	96.2%	428	98.4%	321	97.6%	1.7040	0.0884
Lipopeptides	DAP (MIC≥16)[6]	Not Tested		Not Tested		13	3.0%	0	-	0	-	0	-	N/A	N/A
Macrolides	ERY (MIC≥8)	136	35.1%	180	43.1%	162	37.1%	174	38.5%	202	46.4%	142	43.2%	2.4897	0.0128
	TYL (MIC≥32)	126	32.6%	161	38.5%	151	34.6%	163	36.1%	190	43.7%	138	41.9%	3.0901	0.0020
Nitrofurans	NIT (MIC≥128)	52	13.4%	66	15.8%	118	27.0%	54	11.9%	33	7.6%	8	2.4%	-6.3559	<0.0001
Oxazolidinones	LZD (MIC≥8)	0	-	0	-	0	-	0	-	0	-	0	-	N/A	N/A
Penicillins	PEN (MIC≥16)	59	15.2%	77	18.4%	106	24.3%	70	15.5%	98	22.5%	41	12.5%	-0.3479	0.7279
Phenicols	CHL (MIC≥32)	1	0.3%	0	-	0	-	0	-	0	-	2	0.6%	0.9288	0.3530
Phosphoglycolipids	FLA (MIC≥32)	86	22.2%	125	29.9%	156	35.7%	101	22.3%	119	27.4%	48	14.6%	-2.8818	0.0040
Quinolones	CIP (MIC≥4)	21	5.4%	47	11.2%	108	24.7%	56	12.4%	56	12.9%	25	7.6%	0.4339	0.6643
Streptogramins	QDA[7] (MIC≥4)	74	79.6%	103	79.8%	111	62.7%	69	61.1%	108	75.0%	50	73.5%	-1.1977	0.2310
Tetracyclines	TET (MIC≥16)	332	85.8%	365	87.3%	380	87.0%	388	85.8%	382	87.8%	312	94.8%	2.9301	0.0034

[1] Blank gray areas indicate antibiotic not tested in that year.
[2] Where %R = the number of resistant isolates (n) / the number of positive isolates (N).
[3] P Value for percent resistant for trend was calculated using Cochran-Armitage trend test method.
[4] Dashes indicate 0.0% resistance.
[5] N/A = No Z Statistic or P Value could be calculated for this antibiotic.
[6] Percent non susceptible is reported rather than percent resistant as no CLSI breakpoint has been established. NARMS breakpoint established to determine resistance.
[7] Data presented for all species except *E. faecalis,* which is considered intrinsically resistant to Quinupristin-Dalfopristin.

Figure 5c. Antimicrobial Resistance among *Enterococcus* from Ground Beef, 2002-2007

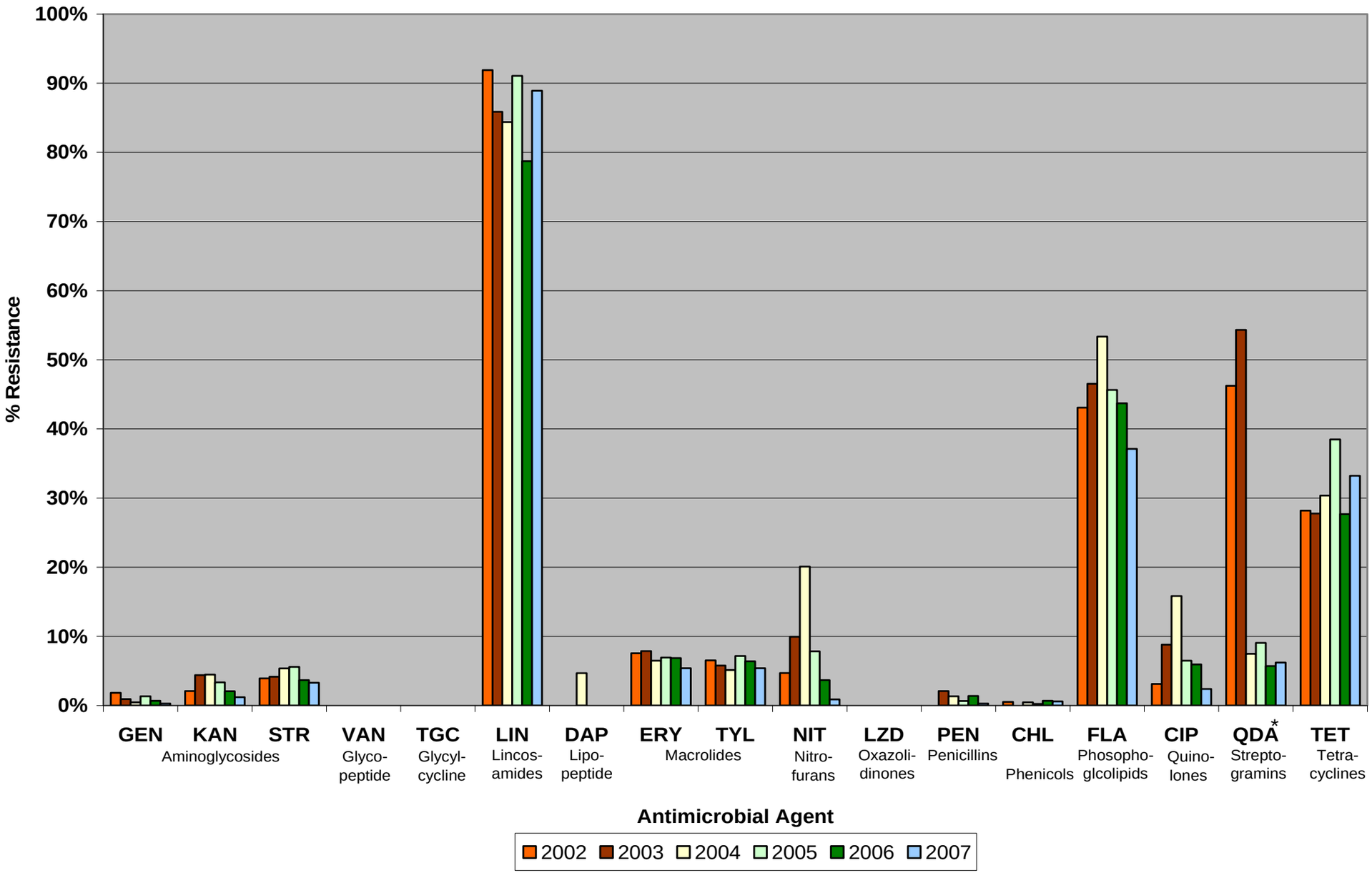


Table 17c. Trends in Resistance among *Enterococcus* Isolates from Ground Beef, 2002 – 2007

Class	Antimicrobial/Resistance Breakpoint (µg/ml)[1]	2002 (N=383)		2003 (N=432)		2004 (N=448)		2005 (N=447)		2006 (N=438)		2007 (N=336)		Cochran-Armitage Trend	
		n	%R[2]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic	P Value[3]
Aminoglycosides	GEN (MIC>500)	7	1.8%	4	0.9%	2	0.4%	6	1.3%	3	0.7%	1	0.3%	-1.7177	0.0858
	KAN (MIC≥1024)	8	2.1%	19	4.4%	20	4.5%	15	3.4%	9	2.1%	4	1.2%	-1.7189	0.0856
	STR (MIC>1000)	15	3.9%	18	4.2%	24	5.4%	25	5.6%	16	3.7%	11	3.3%	-0.4441	0.6569
Glycopeptides	VAN (MIC≥32)	0	-[4]	0	-	0	-	0	-	0	-	0	-	N/A[5]	N/A
Glycylcycline	TGC (MIC≥1)[6]	Not Tested		Not Tested		Not Tested		0	-	0	-	0	-	N/A	N/A
Lincosamides	LIN (MIC≥8)	352	91.9%	371	85.9%	378	84.4%	407	91.1%	345	78.8%	297	88.9%	-2.2848	0.0223
Lipopeptides	DAP (MIC≥16)[6]	Not Tested		Not Tested		21	4.7%	0	-	0	-	0	-	N/A	N/A
Macrolides	ERY (MIC≥8)	29	7.6%	34	7.9%	29	6.5%	31	6.9%	30	6.8%	18	5.4%	-1.1874	0.2351
	TYL (MIC≥32)	25	6.5%	25	5.8%	23	5.1%	32	7.2%	28	6.4%	18	5.4%	-0.0754	0.9399
Nitrofurans	NIT (MIC≥128)	18	4.7%	43	10.0%	90	20.1%	35	7.8%	16	3.7%	3	0.9%	-4.2724	<0.0001
Oxazolidinones	LZD (MIC≥8)	0	-	0	-	0	-	0	-	0	-	0	-	N/A	N/A
Penicillins	PEN (MIC≥16)	0	-	9	2.1%	6	1.3%	3	0.7%	6	1.4%	1	0.3%	-0.2867	0.7743
Phenicols	CHL (MIC≥32)	2	0.5%	0	-	2	0.4%	1	0.2%	3	0.7%	2	0.6%	0.8640	0.3876
Phosphoglycolipids	FLA (MIC≥32)	165	43.1%	201	46.5%	239	53.3%	204	45.6%	191	43.6%	124	37.1%	-2.0359	0.0418
Quinolones	CIP (MIC≥4)	12	3.1%	38	8.8%	71	15.8%	29	6.5%	27	6.2%	8	2.4%	-1.8915	0.0586
Streptogramins	QDA[7] (MIC≥4)	80	46.2%	113	54.3%	19	7.5%	20	9.0%	12	5.7%	8	6.2%	-13.8013	<0.0001
Tetracyclines	TET (MIC≥16)	108	28.2%	120	27.8%	136	30.4%	172	38.5%	121	27.6%	111	33.2%	1.6639	0.0961

[1] Blank gray areas indicate antibiotic not tested in that year.
[2] Where %R = the number of resistant isolates (n) / the number of positive isolates (N).
[3] P Value for percent resistant for trend was calculated using Cochran-Armitage trend test method.
[4] Dashes indicate 0.0% resistance.
[5] N/A = No Z Statistic or P Value could be calculated for this antibiotic.
[6] Percent non susceptible is reported rather than percent resistant as no CLSI breakpoint has been established. NARMS breakpoint established to determine resistance.
[7] Data presented for all species except *E. faecalis,* which is considered intrinsically resistant to Quinupristin-Dalfopristin.

Figure 5d. Antimicrobial Resistance among *Enterococcus* from Pork Chops, 2002-2007

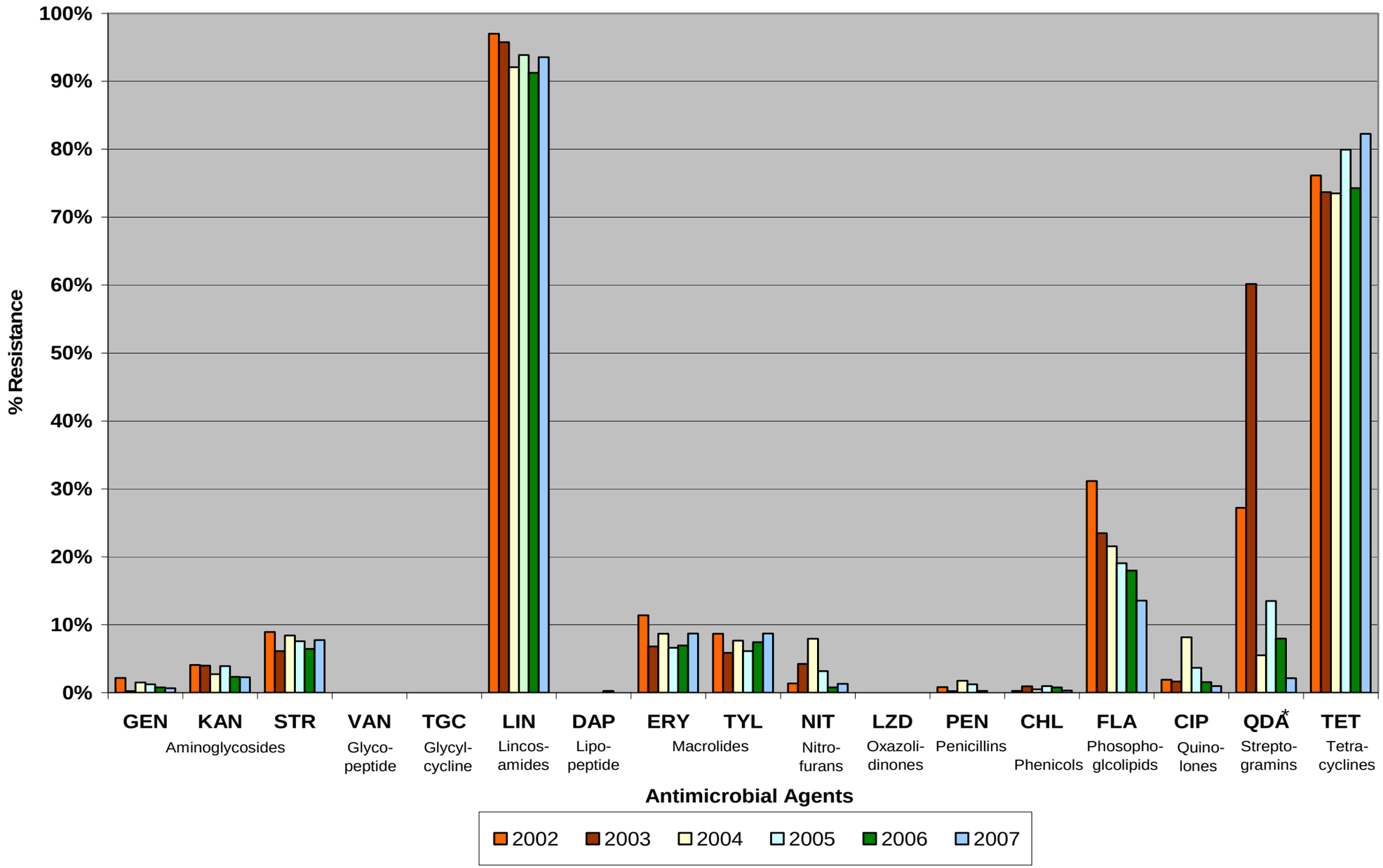


Table 17d. Trends in Resistance among *Enterococcus* Isolates from Pork Chop 2002 - 2007

Class	Antimicrobial/Resistance Breakpoint (µg/ml)	2002 (N=369)		2003 (N=426)		2004 (N=404)		2005 (N=409)		2006 (N=389)		2007 (N=310)		Cochran-Armitage Trend	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P Value[3]
Aminoglycosides	GEN (MIC>500)	8	2.2%	1	0.2%	6	1.5%	5	1.2%	3	0.8%	2	0.6%	-1.2604	0.2075
	KAN (MIC≥1024)	15	4.1%	17	4.0%	11	2.7%	16	3.9%	9	2.3%	7	2.3%	-1.6374	0.1015
	STR (MIC>1000)	33	8.9%	26	6.1%	34	8.4%	31	7.6%	25	6.4%	24	7.7%	-0.5021	0.6156
Glycopeptides	VAN (MIC≥32)	0	-[4]	0	-	0	-	0	-	0	-	0	0.0%	N/A	N/A
Glycylcycline	TGC (MIC≥1)[5,6]	Not Tested		Not Tested		Not Tested		0	-	0	-	0	0.0%	N/A	N/A
Lincosamides	LIN (MIC≥8)	358	97.0%	408	95.8%	372	92.1%	384	93.9%	355	91.3%	290	93.5%	-2.9197	0.0035
Lipopeptides	DAP (MIC≥16)[5,6]	Not Tested		Not Tested		0	-	0	-	1	0.3%	0	0.0%	N/A	N/A
Macrolides	ERY (MIC≥8)	42	11.4%	29	6.8%	35	8.7%	27	6.6%	27	6.9%	27	8.7%	-1.3078	0.1909
	TYL (MIC≥32)	32	8.7%	25	5.9%	31	7.7%	25	6.1%	29	7.5%	27	8.7%	0.2516	0.8014
Nitrofurans	NIT (MIC≥128)	5	1.4%	18	4.2%	32	7.9%	13	3.2%	3	0.8%	4	1.3%	-1.9936	0.0462
Oxazolidinones	LZD (MIC≥8)	0	-	0	-	0	-	0	-	0	-	0	0.0%	N/A	N/A
Penicillins	PEN (MIC≥16)	3	0.8%	1	0.2%	7	1.7%	5	1.2%	1	0.3%	0	0.0%	-1.0375	0.2995
Phenicols	CHL (MIC≥32)	1	0.3%	4	0.9%	2	0.5%	4	1.0%	3	0.8%	1	0.3%	0.1263	0.8995
Phosphoglycolipids	FLA (MIC≥32)	115	31.2%	100	23.5%	87	21.5%	78	19.1%	70	18.0%	42	13.5%	-5.8377	<0.0001
Quinolones	CIP (MIC≥4)	7	1.9%	7	1.6%	33	8.2%	15	3.7%	6	1.5%	3	1.0%	-1.0484	0.2945
Streptogramins	QDA[7] (MIC≥4)	31	27.2%	68	60.2%	5	5.5%	12	13.5%	7	8.0%	1	2.1%	-7.3069	<0.0001
Tetracyclines	TET (MIC≥16)	281	76.2%	314	73.7%	297	73.5%	327	80.0%	289	74.3%	255	82.3%	1.9563	0.0504

[1] Where %R = the number of resistant isolates (n) / the number of positive isolates (N).
[2] N/A = No Z Statistic or P Value could be calculated for this antibiotic.
[3] P Value for percent resistant for trend was calculated using Cochran-Armitage trend test method.
[4] Dashes indicate 0.0% resistance.
[5] Percent non susceptible is reported rather than percent resistant as no CLSI breakpoint has been established. NARMS breakpoint established to determine resistance.
[6] Z Statistic and P Values based on less than 5 years of data.
[7] Data presented for all species except *E. faecalis,* which is considered intrinsically resistant to Quinupristin-Dalfopristin.

Table 18a. MIC Distribution Among *Enterococcus faecalis* and *Enterococcus faecium* from Chicken Breast, 2007

Antimicrobial	Species	%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	2048	>2048
Aminoglycosides																							
Gentamicin	faecalis	N/A	**19.5%**	(12.9 - 27.6)														78.0	2.4	**1.6**	**2.4**	**15.4**	
	faecium	N/A	**9.5%**	(5.7 - 14.6)														89.9	0.5	**1.1**	**3.2**	**5.3**	
Kanamycin	faecalis	N/A	**28.5%**	(20.7 - 37.3)														70.7		0.8		**28.5**	
	faecium	N/A	**12.2%**	(7.9 - 17.7)														73.5	11.6	2.6	**1.1**	**11.1**	
Streptomycin	faecalis	N/A	**17.9%**	(11.6 - 25.8)																82.1	**2.4**	**9.8**	**5.7**
	faecium	N/A	**3.7%**	(1.5 - 7.5)																96.3	**3.7**		
Glycopeptides																							
Vancomycin	faecalis	0.0%	**0.0%**	(0.0 - 3.0)							71.5	28.5											
	faecium	0.0%	**0.0%**	(0.0 - 1.9)						66.1	29.1	4.8											
Glycylcycline																							
Tigecycline[5]	faecalis	0.0%	**0.0%**	(0.0 - 3.0)	1.6	11.4	19.5	65.9	1.6														
	faecium	0.0%	**0.0%**	(0.0 - 1.9)		7.9	40.7	48.1	3.2														
Lincosamides																							
Lincomycin	faecalis	0.8%	**99.2%**	(95.6 - 100.0)									0.8		**27.6**	**24.4**	**47.2**						
	faecium	0.5%	**84.1%**	(78.1 - 89.0)							15.3		0.5	**10.1**	**14.3**	**1.1**	**58.7**						
Lipopeptides																							
Daptomycin[5]	faecalis	0.0%	**0.0%**	(0.0 - 3.0)						26.0	71.5	2.4											
	faecium	0.5%	**0.0%**	(0.0 - 1.9)						4.8	5.3	59.3	30.2	0.5									
Macrolides																							
Erythromicin	faecalis	24.4%	**44.7%**	(35.7 - 53.9)						30.9	20.3	4.1		**2.4**	**42.3**								
	faecium	59.8%	**19.6%**	(14.2 - 26.0)						20.6	11.1	33.3	15.3	**0.5**	**19.0**								
Tylosin	faecalis	0.0%	**44.7%**	(35.7 - 53.9)							8.1	46.3	0.8				**44.7**						
	faecium	0.5%	**19.0%**	(13.7 - 25.4)							20.6	25.9	25.4	8.5	0.5		**19.0**						
Nitrofurans																							
Nitrofurantoin	faecalis	3.3%	**0.0%**	(0.0 - 3.0)										71.5	23.6	1.6	3.3						
	faecium	58.2%	**32.8%**	(26.2 - 40.0)										4.8	1.1	3.2	58.2	**32.8**					
Oxazolidinones																							
Linezolid	faecalis	0.0%	**0.0%**	(0.0 - 3.0)						2.4	78.9	18.7											
	faecium	2.1%	**0.0%**	(0.0 - 1.9)							29.1	68.8	2.1										
Penicillins																							
Penicillin	faecalis	N/A	**0.0%**	(0.0 - 3.0)							0.8	30.9	65.0	3.3									
	faecium	N/A	**12.2%**	(7.9 - 17.7)						5.8	2.6	12.7	55.6	11.1	**9.5**	**2.6**							
Phenicols																							
Chloramphenicol	faecalis	0.0%	**0.0%**	(0.0 - 3.0)								2.4	46.3	51.2									
	faecium	2.1%	**0.0%**	(0.0 - 1.9)								0.5	58.2	39.2	2.1								
Phosphoglcolipids																							
Flavomycin	faecalis	0.0%	**0.0%**	(0.0 - 3.0)							11.4	88.6											
	faecium	4.2%	**81.5%**	(75.2 - 86.7)								5.3	3.7	5.3	4.2	**81.5**							
Quinolones																							
Ciprofloxacin	faecalis	11.4%	**0.0%**	(0.0 - 3.0)						11.4	77.2	11.4											
	faecium	35.4%	**19.6%**	(14.2 - 26.0)					1.1	7.4	36.5	35.4	**18.5**	**1.1**									
Streptogramins																							
Quinupristin-Dalfopristin	faecalis																						
	faecium	21.2%	**57.1%**	(49.8 - 64.3)							21.7	21.2	**12.2**	**38.6**	**6.3**								
Tetracyclines																							
Tetracycline	faecalis	0.0%	**65.9%**	(56.8 - 74.2)									34.1		**4.9**	**11.4**	**49.6**						
	faecium	0.5%	**66.1%**	(58.9 - 72.8)									33.3	0.5	**1.6**	**5.8**	**58.7**						

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black lines indicate the breakpoints for susceptibility, while vertical red lines indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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. No CLSI breakpoints for tigecycline or daptomycin.

[5] For daptomycin and tigecycline, percent non-susceptible is reported rather than percent resistant because a resistance breakpoint has not been established.

Table 18b. MIC Distribution Among *Enterococcus faecalis* and *Enterococcus faecium* from Ground Turkey, 2007

Antimicrobial	Species	%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	2048	>2048
Aminoglycosides																							
Gentamicin	faecalis	N/A	**42.1%**	(36.1 - 48.4)														57.9			**1.9**	**40.2**	
	faecium	N/A	**1.5%**	(0.0 - 8.3)														98.5				**1.5**	
Kanamycin	faecalis	N/A	**50.2%**	(44.0 - 56.4)														49.8				**50.2**	
	faecium	N/A	**7.7%**	(2.5 - 17.0)														60.0	24.6	7.7	**1.5**	**6.2**	
Streptomycin	faecalis	N/A	**36.4%**	(30.6 - 42.6)																63.6	**1.1**	**12.3**	**23.0**
	faecium	N/A	**16.9%**	(8.8 - 28.3)																83.1	**13.8**		**3.1**
Glycopeptides																							
Vancomycin	faecalis	0.0%	**0.0%**	(0.0 - 1.4)							69.0	29.9	1.1										
	faecium	0.0%	**0.0%**	(0.0 - 5.5)						63.1	12.3	24.6											
Glycylcycline																							
Tigecycline[5]	faecalis	0.0%	**0.0%**	(0.0 - 1.4)		3.4	25.3	65.9	5.4														
	faecium	0.0%	**0.0%**	(0.0 - 5.5)		9.2	35.4	53.8	1.5														
Lincosamides																							
Lincomycin	faecalis	0.4%	**98.9%**	(96.7 - 99.8)								0.8	0.4		**25.3**	**18.0**	**55.6**						
	faecium	0.0%	**92.3%**	(83.0 - 97.5)							7.7			**6.2**	**15.4**	**4.6**	**66.2**						
Lipopeptides																							
Daptomycin[5]	faecalis	0.0%	**0.0%**	(0.0 - 1.4)						27.6	70.9	1.5											
	faecium	0.0%	**0.0%**	(0.0 - 5.5)						3.1	12.3	56.9	27.7										
Macrolides																							
Erythromicin	faecalis	31.4%	**48.7%**	(42.4 - 54.9)						19.9	27.2	4.2		**0.4**	**48.3**								
	faecium	40.0%	**23.1%**	(13.5 - 35.2)						36.9	15.4	18.5	6.2	**4.6**	**18.5**								
Tylosin	faecalis	0.0%	**49.4%**	(43.2 - 55.7)							15.3	34.1	1.1				**49.4**						
	faecium	0.0%	**13.8%**	(6.5 - 24.7)							15.4	23.1	40.0	7.7		**1.5**	**12.3**						
Nitrofurans																							
Nitrofurantoin	faecalis	1.1%	**0.0%**	(0.0 - 1.4)									0.4	79.7	17.2	1.5	1.1						
	faecium	50.8%	**12.3%**	(5.5 - 22.8)										1.5	1.5	33.8	50.8	**12.3**					
Oxazolidinones																							
Linezolid	faecalis	0.0%	**0.0%**	(0.0 - 1.4)						2.3	85.1	12.6											
	faecium	0.0%	**0.0%**	(0.0 - 5.5)							29.2	70.8											
Penicillins																							
Penicillin	faecalis	N/A	**0.0%**	(0.0 - 1.4)							0.4	36.8	59.8	3.1									
	faecium	N/A	**60.0%**	(47.1 - 72.0)						3.1	3.1	7.7	18.5	7.7	**20.0**	**40.0**							
Phenicols																							
Chloramphenicol	faecalis	0.0%	**0.8%**	(0.1 - 2.7)								2.3	52.9	44.1			**0.8**						
	faecium	0.0%	**0.0%**	(0.0 - 5.5)								1.5	56.9	41.5									
Phosphoglcolipids																							
Flavomycin	faecalis	0.0%	**0.4%**	(0.0 - 2.1)							18.8	80.5	0.4			**0.4**							
	faecium	16.9%	**69.2%**	(56.6 - 80.1)								1.5	1.5	10.8	16.9	**69.2**							
Quinolones																							
Ciprofloxacin	faecalis	10.7%	**0.0%**	(0.0 - 1.4)					0.4	11.1	77.8	10.7											
	faecium	23.1%	**35.4%**	(23.9 - 48.2)						4.6	36.9	23.1	**29.2**	**6.2**									
Streptogramins																							
Quinupristin-Dalfopristin	faecalis																						
	faecium	12.3%	**76.9%**	(64.8 - 86.5)							10.8	12.3	**6.2**	**13.8**	**55.4**	**1.5**							
Tetracyclines																							
Tetracycline	faecalis	0.0%	**94.3%**	(90.7 - 96.7)									5.7		**2.3**	**14.6**	**77.4**						
	faecium	0.0%	**96.9%**	(89.3 - 99.6)									3.1		**3.1**	**6.2**	**87.7**						

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black lines indicate the breakpoints for susceptibility, while vertical red lines indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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. No CLSI breakpoints for tigecycline or daptomycin.

[5] For daptomycin and tigecycline, percent non-susceptible is reported rather than percent resistant because a resistance breakpoint has not been established.

Table 18c. MIC Distribution Among *Enterococcus faecalis* and *Enterococcus faecium* from Ground Beef, 2007

Antimicrobial	Species	%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	2048	>2048
Aminoglycosides																							
Gentamicin	faecalis	N/A	**0.5%**	(0.0 - 2.7)														99.5				**0.5**	
	faecium	N/A	**0.0%**	(0.0 - 5.1)														100.0					
Kanamycin	faecalis	N/A	**2.0%**	(0.5 - 4.9)														97.1	1.0			**2.0**	
	faecium	N/A	**0.0%**	(0.0 - 5.1)														75.7	21.4	2.9			
Streptomycin	faecalis	N/A	**4.9%**	(2.4 - 8.8)																95.1	**3.4**	**1.0**	**0.5**
	faecium	N/A	**0.0%**	(0.0 - 5.1)																100.0			
Glycopeptides																							
Vancomycin	faecalis	0.0%	**0.0%**	(0.0 - 1.8)							59.5	38.0	2.4										
	faecium	0.0%	**0.0%**	(0.0 - 5.1)						87.1	10.0	2.9											
Glycylcycline																							
Tigecycline[5]	faecalis	0.0%	**0.0%**	(0.0 - 1.8)		11.7	31.7	53.7	2.9														
	faecium	0.0%	**0.0%**	(0.0 - 5.1)		18.6	51.4	25.7	4.3														
Lincosamides																							
Lincomycin	faecalis	0.5%	**98.0%**	(95.1 - 99.5)							1.5		0.5	**3.9**	**50.7**	**38.0**	**5.4**						
	faecium	25.7%	**55.7%**	(43.3 - 67.6)							15.7	2.9	25.7	**28.6**	**18.6**	**2.9**	**5.7**						
Lipopeptides																							
Daptomycin[5]	faecalis	0.0%	**0.0%**	(0.0 - 1.8)						28.8	67.3	3.9											
	faecium	0.0%	**0.0%**	(0.0 - 5.1)						2.9	22.9	60.0	14.3										
Macrolides																							
Erythromicin	faecalis	47.8%	**2.4%**	(0.8 - 5.6)						49.8	37.6	10.2			**2.4**								
	faecium	70.0%	**4.3%**	(0.9 - 12.0)						25.7	14.3	31.4	24.3	**1.4**	**2.9**								
Tylosin	faecalis	0.0%	**2.4%**	(0.8 - 5.6)						0.5	19.0	74.1	3.9				**2.4**						
	faecium	0.0%	**2.9%**	(0.3 - 9.9)							4.3	32.9	40.0	20.0			**2.9**						
Nitrofurans																							
Nitrofurantoin	faecalis	0.0%	**0.0%**	(0.0 - 1.8)									0.5	70.7	27.8	1.0							
	faecium	67.1%	**4.3%**	(0.9 - 12.0)										4.3	1.4	22.9	67.1	**4.3**					
Oxazolidinones																							
Linezolid	faecalis	0.0%	**0.0%**	(0.0 - 1.8)							67.3	32.7											
	faecium	2.9%	**0.0%**	(0.0 - 5.1)							34.3	62.9	2.9										
Penicillins																							
Penicillin	faecalis	N/A	**0.0%**	(0.0 - 1.8)							0.5	34.1	62.0	3.4									
	faecium	N/A	**1.4%**	(0.0 - 7.7)						30.0		14.3	44.3	10.0		**1.4**							
Phenicols																							
Chloramphenicol	faecalis	0.0%	**1.0%**	(0.1 - 3.5)									67.3	31.7		**0.5**	**0.5**						
	faecium	0.0%	**0.0%**	(0.0 - 5.1)								1.4	77.1	21.4									
Phosphoglcolipids																							
Flavomycin	faecalis	0.5%	**1.0%**	(0.1 - 3.5)							10.7	85.9	1.0	1.0	0.5	**1.0**							
	faecium	2.9%	**92.9%**	(84.1 - 97.6)								4.3			2.9	**92.9**							
Quinolones																							
Ciprofloxacin	faecalis	25.4%	**0.0%**	(0.0 - 1.8)						18.5	56.1	25.4											
	faecium	12.9%	**10.0%**	(4.1 - 19.5)						38.6	38.6	12.9	**10.0**										
Streptogramins																							
Quinupristin-Dalfopristin	faecalis																						
	faecium	68.6%	**5.7%**	(1.6 - 14.0)							25.7	68.6	**4.3**	**1.4**									
Tetracyclines																							
Tetracycline	faecalis	0.5%	**32.7%**	(26.3 - 39.6)									66.8	0.5	**3.4**	**13.2**	**16.1**						
	faecium	0.0%	**18.6%**	(10.3 - 29.7)									81.4			**2.9**	**15.7**						

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black lines indicate the breakpoints for susceptibility, while vertical red lines indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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. No CLSI breakpoints for tigecycline or daptomycin.

[5] For daptomycin and tigecycline, percent non-susceptible is reported rather than percent resistant because a resistance breakpoint has not been established.

Table 18d. MIC Distribution Among *Enterococcus faecalis* and *Enterococcus faecium* from Pork Chop, 2007

Antimicrobial	Species	%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	2048	>2048
Aminoglycosides																							
Gentamicin	faecalis	N/A	**0.8%**	(0.1 - 2.7)														99.2			**0.4**	**0.4**	
	faecium	N/A	**0.0%**	(0.0 - 10.6)														100.0					
Kanamycin	faecalis	N/A	**2.3%**	(0.8 - 4.9)														97.7				**2.3**	
	faecium	N/A	**3.0%**	(0.1 - 15.8)														87.9	9.1			**3.0**	
Streptomycin	faecalis	N/A	**8.7%**	(5.6 - 12.8)																91.3	**2.3**	**5.3**	**1.1**
	faecium	N/A	**0.0%**	(0.0 - 10.6)																100.0			
Glycopeptides																							
Vancomycin	faecalis	0.0%	**0.0%**	(0.0 - 1.4)						0.4	66.9	32.3	0.4										
	faecium	0.0%	**0.0%**	(0.0 - 10.6)						93.9	6.1												
Glycylcycline																							
Tigecycline[5]	faecalis	0.0%	**0.0%**	(0.0 - 1.4)	0.4	4.2	23.2	69.2	3.0														
	faecium	0.0%	**0.0%**	(0.0 - 10.6)	3.0	21.2	36.4	33.3	6.1														
Lincosamides																							
Lincomycin	faecalis	0.0%	**97.7%**	(95.1 - 99.2)							2.3			**2.3**	**50.2**	**29.7**	**15.6**						
	faecium	3.0%	**66.7%**	(48.2 - 82.0)							30.3		3.0	**24.2**	**39.4**		**3.0**						
Lipopeptides																							
Daptomycin[5]	faecalis	0.0%	**0.0%**	(0.0 - 1.4)						24.7	73.0	2.3											
	faecium	0.0%	**0.0%**	(0.0 - 10.6)						6.1	33.3	60.6											
Macrolides																							
Erythromicin	faecalis	48.3%	**9.1%**	(5.9 - 13.3)						42.6	39.2	8.7	0.4		**9.1**								
	faecium	97.0%	**3.0%**	(0.1 - 15.8)							39.4	33.3	24.2		**3.0**								
Tylosin	faecalis	0.0%	**9.1%**	(5.9 - 13.3)						0.4	20.2	65.0	5.3				**9.1**						
	faecium	0.0%	**3.0%**	(0.1 - 15.8)							9.1	15.2	33.3	39.4			**3.0**						
Nitrofurans																							
Nitrofurantoin	faecalis	0.0%	**0.0%**	(0.0 - 1.4)										77.2	21.3	1.5							
	faecium	69.7%	**9.1%**	(1.9 - 24.3)										3.0		18.2	69.7	**9.1**					
Oxazolidinones																							
Linezolid	faecalis	0.4%	**0.0%**	(0.0 - 1.4)						0.4	66.9	32.3	0.4										
	faecium	0.0%	**0.0%**	(0.0 - 10.6)							24.2	75.8											
Penicillins																							
Penicillin	faecalis	N/A	**0.0%**	(0.0 - 1.4)							0.4	39.2	58.6	1.9									
	faecium	N/A	**0.0%**	(0.0 - 10.6)						12.1	33.3	18.2	33.3	3.0									
Phenicols																							
Chloramphenicol	faecalis	0.4%	**0.4%**	(0.0 - 2.1)								1.9	64.6	32.7	0.4		**0.4**						
	faecium	0.0%	**0.0%**	(0.0 - 10.6)								3.0	60.6	36.4									
Phosphoglcolipids																							
Flavomycin	faecalis	0.4%	**0.8%**	(0.1 - 2.7)							11.4	86.7	0.8		0.4		**0.8**						
	faecium	12.1%	**84.8%**	(68.1 - 94.9)								3.0			12.1		**84.8**						
Quinolones																							
Ciprofloxacin	faecalis	12.9%	**0.0%**	(0.0 - 1.4)						18.6	68.4	12.9											
	faecium	36.4%	**9.1%**	(1.9 - 24.3)						18.2	36.4	36.4	**9.1**										
Streptogramins																							
Quinupristin-Dalfopristin	faecalis																						
	faecium	66.7%	**3.0%**	(0.1 - 15.8)							30.3	66.7			**3.0**								
Tetracyclines																							
Tetracycline	faecalis	0.0%	**90.1%**	(85.9 - 93.4)									9.9		**0.8**	**26.6**	**62.7**						
	faecium	0.0%	**33.3%**	(18.0 - 51.8)									66.7			**6.1**	**27.3**						

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black lines indicate the breakpoints for susceptibility, while vertical red lines indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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. No CLSI breakpoints for tigecycline or daptomycin.

[5] For daptomycin and tigecycline, percent non-susceptible is reported rather than percent resistant because a resistance breakpoint has not been established.

Table 19. Antimicrobial Resistance among *Enterococcus* by Species, 2007

	Aminoglycosides			Glyco-peptides	Glycyl-cycline	Lincos-amides	Lipo-peptides	Macrolides		Nitro-furans	Oxazolidi-nones	Penicillins	Phenicols	Phospho-glycolipids	Quino-lones	Strepto-gramins	Tetra-cyclines
Species	**GEN**	**KAN**	**STR**	**VAN**	**TGC**	**LIN**	**DAP**	**ERY**	**TYL**	**NIT**	**LZD**	**PEN**	**CHL**	**FLA**	**CIP**	**QDA**	**TET**
faecalis	16.1%[1]	20.7%	17.6%	-	-	98.4%	-	24.8%	25.0%	-	-	-	0.6%	0.6%	-	-[2]	74.1%
faecium	5.3%	8.1%	5.0%	-	-	78.4%	-	15.7%	13.4%	21.3%	-	17.6%	-	81.8%	19.6%	45.7%	59.4%
hirae	1.1%	4.6%	4.6%	-	-	95.4%	-	25.3%	26.4%	-	-	3.4%	-	94.3%	4.6%	13.8%	63.2%
durans	-[3]	-	-	-	-	77.8%	-	-	-	22.2%	-	11.1%	-	55.6%	11.1%	-	22.2%
gallinarum	25.0%	25.0%	25.0%	-	-	100.0%	-	-	-	-	-	-	-	50.0%	-	-	50.0%
avium	100.0%	100.0%	-	-	-	100.0%	-	-	-	-	-	-	-	-	-	100.0%	-
casseliflavus	-	-	-	-	-	50.0%	-	-	-	-	-	-	-	100.0%	-	50.0%	50.0%
Total	**12.1%**	**16.1%**	**13.2%**	**-**	**-**	**92.5%**	**-**	**22.0%**	**21.6%**	**5.9%**	**-**	**5.1%**	**0.4%**	**29.6%**	**5.7%**	**38.5%**	**68.8%**

[1] Where % resistance = (# isolates per species resistant to antimicrobial) / (total # isolates per species).
[2] Data presented for all species except *E. faecalis*, which is considered intrinsically resistant to Quinupristin-Dalfopristin.
[3] Dashes indicate 0.0% resistance to antimicrobial.

Table 20a. Antimicrobial Resistance among *Enterococcus faecalis* by Meat Type, 2002-2007

Meat Type	Year	Aminoglycosides			Glyco-peptides	Glycyl-cycline	Lincos-amides	Lipo-peptides	Macrolides		Nitro-furans	Oxazolidi-nones	Penicillins	Phenicols	Phospho-glycolipids	Quino-lones	Strepto-gramins	Tetra-cyclines
		GEN	KAN	STR	VAN	TGC	LIN	DAP	ERY	TYL	NIT	LZD	PEN	CHL	FLA	CIP	QDA[1]	TET
Chicken Breast	2002 (n=134)	22.4%[2]	32.1%	29.1%	-[3]	Not Tested	99.3%	Not Tested	45.5%	48.5%	0.7%	-	-	-	-	-	-	67.2%
	2003 (n=188)	20.2%	27.1%	22.9%	-	Not Tested	99.5%	Not Tested	43.1%	42.6%	1.1%	-	-	-	-	-	-	68.6%
	2004 (n=88)	19.3%	22.7%	18.2%	-	Not Tested	98.9%	-	35.2%	34.1%	1.1%	-	-	-	-	8.0%	-	63.6%
	2005 (n=116)	18.1%	26.7%	18.1%	-	-	99.1%	-	37.1%	37.1%	4.3%	-	-	-	0.9%	0.9%	-	75.0%
	2006 (n=126)	23.0%	30.2%	10.3%	-	-	100.0%	-	34.9%	36.5%	-	-	-	-	-	0.8%	-	70.6%
	2007 (n=123)	19.5%	28.5%	17.9%	-	-	99.2%	-	44.7%	44.7%	-	-	-	-	-	-	-	65.9%
	Z Statistic[4]	**-0.2376**	**-0.1855**	**-3.3008**	**N/A**	**N/A**	**0.2095**	**N/A**	**-0.8911**	**-1.0759**	**-0.4359**	**N/A**	**N/A**	**N/A**	**0.3664**	**-0.0507**	**N/A**	**0.2716**
	P Value[5]	**0.8122**	**0.8528**	**0.0010**	**N/A**	**N/A**	**0.8341**	**N/A**	**0.3729**	**0.2820**	**0.6629**	**N/A**	**N/A**	**N/A**	**0.7141**	**0.9596**	**N/A**	**0.7859**
Ground Turkey	2002 (n=294)	22.1%	26.2%	24.1%	-	Not Tested	97.3%	Not Tested	31.0%	32.0%	2.0%	-	-	0.3%	-	0.3%	-	85.0%
	2003 (n=289)	27.7%	36.0%	30.4%	-	Not Tested	99.0%	Not Tested	43.6%	43.9%	1.4%	-	-	-	-	-	-	87.9%
	2004 (n=260)	24.6%	29.6%	26.9%	-	Not Tested	98.8%	-	33.8%	34.6%	1.2%	-	-	-	-	5.8%	-	88.1%
	2005 (n=339)	20.1%	27.4%	21.5%	-	-	97.3%	-	38.3%	38.3%	2.4%	-	1.5%	-	2.1%	2.4%	-	84.4%
	2006 (n=291)	22.0%	32.0%	20.3%	-	-	98.6%	-	47.1%	47.1%	-	-	0.3%	-	0.7%	0.7%	-	85.9%
	2007 (n=261)	42.1%	50.2%	36.4%	-	-	98.9%	-	48.7%	49.4%	-	-	-	0.8%	0.4%	-	-	94.3%
	Z Statistic	**3.2784**	**4.2313**	**0.9233**	**N/A**	**N/A**	**0.7988**	**N/A**	**4.1732**	**4.0260**	**-2.3475**	**N/A**	**1.0045**	**0.8811**	**1.7375**	**-0.2815**	**N/A**	**2.0358**
	P Value	**0.0010**	**<0.0001**	**0.3559**	**N/A**	**N/A**	**0.4244**	**N/A**	**<0.0001**	**<0.0001**	**0.0189**	**N/A**	**0.3152**	**0.3782**	**0.0823**	**0.7783**	**N/A**	**0.0418**
Ground Beef	2002 (n=210)	2.4%	1.9%	4.8%	-	Not Tested	98.6%	Not Tested	1.4%	1.9%	-	-	-	-	0.5%	-	-	18.6%
	2003 (n=224)	1.8%	3.1%	5.4%	-	Not Tested	96.4%	Not Tested	4.9%	4.9%	-	-	-	-	-	0.4%	-	20.5%
	2004 (n=194)	1.0%	3.1%	7.7%	-	Not Tested	97.4%	-	3.6%	3.6%	-	-	-	-	-	12.9%	-	25.3%
	2005 (n=226)	1.8%	4.0%	8.4%	-	-	97.8%	-	4.4%	5.8%	0.9%	-	-	0.4%	1.3%	0.9%	-	34.1%
	2006 (n=227)	0.9%	2.6%	5.7%	-	-	97.8%	-	4.0%	4.0%	-	-	-	1.3%	0.4%	-	-	22.5%
	2007 (n=205)	0.5%	2.0%	4.9%	-	-	98.0%	-	2.4%	2.4%	-	-	-	1.0%	1.0%	-	-	32.7%
	Z Statistic	**-1.6919**	**-0.0223**	**0.2056**	**N/A**	**N/A**	**0.2377**	**N/A**	**0.2876**	**0.1882**	**0.4113**	**N/A**	**N/A**	**2.3991**	**1.2170**	**-1.4813**	**N/A**	**3.3643**
	P Value	**0.0907**	**0.9822**	**0.8371**	**N/A**	**N/A**	**0.8121**	**N/A**	**0.7737**	**0.8507**	**0.6809**	**N/A**	**N/A**	**0.0164**	**0.2236**	**0.1385**	**N/A**	**0.0008**
Pork Chop	2002 (n=255)	2.7%	4.7%	10.6%	-	Not Tested	99.2%	Not Tested	9.0%	9.0%	-	-	-	0.4%	2.0%	1.2%	-	80.4%
	2003 (n=313)	0.3%	4.8%	7.3%	-	Not Tested	98.1%	Not Tested	7.0%	7.0%	-	-	-	1.0%	-	-	-	78.0%
	2004 (n=313)	1.9%	2.6%	9.3%	-	Not Tested	94.9%	-	9.9%	9.9%	0.3%	-	-	0.6%	-	6.1%	-	75.7%
	2005 (n=320)	1.6%	3.1%	7.8%	-	-	95.3%	-	5.9%	6.3%	0.3%	-	1.3%	1.3%	0.6%	2.5%	-	86.3%
	2006 (n=301)	0.7%	2.3%	7.6%	-	-	97.3%	0.3%	6.6%	7.3%	-	-	-	1.0%	-	0.3%	-	81.4%
	2007 (n=263)	0.8%	2.3%	8.7%	-	-	97.7%	-	9.1%	9.1%	-	-	-	0.4%	0.8%	-	-	90.1%
	Z Statistic	**-1.4763**	**-2.1247**	**-0.6468**	**N/A**	**N/A**	**-1.0457**	**N/A**	**-0.3724**	**-0.1831**	**-0.0027**	**N/A**	**0.6047**	**0.1560**	**-1.3260**	**-1.2773**	**N/A**	**3.6195**
	P Value	**0.1399**	**0.0336**	**0.5177**	**N/A**	**N/A**	**0.2957**	**N/A**	**0.7096**	**0.8547**	**0.9979**	**N/A**	**0.5454**	**0.8760**	**0.1848**	**0.2015**	**N/A**	**0.0003**

[1] Data not presented as *E. faecalis* is considered intrinsically resistant to Quinupristin-Dalfopristin.
[2] Where % resistance = (# isolates resistant to antimicrobial per meat type) / (Total # isolates per meat type).
[3] Dashes indicate 0.0% resistance to antimicrobial.
[4] N/A = No Z statistic or P value could be calculated.
[5] P value for percent resistant for trend was calculated using Cochran-Armitage trend test method.

Table 20b. Antimicrobial Resistance among *Enterococcus faecium* by Meat Type, 2002-2007

Meat Type	Year	Aminoglycosides			Glyco-peptides	Glycyl-cycline	Lincos-amides	Lipo-peptides	Macrolides		Nitro-furans	Oxazolidi-nones	Penicillins	Phenicols	Phospho-glycolipids	Quino-lones	Strepto-gramins	Tetra-cyclines
		GEN	KAN	STR	VAN	TGC	LIN	DAP	ERY	TYL	NIT	LZD	PEN	CHL	FLA	CIP	QDA	TET
Chicken Breast	2002 (n=231)	3.0%[1]	6.5%	16.9%	-[2]	Not Tested	87.0%	Not Tested	25.5%	21.2%	54.5%	-	44.2%	-	96.5%	13.0%	55.4%	56.7%
	2003 (n=248)	5.6%	10.5%	16.9%	-	Not Tested	86.7%	Not Tested	17.3%	12.5%	64.5%	-	51.2%	-	96.8%	21.8%	59.7%	51.6%
	2004 (n=348)	4.3%	9.5%	8.3%	-	Not Tested	83.3%	4.0%	12.6%	10.3%	85.3%	-	39.1%	-	83.6%	52.3%	31.6%	45.1%
	2005 (n=307)	6.2%	10.7%	14.0%	-	-	78.2%	-	13.7%	12.4%	54.7%	0.3%	31.9%	-	76.2%	33.9%	39.1%	54.4%
	2006 (n=315)	6.0%	6.3%	3.8%	-	-	74.9%	-	9.5%	7.9%	38.4%	-	22.2%	-	75.6%	37.5%	36.5%	53.0%
	2007 (n=189)	9.5%	12.2%	3.7%	-	-	84.1%	-	19.6%	19.0%	32.8%	-	12.2%	-	81.5%	19.6%	57.1%	66.1%
	Z Statistic[3]	**2.6193**	**0.7236**	**-5.9101**	**N/A**	**N/A**	**-3.1805**	**N/A**	**-3.1017**	**-1.7308**	**-8.5250**	**0.3276**	**-9.7340**	**N/A**	**-7.8862**	**2.7766**	**-2.6345**	**1.9472**
	P Value[4]	**0.0088**	**0.4693**	**<0.0001**	**N/A**	**N/A**	**0.0015**	**N/A**	**0.0019**	**0.0835**	**<0.0001**	**0.7432**	**<0.0001**	**N/A**	**<0.0001**	**0.0055**	**0.0084**	**0.0515**
Ground Turkey	2002 (n=89)	15.7%	39.3%	39.3%	-	Not Tested	94.4%	Not Tested	50.6%	36.0%	50.6%	-	66.3%	-	92.1%	22.5%	82.0%	88.8%
	2003 (n=118)	12.7%	28.0%	32.2%	-	Not Tested	89.0%	Not Tested	44.1%	27.1%	52.5%	-	65.3%	-	96.6%	39.0%	79.7%	91.5%
	2004 (n=172)	13.4%	35.5%	34.3%	-	Not Tested	88.4%	7.6%	43.0%	35.5%	66.9%	-	61.6%	-	87.8%	53.5%	64.5%	86.6%
	2005 (n=107)	12.1%	29.9%	34.6%	-	-	92.5%	-	41.1%	29.9%	43.0%	-	59.8%	-	83.2%	43.9%	63.6%	91.6%
	2006 (n=139)	15.1%	33.8%	22.3%	-	-	97.8%	-	44.6%	36.0%	22.3%	-	67.6%	-	82.0%	37.4%	75.5%	92.8%
	2007 (n=65)	1.5%	7.7%	16.9%	-	-	92.3%	-	23.1%	13.8%	12.3%	-	60.0%	-	69.2%	35.4%	76.9%	96.9%
	Z Statistic	**-1.5647**	**-2.6837**	**-3.4046**	**N/A**	**N/A**	**1.5079**	**N/A**	**-2.4849**	**-1.3943**	**-7.3510**	**N/A**	**-0.3471**	**N/A**	**-5.1359**	**0.9533**	**-1.0191**	**1.8364**
	P Value	**0.1177**	**0.0073**	**0.0007**	**N/A**	**N/A**	**0.1316**	**N/A**	**0.0130**	**0.1632**	**<0.0001**	**N/A**	**0.7285**	**N/A**	**<0.0001**	**0.3405**	**0.3081**	**0.0663**
Ground Beef	2002 (n=93)	1.1%	4.3%	3.2%	-	Not Tested	76.3%	Not Tested	11.8%	6.5%	18.3%	-	-	1.1%	94.6%	12.9%	47.3%	22.6%
	2003 (n=112)	-	8.0%	2.7%	-	Not Tested	58.9%	Not Tested	8.9%	0.9%	36.6%	-	8.0%	-	96.4%	33.0%	50.0%	28.6%
	2004 (n=162)	-	8.6%	5.6%	-	Not Tested	67.9%	0.6%	9.3%	5.6%	51.9%	-	3.1%	1.2%	91.4%	27.2%	6.2%	24.7%
	2005 (n=129)	0.8%	3.9%	1.6%	-	-	74.4%	-	4.7%	2.3%	18.6%	-	2.3%	-	89.1%	20.9%	7.8%	28.7%
	2006 (n=125)	-	1.6%	0.8%	-	-	41.6%	-	7.2%	4.8%	12.8%	-	4.8%	-	91.2%	21.6%	6.4%	20.0%
	2007 (n=70)	-	-	-	-	-	55.7%	-	4.3%	2.9%	4.3%	-	1.4%	-	92.9%	10.0%	5.7%	18.6%
	Z Statistic	**-0.8498**	**-2.5546**	**-1.9557**	**N/A**	**N/A**	**-3.8237**	**N/A**	**-2.0010**	**-0.4242**	**-4.9099**	**N/A**	**-0.1428**	**-1.2305**	**-1.2451**	**-1.5011**	**-10.1944**	**-1.0638**
	P Value	**0.3954**	**0.0106**	**0.0505**	**N/A**	**N/A**	**0.0001**	**N/A**	**0.0454**	**0.6714**	**<0.0001**	**N/A**	**0.8865**	**0.2185**	**0.2131**	**0.1333**	**<0.0001**	**0.2874**
Pork Chop	2002 (n=93)	1.1%	3.2%	5.4%	-	Not Tested	90.3%	Not Tested	20.4%	9.7%	5.4%	-	3.2%	-	97.8%	4.3%	24.7%	68.8%
	2003 (n=97)	-	2.1%	3.1%	-	Not Tested	89.7%	Not Tested	6.2%	2.1%	16.5%	-	1.0%	-	87.6%	6.2%	64.9%	69.1%
	2004 (n=75)	-	2.7%	6.7%	-	Not Tested	84.0%	-	5.3%	-	37.3%	-	8.0%	-	94.7%	17.3%	6.7%	72.0%
	2005 (n=75)	-	8.0%	6.7%	-	-	88.0%	-	9.3%	5.3%	10.7%	-	1.3%	-	89.3%	9.3%	13.3%	56.0%
	2006 (n=70)	1.4%	2.9%	2.9%	-	-	64.3%	-	7.1%	5.7%	4.3%	-	1.4%	-	78.6%	4.3%	10.0%	54.3%
	2007 (n=33)	-	3.0%	-	-	-	66.7%	-	3.0%	3.0%	9.1%	-	-	-	84.8%	9.1%	3.0%	33.3%
	Z Statistic	**-0.0624**	**0.6218**	**-0.7775**	**N/A**	**N/A**	**-4.6536**	**N/A**	**-2.7492**	**-0.9215**	**-0.6342**	**N/A**	**-0.8913**	**N/A**	**-3.3107**	**0.5997**	**-6.2212**	**-3.9058**
	P Value	**0.9502**	**0.5341**	**0.4369**	**N/A**	**N/A**	**<0.0001**	**N/A**	**0.0060**	**0.3568**	**0.5260**	**N/A**	**0.3728**	**N/A**	**0.0009**	**0.5487**	**<0.0001**	**<0.0001**

[1] Where % resistance = (# isolates resistant to antimicrobial per meat type) / (total # isolates per meat type).
[2] Dashes indicate 0.0% resistance to antimicrobial.
[3] N/A = No Z Statistic or P value could be calculated.
[4] P value for percent resistant for trend was calculated using Cochran-Armitage trend test method.

Table 20c. Antimicrobial Resistance among *Enterococcus hirae* by Meat Type, 2002-2007

Meat Type	Year	Aminoglycosides			Glyco-peptides	Glycyl-cycline	Lincos-amides	Lipo-peptides	Macrolides		Nitro-furans	Oxazolidi-nones	Penicillins	Phenicols	Phospho-glycolipids	Quino-lones	Strepto-gramins	Tetra-cyclines
		GEN	KAN	STR	VAN	TGC	LIN	DAP	ERY	TYL	NIT	LZD	PEN	CHL	FLA	CIP	QDA	TET
Chicken Breast	2002 (n=12)	8.3%[1]	16.7%	16.7%	-[2]	Not Tested	100.0%	Not Tested	16.7%	16.7%	8.3%	-	8.3%	-	91.7%	8.3%	66.7%	83.3%
	2003 (n=28)	-	28.6%	42.9%	-	Not Tested	100.0%	Not Tested	67.9%	64.3%	10.7%	-	7.1%	-	96.4%	-	82.1%	64.3%
	2004 (n=27)	-	3.7%	22.2%	-	Not Tested	92.6%	-	11.1%	11.1%	14.8%	-	25.9%	-	96.3%	3.7%	7.4%	51.9%
	2005 (n=30)	10.0%	26.7%	23.3%	-	-	100.0%	-	63.3%	60.0%	6.7%	-	-	3.3%	100.0%	-	40.0%	46.7%
	2006 (n=27)	3.7%	3.7%	18.5%	-	-	77.8%	-	14.8%	18.5%	7.4%	-	7.4%	-	88.9%	14.8%	18.5%	33.3%
	2007 (n=22)	4.5%	18.2%	9.1%	-	-	95.5%	-	45.5%	45.5%	-	-	4.5%	-	86.4%	4.5%	40.9%	81.8%
	Z Statistic[3]	**0.5340**	**-0.8859**	**-2.0118**	**N/A**	**N/A**	**-2.0019**	**N/A**	**-0.4693**	**-0.1756**	**-1.3804**	**N/A**	**-1.0805**	**0.2142**	**-1.3316**	**1.0820**	**-3.2421**	**-0.8369**
	P Value[4]	**0.5933**	**0.3757**	**0.0442**	**N/A**	**N/A**	**0.0453**	**N/A**	**0.6388**	**0.8606**	**0.1675**	**N/A**	**0.2799**	**0.8304**	**0.1830**	**0.2793**	**0.0012**	**0.4027**
Ground Turkey	2002 (n=2)	-	-	50.0%	-	Not Tested	100.0%	Not Tested	-	-	50.0%	-	-	-	100.0%	-	50.0%	100.0%
	2003 (n=3)	-	66.7%	-	-	Not Tested	100.0%	Not Tested	66.7%	66.7%	-	-	-	-	100.0%	-	66.7%	-
	2004 (n=0)					Not Tested												
	2005 (n=1)	-	-	-	-	-	100.0%	-	-	-	-	-	-	-	100.0%	-	-	-
	2006 (n=3)	33.3%	33.3%	33.3%	-	-	100.0%	-	66.7%	66.7%	66.7%	-	66.7%	-	66.7%	33.3%	33.3%	66.7%
	2007 (n=2)	-	-	-	-	-	100.0%	-	-	-	-	-	100.0%	-	50.0%	100.0%	-	100.0%
	Z Statistic	**0.8130**	**0.5904**	**-0.4545**	**N/A**	**N/A**	**N/A**	**N/A**	**-0.0607**	**-0.0607**	**0.1312**	**N/A**	**2.6116**	**N/A**	**-1.6286**	**2.2961**	**-1.3969**	**0.8801**
	P Value	**0.4162**	**0.5549**	**0.6495**	**N/A**	**N/A**	**N/A**	**N/A**	**0.9516**	**0.9516**	**0.8956**	**N/A**	**0.0090**	**N/A**	**0.1034**	**0.0217**	**0.1624**	**0.3788**
Ground Beef	2002 (n=76)	-	-	2.6%	-	Not Tested	93.4%	Not Tested	19.7%	19.7%	-	-	-	1.3%	94.7%	-	44.7%	60.5%
	2003 (n=84)	-	3.6%	3.6%	-	Not Tested	91.7%	Not Tested	15.5%	15.5%	-	-	-	-	97.6%	-	60.7%	46.4%
	2004 (n=88)	-	-	-	-	Not Tested	85.2%	22.7%	8.0%	8.0%	6.8%	-	1.1%	-	98.9%	1.1%	10.2%	53.4%
	2005 (n=82)	1.2%	1.2%	4.9%	-	-	98.8%	-	17.1%	17.1%	4.9%	-	-	-	93.9%	-	11.0%	65.9%
	2006 (n=77)	1.3%	1.3%	2.6%	-	-	81.8%	-	14.3%	15.6%	-	-	-	-	92.2%	-	5.2%	53.2%
	2007 (n=57)	-	-	1.8%	-	-	96.5%	-	17.5%	19.3%	-	-	-	-	98.2%	1.8%	5.3%	52.6%
	Z Statistic	**0.9857**	**-0.5093**	**-0.0759**	**N/A**	**N/A**	**-0.2508**	**N/A**	**-0.2230**	**0.1155**	**0.0618**	**N/A**	**-0.2268**	**-1.4575**	**-0.4317**	**0.9857**	**-8.9605**	**0.0165**
	P Value	**0.3243**	**0.6105**	**0.9395**	**N/A**	**N/A**	**0.8020**	**N/A**	**0.8235**	**0.9080**	**0.9507**	**N/A**	**0.8206**	**0.1450**	**0.6660**	**0.3243**	**<0.0001**	**0.9869**
Pork Chop	2002 (n=12)	-	-	-	-	Not Tested	100.0%	Not Tested	-	-	-	-	-	-	91.7%	-	25.0%	66.7%
	2003 (n=14)	-	-	-	-	Not Tested	100.0%	Not Tested	7.1%	7.1%	7.1%	-	-	-	92.9%	-	35.7%	14.3%
	2004 (n=14)	-	7.1%	-	-	Not Tested	71.4%	-	-	-	21.4%	-	7.1%	-	100.0%	7.1%	-	35.7%
	2005 (n=4)	-	-	25.0%	-	-	100.0%	-	25.0%	25.0%	25.0%	-	-	-	100.0%	-	25.0%	50.0%
	2006 (n=8)	-	-	-	-	-	87.5%	-	25.0%	25.0%	-	-	-	-	100.0%	12.5%	-	50.0%
	2007 (n=6)	-	-	16.7%	-	-	83.3%	-	33.3%	33.3%	-	-	-	-	100.0%	-	-	83.3%
	Z Statistic	**N/A**	**0.0000**	**-1.7781**	**N/A**	**N/A**	**-1.3317**	**N/A**	**2.6634**	**2.6634**	**0.0000**	**N/A**	**0.0000**	**N/A**	**1.3336**	**0.8891**	**-2.2402**	**1.1417**
	P Value	**N/A**	**1.0000**	**0.0754**	**N/A**	**N/A**	**0.1830**	**N/A**	**0.0077**	**0.0077**	**1.0000**	**N/A**	**1.0000**	**N/A**	**0.1823**	**0.3740**	**0.0251**	**0.2536**

[1] Where % resistance = (# isolates resistant to antimicrobial per meat type) / (total # isolates per meat type).
[2] Dashes indicate 0.0% resistance to antimicrobial.
[3] N/A = No Z statistic or P value could be calculated.
[4] P value for percent resistant for trend was calculated using Cochran-Armitage trend test method.

Table 21a. Number of *Enterococcus faecalis* Resistant to Multiple Antimicrobial Agents[1], 2002-2007

		Year						
Meat Type	**Number of Antimicrobials**	**2002 (N=893)**	**2003 (N=1014)**	**2004 (N=855)**	**2005 (N=1001)**	**2006 (N=945)**	**2007 (N=852)**	**Total**
Chicken Breast	**0**	1	0	0	1	0	0	**2**
	1	4	4	1	25	29	32	**95**
	2-4	66	89	53	63	70	62	**403**
	5-7	52	90	31	26	27	29	**255**
	≥8	11	5	3	1	0	0	**20**
	Total	**134**	**188**	**88**	**116**	**126**	**123**	**775**
Ground Turkey	**0**	3	4	1	2	1	0	**11**
	1	3	5	4	48	31	16	**107**
	2-4	152	133	150	200	189	150	**974**
	5-7	105	103	73	84	70	95	**530**
	≥8	31	44	32	5	0	0	**112**
	Total	**294**	**289**	**260**	**339**	**291**	**261**	**1734**
Ground Beef	**0**	1	5	2	3	4	4	**19**
	1	23	9	21	143	168	133	**497**
	2-4	179	200	163	70	50	65	**727**
	5-7	3	6	8	9	5	3	**34**
	≥8	3	4	0	1	0	0	**8**
	Total	**209**	**224**	**194**	**226**	**227**	**205**	**1285**
Pork Chop	**0**	0	0	2	4	0	1	**7**
	1	7	10	30	51	61	30	**189**
	2-4	223	281	252	251	230	225	**1462**
	5-7	22	20	23	12	9	6	**92**
	≥8	4	2	6	2	1	1	**16**
	Total	**256**	**313**	**313**	**320**	**301**	**263**	**1766**

[1] Data does not include QDA, as *E. faecalis* is considered intrinsically resistant.

Table 21b. Number of *Enterococcus faecium* Resistant to Multiple Antimicrobial Agents, 2002-2007

		Year						
Meat Type	**Number of Antimicrobials**	**2002 (N=506)**	**2003 (N=575)**	**2004 (N=757)**	**2005 (N=618)**	**2006 (N=649)**	**2007 (N=357)**	**Total**
Chicken Breast	**0**	0	0	0	5	3	0	**8**
	1	0	0	4	28	32	19	**83**
	2-4	80	52	155	141	177	98	**703**
	5-7	118	155	168	109	84	55	**689**
	≥8	33	41	21	24	19	17	**155**
	Total	**231**	**248**	**348**	**307**	**315**	**189**	**1638**
Ground Turkey	**0**	0	1	0	0	0	0	**1**
	1	0	0	1	1	0	1	**3**
	2-4	12	16	27	29	28	22	**134**
	5-7	32	48	78	45	72	38	**313**
	≥8	45	53	66	32	39	4	**239**
	Total	**89**	**118**	**172**	**107**	**139**	**65**	**690**
Ground Beef	**0**	0	0	0	2	0	2	**4**
	1	2	2	22	14	51	25	**116**
	2-4	77	67	123	105	67	40	**479**
	5-7	15	37	8	6	4	3	**73**
	≥8	0	6	9	2	3	0	**20**
	Total	**94**	**112**	**162**	**129**	**125**	**70**	**692**
Pork Chop	**0**	0	0	0	1	0	0	**1**
	1	1	2	5	5	15	7	**35**
	2-4	70	50	55	62	50	25	**312**
	5-7	18	42	15	5	3	1	**84**
	≥8	3	3	0	2	2	0	**10**
	Total	**92**	**97**	**75**	**75**	**70**	**33**	**442**

Table 22. *E. coli* by Meat Type, 2002-2007

	2002			2003			2004			2005			2006			2007		
Meat Type	**N**	**n**	**%**	**N**	**n**	**%**	**N**	**n**	**%**	**N**	**n**	**%**	**N**	**n**	**%**	**N**	**n**	**%**
Chicken Breast	390	282	72.3%	477	396	83.0%	476	400	84.0%	468	393	84.0%	475	418	88.0%	342	299	87.4%
Ground Turkey	395	304	77.0%	447	333	74.5%	466	376	80.7%	470	396	84.3%	466	388	83.3%	338	315	93.2%
Ground Beef	399	295	73.9%	470	311	66.2%	480	338	70.4%	468	316	67.5%	471	295	62.6%	343	256	74.6%
Pork Chop	390	184	47.2%	479	218	45.5%	478	232	48.5%	465	205	44.1%	472	182	38.6%	356	152	42.7%
Total	**1574**	**1065**	**67.7%**	**1873**	**1258**	**67.2%**	**1900**	**1346**	**70.8%**	**1871**	**1310**	**70.0%**	**1884**	**1283**	**68.1%**	**1379**	**1022**	**74.1%**

Figure 6a. Antimicrobial Resistance among *E. coli* from Chicken Breast, 2002-2007

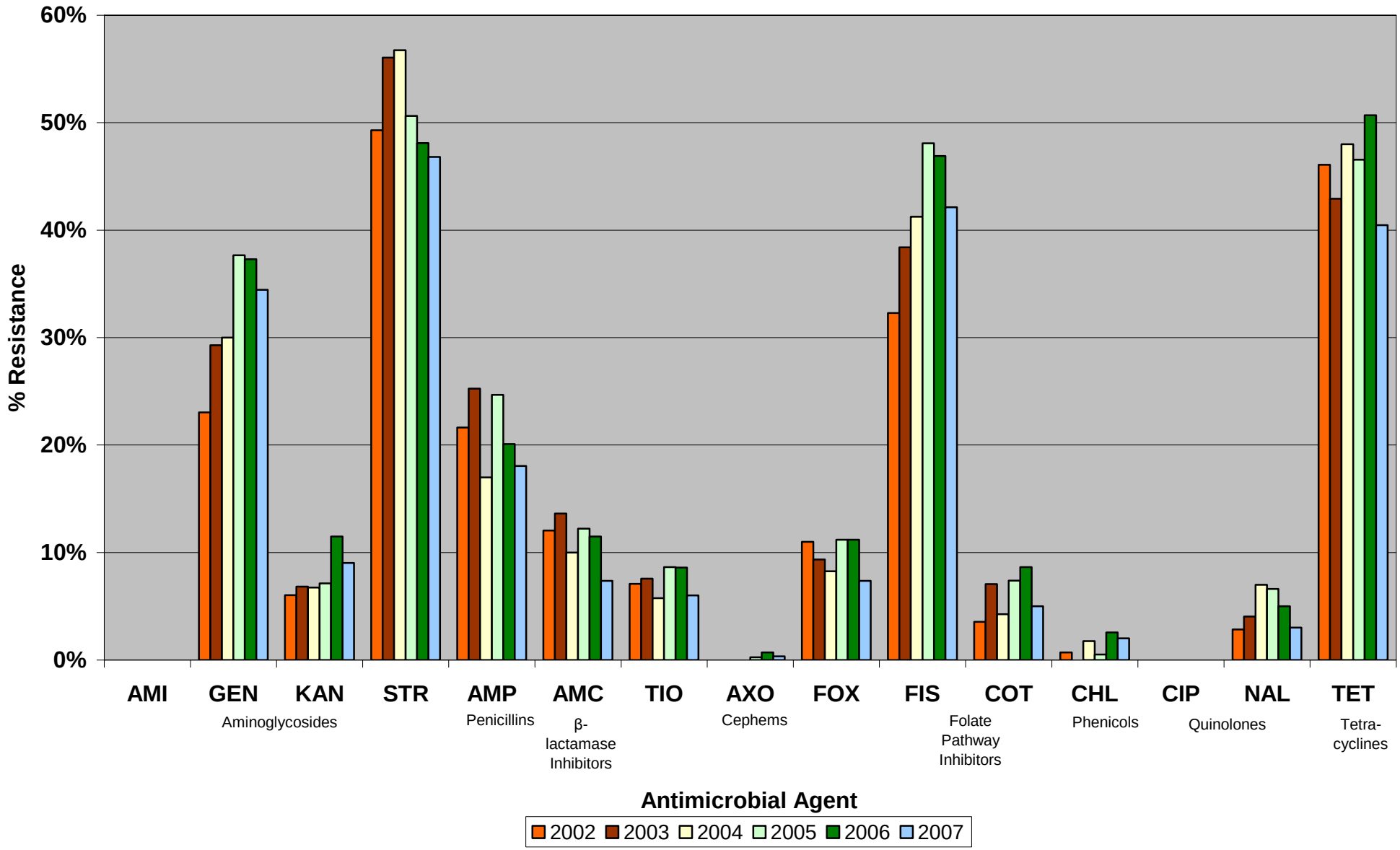


Table 23a. Trends in Resistance among *E. coli* in Chicken Breast Isolates, 2002-2007

Class/Subclass	Antimicrobial Agent (µg/ml)	2002 (N=282)		2003 (N=396)		2004 (N=400)		2005 (N=393)		2006 (N=418)		2007 (N=299)		Cochran Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P Value[3]
Aminoglycosides	AMI (MIC ≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN(MIC ≥ 16)	65	23.1%	116	29.3%	120	30.0%	148	37.7%	156	37.3%	103	34.4%	4.1401	<0.0001
	KAN (MIC ≥ 64)	17	6.0%	27	6.8%	27	6.8%	28	7.1%	48	11.5%	27	9.0%	2.5193	0.0118
	STR (MIC ≥ 64)	139	49.3%	222	56.1%	227	56.8%	199	50.6%	201	48.1%	140	46.8%	-2.1312	0.0331
Aminopenicillins	AMP (MIC ≥ 32)	61	21.6%	100	25.3%	68	17.0%	97	24.7%	84	20.1%	54	18.1%	-1.3746	0.1692
Beta-Lactamase Inhibitor Combinations	AMC (MIC ≥ 32)	34	12.1%	54	13.6%	40	10.0%	48	12.2%	48	11.5%	22	7.4%	-1.8135	0.0697
Cephalosporins (3rd Gen)	TIO (MIC ≥ 32)	20	7.1%	30	7.6%	23	5.8%	34	8.7%	36	8.6%	18	6.0%	0.2139	0.8306
	AXO (MIC ≥ 64)	0	0.0%	0	0.0%	0	0.0%	1	0.3%	3	0.7%	1	0.3%	2.0422	0.0411
Cephamycins	FOX (MIC ≥ 32)	31	11.0%	37	9.3%	33	8.3%	44	11.2%	47	11.2%	22	7.4%	-0.4046	0.6857
Folate Pathway Inhibitors	FIS (MIC ≥ 512)[4]	91	32.3%	152	38.4%	165	41.3%	189	48.1%	196	46.9%	126	42.1%	3.6431	0.0003
	COT (MIC ≥ 4)	10	3.6%	28	7.1%	17	4.3%	29	7.4%	37	8.9%	15	5.0%	1.5155	0.1296
Phenicols	CHL (MIC ≥ 512)	2	0.7%	0	0.0%	7	1.8%	2	0.5%	11	2.6%	6	2.0%	2.7296	0.0063
Quinolones	CIP (MIC ≥ 4)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	NAL (MIC ≥ 32)	8	2.8%	16	4.0%	28	7.0%	26	6.6%	21	5.0%	9	3.0%	0.3342	0.7382
Tetracyclines	TET (MIC ≥ 16)	130	46.1%	170	42.9%	192	48.0%	183	46.6%	212	50.7%	121	40.5%	0.0755	0.9398

[1] Where % R = the number of resistance isolates (n) / by the number of positive isolates (N).
[2] N/A = No Z Statistic or P value could be calculated for this antibiotic.
[3] P value for percent resistance for trend was calculated using the Cochran-Armitage Trend test method.
[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004.

Figure 6b. Antimicrobial Resistance among *E. coli* from Ground Turkey, 2002-2007

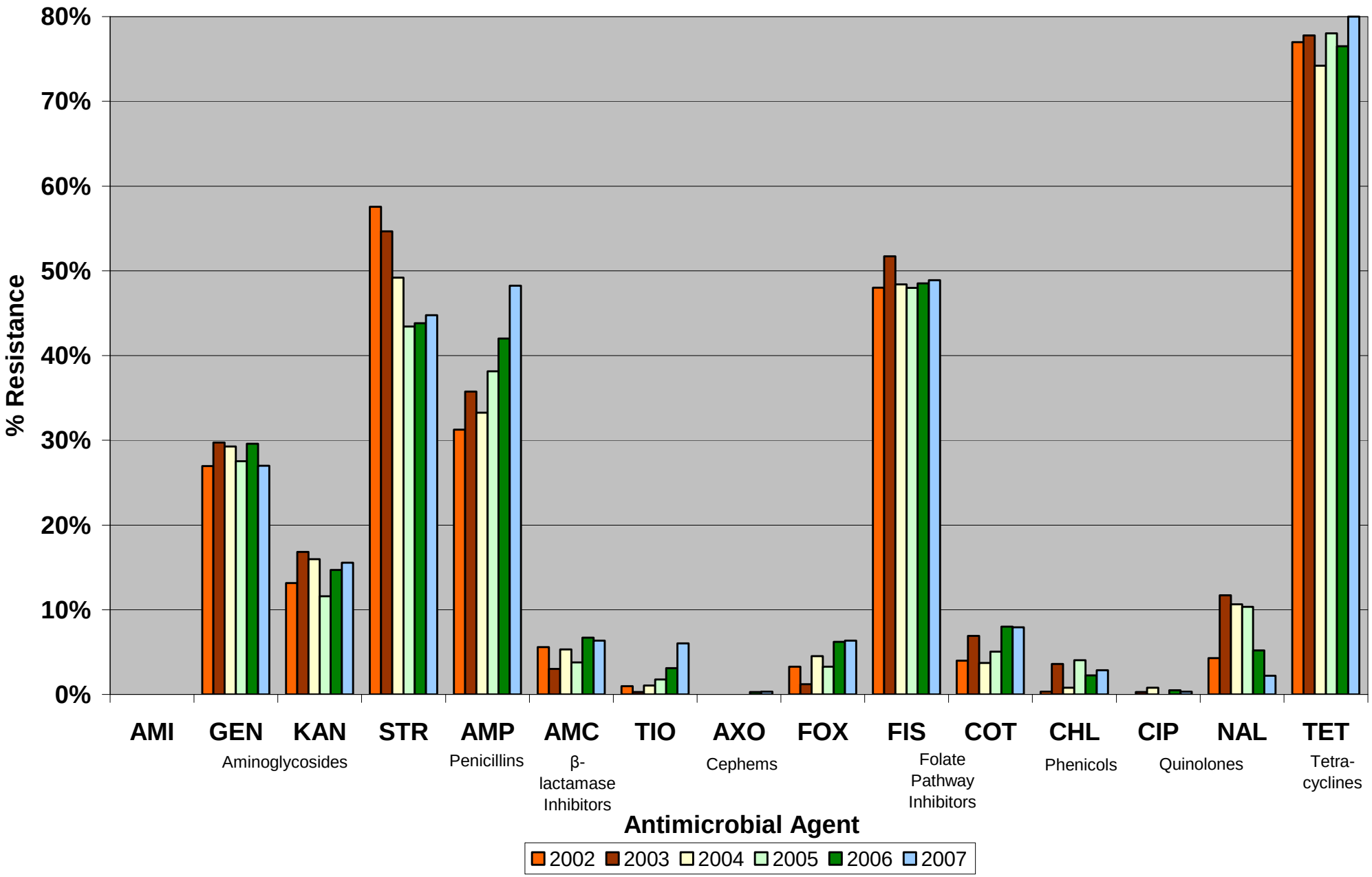


Table 23b. Trends in Resistance among *E. coli* in Ground Turkey Isolates, 2002-2007

Class/Subclass	Antimicrobial Agent (µg/ml)	2002 (N=304)		2003 (N=333)		2004 (N=376)		2005 (N=396)		2006 (N=388)		2007 (N=315)		Cochran Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P Value[3]
Aminoglycosides	**AMI (MIC ≥ 64)**	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN (MIC ≥ 16)	82	27.0%	99	29.7%	110	29.3%	109	27.5%	115	29.6%	85	27.0%	-0.0910	0.9275
	KAN (MIC ≥ 64)	40	13.2%	56	16.8%	60	16.0%	46	11.6%	57	14.7%	49	15.6%	-0.0212	0.9831
	STR (MIC ≥ 64)	175	57.6%	182	54.7%	185	49.2%	172	43.4%	170	43.8%	141	44.8%	-4.4543	<0.0001
Aminopenicillins	**AMP (MIC ≥ 32)**	95	31.3%	119	35.7%	125	33.2%	151	38.1%	163	42.0%	152	48.3%	4.8030	<0.0001
Beta-Lactamase Inhibitor Combinations	**AMC (MIC ≥ 32)**	17	5.6%	10	3.0%	20	5.3%	15	3.8%	26	6.7%	20	6.3%	1.3776	0.1683
Cephalosporins (3rd Gen)	**TIO (MIC ≥ 32)**	3	1.0%	1	0.3%	4	1.1%	7	1.8%	12	3.1%	19	6.0%	5.0360	<0.0001
	AXO (MIC ≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.3%	1	0.3%	1.6769	0.0936
Cephamycins	**FOX (MIC ≥ 32)**	10	3.3%	4	1.2%	17	4.5%	13	3.3%	24	6.2%	20	6.3%	3.1880	0.0014
Folate Pathway Inhibitors	**FIS (MIC ≥ 512)[4]**	146	48.0%	172	51.7%	182	48.4%	190	48.0%	188	48.5%	154	48.9%	-0.2824	0.7776
	COT (MIC ≥ 4)	12	4.0%	23	6.9%	14	3.7%	20	5.1%	31	8.0%	25	7.9%	2.2721	0.0231
Phenicols	**CHL (MIC ≥ 512)**	1	0.3%	12	3.6%	3	0.8%	16	4.0%	9	2.3%	9	2.9%	1.6725	0.0944
Quinolones	**CIP (MIC ≥ 4)**	0	0.0%	1	0.3%	3	0.8%	0	0.0%	2	0.5%	1	0.3%	0.4854	0.6274
	NAL (MIC ≥ 32)	13	4.3%	39	11.7%	40	10.6%	41	10.4%	20	5.2%	7	2.2%	-2.6127	0.0090
Tetracyclines	**TET (MIC ≥ 16)**	234	77.0%	259	77.8%	279	74.2%	309	78.0%	297	76.5%	252	80.0%	0.7712	0.4406

[1] Where % R = the number of resistance isolates (n) / by the number of positive isolates (N).
[2] N/A = No Z Statistic or P value could be calculated for this antibiotic.
[3] P value for percent resistance for trend was calculated using the Cochran-Armitage Trend test method.
[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004.

Figure 6c. Antimicrobial Resistance among *E. coli* from Ground Beef, 2002-2007

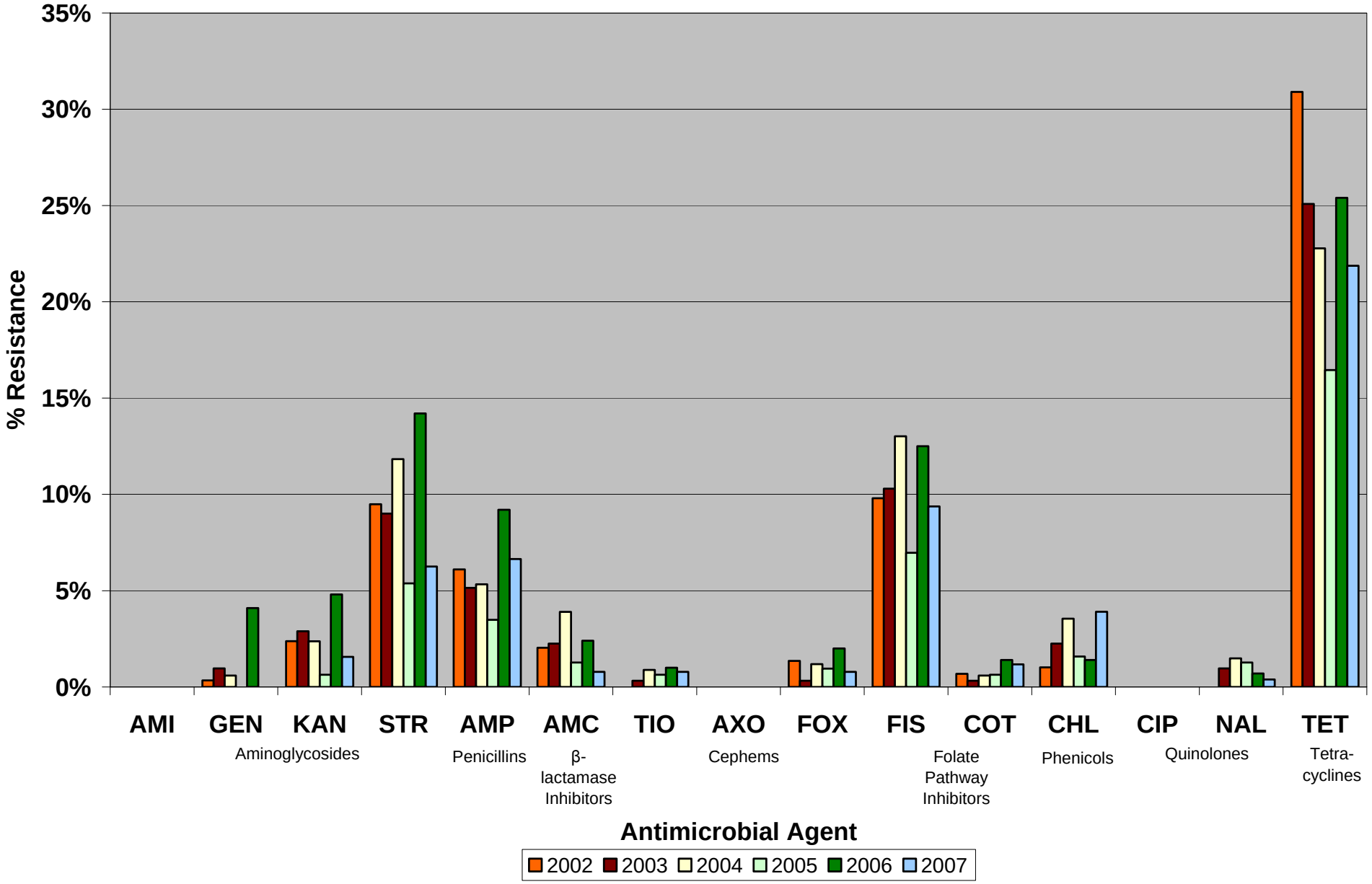


Table 23c. Trends in Resistance among *E. coli* in Ground Beef Isolates, 2002-2007

Class/Subclass	Antimicrobial Agent (µg/ml)	2002 (N=295)		2003 (N=311)		2004 (N=338)		2005 (N=316)		2006 (N=295)		2007 (N=256)		Cochran Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P Value[3]
Aminoglycosides	AMI (MIC ≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN (MIC ≥ 16)	1	0.3%	3	1.0%	2	0.6%	0	0.0%	12	4.1%	0	0.0%	1.6297	0.1053
	KAN (MIC ≥ 64)	7	2.4%	9	2.9%	8	2.4%	2	0.6%	14	4.7%	4	1.6%	0.0202	0.9839
	STR (MIC ≥ 64)	28	9.5%	28	9.0%	40	11.8%	17	5.4%	42	14.2%	16	6.3%	-0.3879	0.6981
Aminopenicillins	AMP (MIC ≥ 32)	18	6.1%	16	5.1%	18	5.3%	11	3.5%	27	9.2%	17	6.6%	1.1037	0.2697
Beta-Lactamase Inhibitor Combinations	AMC (MIC ≥ 32)	6	2.0%	7	2.3%	13	3.9%	4	1.3%	7	2.4%	2	0.8%	-1.1391	0.2547
Cephalosporins (3rd Gen)	TIO (MIC ≥ 32)	0	0.0%	1	0.3%	3	0.9%	2	0.6%	3	1.0%	2	0.8%	1.5175	0.1291
	AXO (MIC ≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
Cephamycins	FOX (MIC ≥ 32)	4	1.4%	1	0.3%	4	1.2%	3	1.0%	6	2.0%	2	0.8%	0.4705	0.6380
Folate Pathway Inhibitors	FIS (MIC ≥ 512)[4]	29	9.8%	32	10.3%	44	13.0%	22	7.0%	37	12.5%	24	9.4%	-0.1045	0.9168
	COT (MIC ≥ 4)	2	0.7%	1	0.3%	2	0.6%	2	0.6%	4	1.4%	3	1.2%	1.3008	0.1933
Phenicols	CHL (MIC ≥ 512)	3	1.0%	7	2.3%	12	3.6%	5	1.6%	4	1.4%	10	3.9%	1.1930	0.2329
Quinolones	CIP (MIC ≥ 4)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	NAL (MIC ≥ 32)	0	0.0%	3	1.0%	5	1.5%	4	1.3%	2	0.7%	1	0.4%	0.2502	0.8024
Tetracyclines	TET (MIC ≥ 16)	91	30.9%	78	25.1%	77	22.8%	52	16.5%	75	25.4%	56	21.9%	-2.4414	0.0146

[1] Where % R = the number of resistance isolates (n) / by the number of positive isolates (N).

[2] N/A = No Z Statistic or P value could be calculated for this antibiotic.

[3] P value for percent resistance for trend was calculated using the Cochran-Armitage Trend test method.

[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004.

Figure 6d. Antimicrobial Resistance among *E. coli* from Pork Chops, 2002-2007

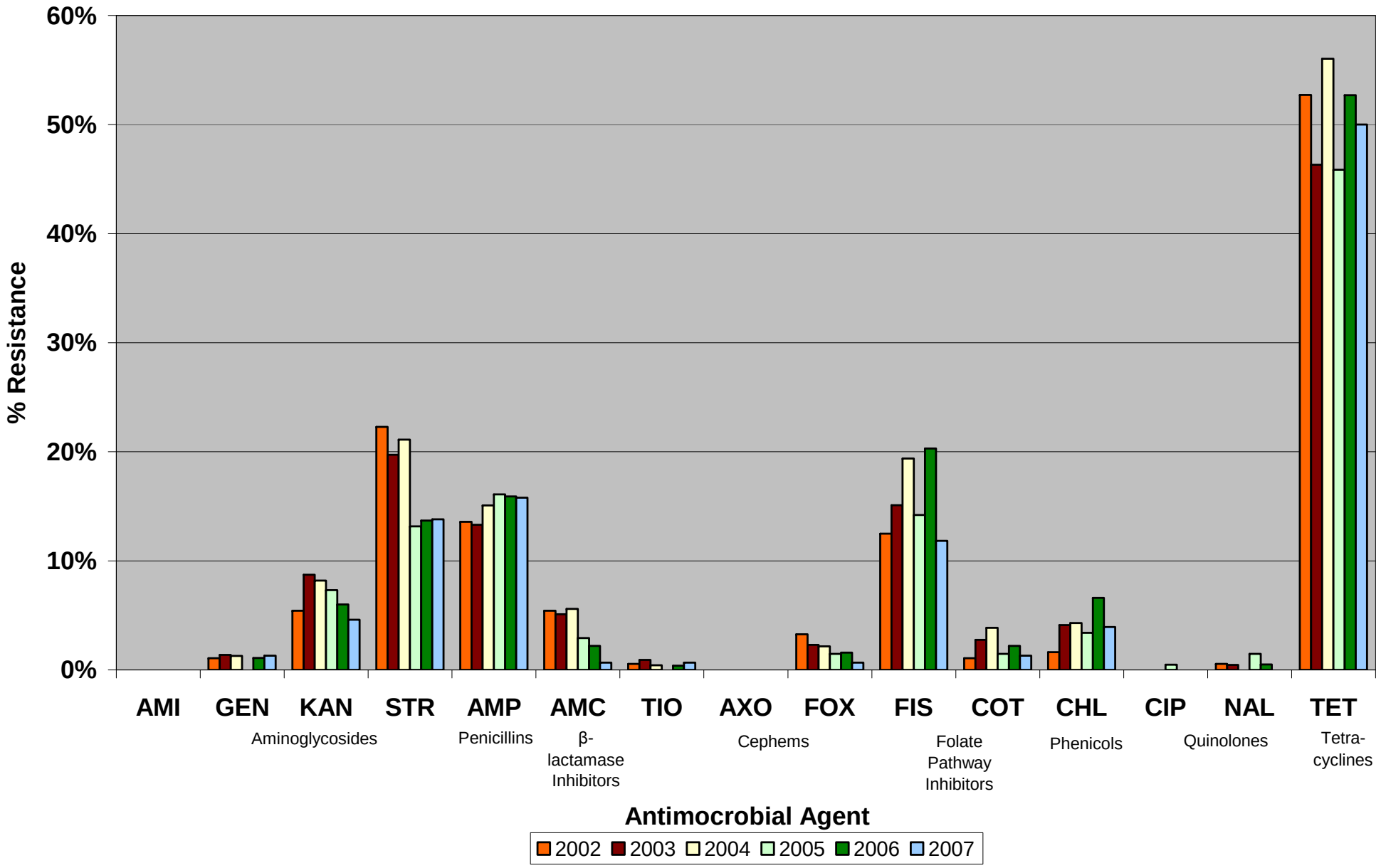


Table 23d. Trends in Resistance among *E. coli* in Pork Chop Isolates, 2002-2007

Class/Subclass	Antimicrobial Agent (µg/ml)	2002 (N=184)		2003 (N=218)		2004 (N=232)		2005 (N=205)		2006 (N=182)		2007 (N=152)		Cochran Armitage Trend Test	
		n	%R[1]	n	%R	n	%R	n	%R	n	%R	n	%R	Z Statistic[2]	P Value[3]
Aminoglycosides	**AMI (MIC ≥ 64)**	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
	GEN (MIC ≥ 16)	2	1.1%	3	1.4%	3	1.3%	0	0.0%	2	1.1%	2	1.3%	-0.2665	0.7898
	KAN (MIC ≥ 64)	10	5.4%	19	8.7%	19	8.2%	15	7.3%	11	6.0%	7	4.6%	-0.8027	0.4221
	STR (MIC ≥ 64)	41	22.3%	43	19.7%	49	21.1%	27	13.2%	25	13.7%	21	13.8%	-2.9355	0.0033
Aminopenicillins	**AMP (MIC ≥ 32)**	25	13.6%	29	13.3%	35	15.1%	33	16.1%	29	15.9%	24	15.8%	0.9343	0.3501
Beta-Lactamase Inhibitor Combinations	**AMC (MIC ≥ 32)**	10	5.4%	11	5.1%	13	5.6%	6	2.9%	4	2.2%	1	0.7%	-2.8883	0.0039
Cephalosporins (3rd Gen)	**TIO (MIC ≥ 32)**	1	0.5%	2	0.9%	1	0.4%	0	0.0%	0	0.0%	1	0.7%	-0.7928	0.4279
	AXO (MIC ≥ 64)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	N/A
Cephamycins	**FOX (MIC ≥ 32)**	6	3.3%	5	2.3%	5	2.2%	3	1.5%	3	1.6%	1	0.7%	-1.7654	0.0775
Folate Pathway Inhibitors	**FIS (MIC ≥ 512)[4]**	23	12.5%	33	15.1%	45	19.4%	29	14.2%	37	20.3%	18	11.8%	0.4325	0.6654
	COT (MIC ≥ 4)	2	1.1%	6	2.8%	9	3.9%	3	1.5%	4	2.2%	2	1.3%	-0.3336	0.7387
Phenicols	**CHL (MIC ≥ 512)**	3	1.6%	9	4.1%	10	4.3%	7	3.4%	12	6.6%	6	3.9%	1.5051	0.1323
Quinolones	**CIP (MIC ≥ 4)**	0	0.0%	0	0.0%	0	0.0%	1	0.5%	0	0.0%	0	0.0%	0.3857	0.6997
	NAL (MIC ≥ 32)	1	0.5%	1	0.5%	0	0.0%	3	1.5%	1	0.5%	0	0.0%	-0.0619	0.9506
Tetracyclines	**TET (MIC ≥ 16)**	97	52.7%	101	46.3%	130	56.0%	94	45.9%	96	52.7%	76	50.0%	-0.1190	0.9053

[1] Where % R = the number of resistance isolates (n) / by the number of positive isolates (N).
[2] N/A = No Z Statistic or P value could be calculated for this antibiotic.
[3] P value for percent resistance for trend was calculated using the Cochran-Armitage Trend test method.
[4] Sulfisoxazole replaced Sulfamethoxazole on NARMS panel in 2004.

Table 24. Multidrug Resistance Patterns among *Escherichia coli* Isolates by Year, 2002-2007

Year		2002	2003	2004	2005	2006	2007
Number of Isolates Tested	**Chicken Breasts**	282	396	400	393	418	299
	Ground Turkey	304	333	376	397	388	315
	Ground Beef	295	311	338	316	295	256
	Pork Chops	184	218	232	205	182	152
Resistance Pattern	**Isolate Source**						
1. No Resistance Detected	**Chicken Breasts**	27.0% 76	20.5% 81	20.8% 83	20.6% 81	23.4% 98	29.1% 87
	Ground Turkey	16.8% 51	14.7% 49	19.2% 72	16.1% 64	16.0% 62	13.0% 41
	Ground Beef	63.1% 186	66.9% 208	73.1% 247	81.3% 257	71.5% 211	77.0% 197
	Pork Chops	41.3% 76	44.5% 97	37.9% 88	48.8% 100	42.9% 78	48.0% 73
2. At Least ACSSuT[1] Resistant	**Chicken Breasts**	0.35% 1	0.0% 0	1.25% 5	0.25% 1	1.44% 6	2.01% 6
	Ground Turkey	0.0% 0	2.70% 9	0.53% 2	1.76% 7	0.77% 3	1.90% 6
	Ground Beef	0.34% 1	0.96% 3	1.48% 5	0.63% 2	0.34% 1	0.39% 1
	Pork Chops	0.54% 1	1.38% 3	1.29% 3	0.98% 2	1.10% 2	0.66% 1
3. At Least ACT/S[2] Resistant	**Chicken Breasts**	0.0% 0	0.0% 0	0.25% 1	0.0% 0	0.0% 0	0.33% 1
	Ground Turkey	0.0% 0	0.90% 3	0.0% 0	0.76% 3	0.26% 1	0.32% 1
	Ground Beef	0.0% 0	0.0% 0	0.0% 0	0.32% 1	0.34% 1	0.0% 0
	Pork Chops	0.54% 1	0.0% 0	0.43% 1	0.49% 1	0.0% 0	0.0% 0
4. At Least ACSSuTAuCf [3] Resistant	**Chicken Breasts**	0.35% 1	0.0% 0	1.00% 4	0.25% 1	0.96% 4	0.67% 2
	Ground Turkey	0.0% 0	0.30% 1	0.0% 0	0.25% 1	0.0% 0	1.27% 4
	Ground Beef	0.0% 0	0.0% 0	0.89% 3	0.32% 1	0.0% 0	0.0% 0
	Pork Chops	0.0% 0	0.46% 1	0.43% 1	0.0% 0	0.0% 0	0.66% 1
5. At Least Ceftiofur and Nalidixic Acid Resistant	**Chicken Breasts**	0.35% 1	0.51% 2	0.75% 3	0.25% 1	0.24% 1	0.0% 0
	Ground Turkey	0.33% 1	0.30% 1	0.27% 1	0.0% 0	0.0% 0	0.63% 2
	Ground Beef	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.34% 1	0.0% 0
	Pork Chops	0.54% 1	0.0% 0	0.0% 0	0.0% 0	0.0% 0	0.0% 0

[1] ACSSuT = ampicillin, chloramphenicol, streptomycin, sulfamethoxazole/sulfisoxazole, and tetracycline.
[2] ACT/S = ampicillin, chloramphenicol, and trimethoprim-sulfamethoxazole.
[3] ACSSuTAuCf = ACSSuT, amoxicillin-clavulanic acid, and ceftiofur.

Table 25a. MIC Distribution among *E. coli* from Chicken Breast

Antimicrobial	Year # 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	2002 (n=282)	0.0	**0.0**	(0.0 - 1.3)						0.7	19.5	64.2	11.7	3.9							
	2003 (n=396)	0.0	**0.0**	(0.0 - 0.9)						0.8	20.2	63.4	12.4	3.3							
	2004 (n=400)	0.0	**0.0**	(0.0 - 0.9)							15.0	65.0	17.0	2.5	0.5						
	2005 (n=393)	0.0	**0.0**	(0.0 - 0.9)							14.8	64.6	18.6	1.8	0.3						
	2006 (n=418)	0.0	**0.0**	(0.0 - 0.9)							3.3	60.3	34.4	1.9							
	2007 (n=299)	0.0	**0.0**	(0.0 - 1.2)							10.0	66.6	19.7	3.3	0.3						
Gentamicin	2002 (n=282)	3.2	**23.0**	(18.3 - 28.4)					3.6	46.1	20.2	2.5	1.4	3.2	**9.2**	**13.8**					
	2003 (n=396)	1.3	**29.3**	(24.9 - 34.0)					3.5	43.9	20.2	1.5	0.3	1.3	**10.6**	**18.7**					
	2004 (n=400)	2.8	**30.0**	(25.5 - 34.8)					5.8	43.3	14.8	2.5	1.0	2.8	**10.0**	**20.0**					
	2005 (n=393)	2.8	**37.7**	(32.9 - 42.7)					3.8	36.6	17.0	1.3	0.8	2.8	**17.6**	**20.1**					
	2006 (n=418)	1.9	**37.3**	(32.7 - 42.2)					2.4	36.1	18.7	2.4	0.8	1.9	**12.2**	**25.1**					
	2007 (n=299)	2.0	**34.4**	(29.1 - 40.1)					2.3	43.5	14.4	2.3	0.8	2.0	**14.4**	**20.1**					
Kanamycin	2002 (n=282)	0.0	**6.0**	(3.6 - 9.5)										91.5	2.5			**6.0**			
	2003 (n=396)	1.3	**6.8**	(4.5 - 9.8)										84.1	7.8	1.3	**0.5**	**6.3**			
	2004 (n=400)	1.0	**6.8**	(4.5 - 9.7)										81.8	10.5	1.0		**6.8**			
	2005 (n=393)	1.0	**7.1**	(4.8 - 10.1)										84.0	7.9	1.0		**7.1**			
	2006 (n=418)	1.0	**11.5**	(8.6 - 14.9)										77.5	10.0	1.0	**0.5**	**11.0**			
	2007 (n=299)	0.7	**9.0**	(6.0 - 12.9)										81.9	8.4	0.7	**0.7**	**8.4**			
Streptomycin	2002 (n=282)	N/A	**49.3**	(43.3 - 55.3)												50.7	**11.4**	**37.9**			
	2003 (n=396)	N/A	**56.1**	(51.0 - 61.0)												44.0	**15.2**	**40.9**			
	2004 (n=400)	N/A	**56.8**	(51.7 - 61.7)												43.3	**13.0**	**43.8**			
	2005 (n=393)	N/A	**50.9**	(45.6 - 55.7)												49.1	**17.8**	**33.1**			
	2006 (n=418)	N/A	**48.1**	(43.2 - 53.0)												51.9	**18.7**	**29.4**			
	2007 (n=299)	N/A	**46.8**	(41.1 - 52.7)												53.2	**18.1**	**28.8**			
Aminopenicillins																					
Ampicillin	2002 (n=282)	0.4	**21.6**	(17.0 - 26.9)							6.0	27.7	39.0	5.3	0.4	**0.4**	**21.3**				
	2003 (n=396)	0.3	**25.3**	(21.0 - 29.8)							1.5	24.5	43.9	4.5	0.3	**0.5**	**24.7**				
	2004 (n=400)	0.3	**17.0**	(13.4 - 21.0)							6.8	40.3	34.0	1.8	0.3	**0.3**	**16.8**				
	2005 (n=393)	0.8	**24.7**	(20.5 - 29.3)							5.9	35.4	31.8	1.5	0.8	**0.3**	**24.4**				
	2006 (n=418)	0.5	**20.1**	(16.4 - 24.3)							8.1	39.7	30.1	1.4	0.5		**20.1**				
	2007 (n=299)	0.0	**18.1**	(13.9 - 22.9)							6.4	46.8	28.4	0.3	0.0	**0.3**	**17.7**				
β-Lactam/β-Lactamase Inhibitor Combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=282)	3.2	**12.1**	(8.5 - 16.4)							3.2	21.3	47.9	12.4	3.2	**6.0**	**6.0**				
	2003 (n=396)	1.5	**13.6**	(10.4 - 17.4)							2.3	21.2	45.7	15.7	1.5	**4.3**	**9.3**				
	2004 (n=400)	0.5	**10.0**	(7.2 - 13.4)							1.8	21.8	51.3	14.8	0.5	**7.3**	**2.8**				
	2005 (n=393)	1.8	**12.0**	(9.1 - 15.9)							3.1	16.8	47.3	19.1	1.8	**9.7**	**2.3**				
	2006 (n=418)	0.7	**11.5**	(8.6 - 14.9)							1.4	23.2	50.0	13.2	0.7	**8.1**	**3.3**				
	2007 (n=299)	0.3	**7.4**	(4.7 - 10.9)							1.7	31.4	47.5	11.7	0.3	**7.0**	**0.3**				
Cephalosporins																					
Ceftiofur	2002 (n=282)	0.4	**7.1**	(4.4 - 10.7)				6.4	48.9	29.8	6.0	1.4	0.4	**5.3**	**1.8**						
	2003 (n=396)	1.5	**7.6**	(5.2 - 10.6)				4.0	43.2	39.4	3.3	1.0	1.5	**4.8**	**2.8**						
	2004 (n=400)	1.0	**5.8**	(3.7 - 8.5)				4.8	50.5	35.3	2.8		1.0	**4.3**	**1.5**						
	2005 (n=393)	1.5	**8.9**	(6.1 - 11.9)				2.0	38.4	46.3	2.3	0.5	1.5	**6.9**	**2.0**						
	2006 (n=418)	0.2	**8.6**	(6.1 - 11.7)				1.2	25.6	60.3	1.9	2.2	0.2	**5.5**	**3.1**						
	2007 (n=299)	0.3	**6.0**	(3.6 - 9.3)				0.7	37.1	54.5	0.3	1.0	0.3	**3.3**	**2.7**						
Ceftriaxone	2002 (n=282)	2.1	**0.0**	(0.0 - 1.3)					87.6	1.8	2.5	0.4	1.8	3.9	2.1						
	2003 (n=396)	4.0	**0.0**	(0.0 - 0.9)					87.1	1.0	2.5	0.3	1.5	3.5	3.5	0.5					
	2004 (n=400)	3.0	**0.0**	(0.0 - 0.9)					90.0	1.3	2.0	0.3		3.5	2.0	1.0					
	2005 (n=393)	2.8	**0.5**	(0.0 - 1.4)					87.0	0.8	1.8	0.3	1.0	5.9	2.5	0.3	**0.5**				
	2006 (n=418)	4.0	**0.7**	(0.1 - 2.1)					88.5	0.7	1.4	0.2		4.3	3.8	0.2	**0.7**				
	2007 (n=299)	2.7	**0.3**	(0.0 - 1.8)					92.6		1.0		0.3	3.0	2.3	0.3	**0.3**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 25a. MIC Distribution among *E. coli* from Chicken Breast continued

Antimicrobial	Year # 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	2002 (n=282)	5.0	**11.0**	(7.6 - 15.2)							1.1	16.3	52.5	14.2	5.0	**11.0**					
	2003 (n=396)	3.8	**9.3**	(6.7 - 12.6)								10.6	50.5	25.8	3.8	**9.3**					
	2004 (n=400)	2.3	**8.3**	(5.7 - 11.4)							0.3	15.5	53.0	20.8	2.3	**3.8**	**4.5**				
	2005 (n=393)	1.5	**11.2**	(8.3 - 14.7)							1.0	24.9	49.9	11.5	1.5	**4.3**	**6.9**				
	2006 (n=418)	2.4	**11.2**	(8.4 - 14.7)							0.2	8.6	57.2	20.3	2.4	**3.8**	**7.4**				
	2007 (n=299)	1.3	**7.4**	(4.7 - 10.9)							0.3	12.7	61.2	17.1	1.3	**2.0**	**5.4**				
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=282)	N/A	**32.3**	(26.8 - 38.1)											66.0	1.42		0.35			**32.3**
	2003 (n=396)	N/A	**38.4**	(33.6 - 43.4)											59.8	1.3	0.5				**38.4**
Sulfisoxazole	2004 (n=400)	N/A	**41.3**	(36.4 - 46.2)											48.5	6.3	4.0			**41.3**	
	2005 (n=393)	N/A	**48.1**	(43.1 - 53.2)											39.4	9.2	2.8	0.3	0.3	**48.1**	
	2006 (n=418)	N/A	**46.9**	(42.0 - 51.8)											33.0	18.2	1.9			**46.9**	
	2007 (n=299)	N/A	**42.1**	(36.5 - 48.0)											41.8	14.7	1.3			**42.1**	
Trimethoprim-Sulfamethoxazole	2002 (n=282)	N/A	**3.5**	(1.7 - 6.4)				82.6	6.4	6.0	0.4	1.1		**3.6**							
	2003 (n=396)	N/A	**7.1**	(4.7 - 10.1)				83.6	5.3	2.3	1.3	0.5		**7.1**							
	2004 (n=400)	N/A	**4.3**	(2.5 - 6.7)				85.5	7.0	2.5	0.5	0.3		**4.3**							
	2005 (n=393)	N/A	**7.4**	(5.0 - 10.4)				66.2	17.3	6.4	2.5	0.3	**0.5**	**6.9**							
	2006 (n=418)	N/A	**8.9**	(6.3 - 12.0)				58.1	18.9	9.8	3.3	1.0	**1.0**	**7.9**							
	2007 (n=299)	N/A	**5.0**	(2.8 - 8.1)				51.8	28.4	9.7	4.7	0.3	**0.3**	**4.7**							
Phenicols																					
Chloramphenicol	2002 (n=282)	1.8	**0.7**	(0.1 - 2.5)								3.9	41.5	52.1	1.8		**0.7**				
	2003 (n=396)	3.5	**0.0**	(0.0 - 0.9)								1.5	25.5	69.4	3.5						
	2004 (n=400)	2.5	**1.8**	(0.7 - 3.6)								3.3	34.5	58.0	2.5	**0.3**	**1.5**				
	2005 (n=393)	2.0	**0.5**	(0.1 - 1.8)								2.5	41.2	53.7	2.0		**0.5**				
	2006 (n=418)	1.0	**2.6**	(1.3 - 4.7)								1.0	39.5	56.0	1.0	**0.2**	**2.4**				
	2007 (n=299)	1.3	**2.0**	(0.7 - 4.3)								1.0	35.8	59.9	1.3	**0.7**	**1.3**				
Quinolones																					
Ciprofloxacin	2002 (n=282)	0.4	**0.0**	(0.0 - 1.3)	90.4	6.4	0.4	0.4	1.4	0.4	0.4	0.4									
	2003 (n=396)	0.0	**0.0**	(0.0 - 0.9)	92.9	3.0		2.3	1.5	0.3											
	2004 (n=400)	0.0	**0.0**	(0.0 - 0.9)	90.3	2.3	0.5	1.8	4.0	1.3											
	2005 (n=393)	0.0	**0.0**	(0.0 - 0.9)	84.0	4.8	2.3	4.1	4.6	0.3											
	2006 (n=418)	0.0	**0.0**	(0.0 - 0.9)	93.3	1.7	0.2	1.2	2.9	0.7											
	2007 (n=299)	0.0	**0.0**	(0.0 - 1.2)	96.7	0.3		1.0	1.7	0.3											
Nalidixic Acid	2002 (n=282)	N/A	**2.8**	(1.2 - 5.5)							1.1	17.7	72.3	5.7	0.4		**2.8**				
	2003 (n=396)	N/A	**4.0**	(2.3 - 6.5)							4.0	47.5	43.2	1.3		**0.3**	**3.8**				
	2004 (n=400)	N/A	**7.0**	(4.7 - 10.0)							6.5	63.0	23.3	0.3		**0.3**	**6.8**				
	2005 (n=393)	N/A	**6.6**	(4.4 - 9.5)							8.1	66.4	15.8	2.0	1.0	**0.5**	**6.1**				
	2006 (n=418)	N/A	**5.0**	(3.1 - 7.6)						0.5	6.9	72.5	14.8		0.2		**5.0**				
	2007 (n=299)	N/A	**3.0**	(1.4 - 5.6)							11.0	78.6	7.4				**3.0**				
Tetracyclines																					
Tetracycline	2002 (n=282)	1.1	**46.1**	(40.2 - 52.1)									52.8	1.1	**1.1**	**1.4**	**43.6**				
	2003 (n=396)	1.5	**42.9**	(38.0 - 48.0)									55.6	1.5	**0.8**	**1.0**	**41.2**				
	2004 (n=400)	0.8	**48.0**	(43.0 - 53.0)									51.3	0.8	**0.5**	**3.3**	**44.3**				
	2005 (n=393)	2.0	**46.6**	(41.5 - 51.6)									51.4	2.0		**2.8**	**43.8**				
	2006 (n=418)	2.2	**50.7**	(45.8 - 55.6)									47.4	2.2	**1.2**	**4.8**	**44.5**				
	2007 (n=299)	2.3	**40.5**	(34.9 - 46.3)									57.2	2.3		**2.3**	**38.1**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 25b. MIC Distribution among *E. coli* from Ground Turkey

Antimicrobial	Year # 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	2002 (n=304)	0.0	**0.0**	(0.0 - 1.2)							25.0	62.2	10.5	2.3							
	2003 (n=333)	0.0	**0.0**	(0.0 - 1.1)						0.6	24.9	58.6	14.1	1.8							
	2004 (n=376)	0.0	**0.0**	(0.0 - 1.0)							17.3	66.5	13.8	2.4							
	2005 (n=396)	0.0	**0.0**	(0.0 - 0.9)						0.3	16.7	68.2	12.1	2.8							
	2006 (n=388)	0.0	**0.0**	(0.0 - 0.9)							4.6	60.3	31.2	3.9							
	2007 (n=315)	0.0	**0.0**	(0.0 - 1.2)						0.3	11.7	67.9	15.6	4.4							
Gentamicin	2002 (n=304)	1.3	**27.0**	(22.1 - 32.3)					5.9	47.4	16.5	1.6	0.3	1.3	**12.2**	**14.8**					
	2003 (n=333)	1.5	**29.7**	(24.9 - 35.0)					5.1	42.3	18.3	2.1	0.9	1.5	**10.5**	**19.2**					
	2004 (n=376)	2.1	**29.3**	(24.7 - 34.1)					4.8	42.6	19.1	2.1		2.1	**12.5**	**16.8**					
	2005 (n=396)	3.0	**27.5**	(23.2 - 32.2)					4.0	46.2	17.2	2.0		3.0	**12.4**	**15.2**					
	2006 (n=388)	3.5	**29.6**	(25.1 - 34.5)					0.8	42.3	20.4	2.3	1.0	3.6	**11.9**	**17.8**					
	2007 (n=315)	5.4	**27.0**	(22.2 - 32.2)					5.4	43.2	18.1	0.3	0.6	5.4	**15.2**	**11.7**					
Kanamycin	2002 (n=304)	1.0	**13.2**	(9.6 - 17.5)										82.2	3.6	1.0	**0.3**	**12.8**			
	2003 (n=333)	1.5	**16.8**	(13.0 - 21.3)										74.2	7.5	1.5	**0.3**	**16.5**			
	2004 (n=376)	2.1	**16.0**	(12.4 - 20.1)										75.0	6.9	2.1	**0.3**	**15.7**			
	2005 (n=396)	0.5	**11.4**	(8.6 - 15.2)										84.1	4.0	0.5	**0.3**	**11.1**			
	2006 (n=388)	1.0	**14.7**	(11.3 - 18.6)										78.4	5.9	1.0	**0.8**	**13.9**			
	2007 (n=315)	0.3	**15.6**	(11.7 - 20.0)										80.3	3.8	0.3		**15.6**			
Streptomycin	2002 (n=304)	N/A	**57.6**	(51.8 - 63.2)												42.4	**23.0**	**34.5**			
	2003 (n=333)	N/A	**54.7**	(49.1 - 60.1)												45.3	**17.7**	**36.9**			
	2004 (n=376)	N/A	**49.2**	(44.0 - 54.4)												50.8	**18.6**	**30.6**			
	2005 (n=396)	N/A	**43.4**	(38.5 - 48.5)												56.6	**19.2**	**24.2**			
	2006 (n=388)	N/A	**43.8**	(38.8 - 48.9)												56.2	**19.8**	**24.0**			
	2007 (n=315)	N/A	**44.8**	(39.2 - 50.4)												55.2	**23.2**	**21.6**			
Aminopenicillins																					
Ampicillin	2002 (n=304)	0.7	**31.3**	(26.1 - 36.8)							0.7	27.6	36.8	3.0	0.7		**31.3**				
	2003 (n=333)	0.0	**35.7**	(30.6 - 41.1)							3.0	19.2	40.5	1.5		**0.3**	**35.4**				
	2004 (n=376)	0.3	**33.2**	(28.5 - 38.3)							6.4	33.2	26.9		0.3	**0.8**	**32.4**				
	2005 (n=396)	0.0	**38.1**	(33.3 - 43.1)							5.6	36.1	19.9	0.3			**38.1**				
	2006 (n=388)	0.0	**42.0**	(37.0 - 47.1)							4.1	35.6	18.3			**0.3**	**41.8**				
	2007 (n=315)	0.3	**48.3**	(42.6 - 53.9)							4.1	34.0	13.3		0.3	**0.3**	**47.9**				
β-Lactam/β-Lactamase Inhibitor Combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=304)	4.3	**5.6**	(3.3 - 8.8)							1.6	18.1	46.1	24.3	4.3	**4.6**	**1.0**				
	2003 (n=333)	6.0	**3.0**	(1.4 - 5.5)							3.0	15.3	45.6	27.0	6.0	**1.5**	**1.5**				
	2004 (n=376)	3.5	**5.3**	(3.3 - 8.1)							1.3	19.9	41.8	28.2	3.5	**4.5**	**0.8**				
	2005 (n=396)	5.1	**3.8**	(2.1 - 6.2)							4.8	12.4	42.7	31.3	5.1	**2.8**	**1.0**				
	2006 (n=388)	6.3	**6.7**	(4.4 - 9.7)							2.3	12.4	41.0	31.4	6.2	**6.2**	**0.5**				
	2007 (n=315)	9.5	**6.3**	(3.9 - 9.6)							1.3	16.2	34.9	31.7	9.5	**4.4**	**1.9**				
Cephalosporins																					
Ceftiofur	2002 (n=304)	0.0	**1.0**	(0.2 - 2.9)				5.3	57.6	33.2	2.6	0.3		**1.0**							
	2003 (n=333)	0.0	**0.3**	(0.0 - 1.7)				4.2	55.3	38.7	1.2	0.3		**0.3**							
	2004 (n=376)	0.3	**1.1**	(0.3 - 2.7)				1.9	47.9	45.2	2.4	1.3	0.3	**0.5**	**0.5**						
	2005 (n=396)	0.3	**1.8**	(0.7 - 3.6)				1.3	51.3	41.7	2.0	1.8	0.3	**0.8**	**1.0**						
	2006 (n=388)	0.0	**3.1**	(1.6 - 5.3)				1.0	26.8	62.9	5.7	0.5		**0.8**	**2.3**						
	2007 (n=315)	0.0	**6.0**	(3.7 - 9.3)					31.7	61.0	1.3			**2.2**	**3.8**						
Ceftriaxone	2002 (n=304)	0.0	**0.0**	(0.0 - 1.2)					95.7	2.3	0.7		0.7	0.7							
	2003 (n=333)	0.3	**0.0**	(0.0 - 1.1)					97.9	0.3	1.2	0.3			0.3						
	2004 (n=376)	0.5	**0.0**	(0.0 - 1.0)					95.5	1.3	1.9			0.8	0.3	0.3					
	2005 (n=396)	1.3	**0.0**	(0.0 - 0.9)					93.7	1.8	2.0	0.3		1.0	1.0	0.3					
	2006 (n=388)	2.3	**0.3**	(0.0 - 1.4)					93.6	1.8	1.3	0.3		0.5	1.5	0.8	**0.3**				
	2007 (n=315)	4.5	**0.3**	(0.0 - 1.8)					93.3	0.6				1.3	3.2	1.3	**0.3**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 25b. MIC Distribution among *E. coli* from Ground Turkey continued

Antimicrobial	Year # 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	2002 (n=304)	2.3	**3.3**	(1.6 - 6.0)								17.1	57.6	19.7	2.3	**3.3**					
	2003 (n=333)	3.3	**1.2**	(0.3 - 3.0)							0.3	12.6	60.4	22.2	3.3	**1.2**					
	2004 (n=376)	0.8	**4.5**	(2.7 - 7.1)							0.8	22.1	55.9	16.0	0.8	**2.7**	**1.9**				
	2005 (n=396)	1.0	**3.3**	(1.8 - 5.5)							2.0	35.9	47.2	10.6	1.0	**1.3**	**2.0**				
	2006 (n=388)	2.3	**6.2**	(4.0 - 9.1)							0.3	12.1	60.3	18.8	2.3	**2.6**	**3.6**				
	2007 (n=315)	0.6	**6.3**	(3.9 - 9.6)							0.3	16.8	61.9	14.0	0.6	**1.6**	**4.8**				
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=304)	N/A	**48.0**	(2.1 - 6.8)											49.3	1.6	1.0				**48.0**
	2003 (n=333)	N/A	**51.7**	(4.4 - 10.2)											45.9	2.1			0.3		**51.7**
Sulfisoxazole	2004 (n=376)	N/A	**48.4**	(43.2 - 53.6)											44.4	3.2	4.0			**48.4**	
	2005 (n=396)	N/A	**48.0**	(43.0 - 53.0)											33.1	14.4	4.5			**48.0**	
	2006 (n=388)	N/A	**48.5**	(43.4 - 53.6)											25.3	23.2	2.8		0.3	**48.5**	
	2007 (n=315)	N/A	**48.9**	(43.2 - 54.6)											34.3	14.6	1.9		0.3	**48.9**	
Trimethoprim-Sulfamethoxazole	2002 (n=304)	N/A	**4.0**	(2.1 - 6.8)				77.3	13.5	4.9	0.3			**4.0**							
	2003 (n=333)	N/A	**6.9**	(4.4 - 10.2)				81.7	7.5	3.0	0.6	0.3		**6.9**							
	2004 (n=376)	N/A	**3.7**	(2.1 - 6.2)				83.8	9.3	2.7	0.5			**3.7**							
	2005 (n=396)	N/A	**5.1**	(3.1 - 7.7)				69.4	18.2	5.8	1.3	0.3	**0.3**	**4.8**							
	2006 (n=388)	N/A	**8.0**	(5.5 - 11.1)				61.1	17.8	7.2	4.4	1.5	**0.5**	**7.5**							
	2007 (n=315)	N/A	**7.9**	(5.2 - 11.5)				44.1	35.2	9.2	1.9	1.6		**7.9**							
Phenicols																					
Chloramphenicol	2002 (n=304)	1.3	**0.3**	(0.0 - 1.8)								3.0	42.1	53.3	1.3		**0.3**				
	2003 (n=333)	2.4	**3.6**	(1.9 - 6.2)								1.2	24.0	68.8	2.4	**0.6**	**3.0**				
	2004 (n=376)	0.8	**0.8**	(0.2 - 2.3)								1.3	36.7	60.4	0.8		**0.8**				
	2005 (n=396)	2.5	**4.0**	(2.3 - 6.5)								0.5	34.1	58.8	2.5		**4.0**				
	2006 (n=388)	1.3	**2.3**	(1.1 - 4.4)								1.0	42.3	53.1	1.3		**2.3**				
	2007 (n=315)	1.0	**2.9**	(1.3 - 5.4)								0.3	38.1	57.8	1.0		**2.9**				
Quinolones																					
Ciprofloxacin	2002 (n=304)	0.0	**0.0**	(0.0 - 1.2)	90.1	5.6		1.0	2.3	0.3	0.7										
	2003 (n=333)	0.0	**0.3**	(0.0 - 1.7)	83.5	3.9	0.6	4.2	6.3	1.2				**0.3**							
	2004 (n=376)	0.0	**0.8**	(0.2 - 2.3)	84.3	3.5	0.8	2.9	7.4	0.3				**0.8**							
	2005 (n=396)	0.0	**0.0**	(0.0 - 0.9)	81.3	4.8	1.3	4.0	8.6												
	2006 (n=388)	0.0	**0.5**	(0.1 - 1.8)	91.8	2.6	0.3	2.1	2.3	0.5				**0.5**							
	2007 (n=315)	0.0	**0.3**	(0.0 - 1.8)	96.5	1.3		1.0	1.0					**0.3**							
Nalidixic Acid	2002 (n=304)	N/A	**4.3**	(2.3 - 7.2)							0.7	16.1	72.7	6.3			**4.3**				
	2003 (n=333)	N/A	**11.7**	(8.5 - 15.7)						0.3	3.0	41.7	41.4	1.5	0.3		**11.7**				
	2004 (n=376)	N/A	**10.6**	(7.7 - 14.2)							3.7	62.0	21.5	1.6	0.5	**0.5**	**10.1**				
	2005 (n=396)	N/A	**10.4**	(7.5 - 13.8)							7.1	60.9	19.2	1.8	0.8	**0.8**	**9.6**				
	2006 (n=388)	N/A	**5.2**	(3.2 - 7.8)						0.3	3.4	74.0	16.8	0.3	0.3	**0.3**	**4.9**				
	2007 (n=315)	N/A	**2.2**	(0.9 - 4.5)							9.2	76.5	12.1			**0.3**	**1.9**				
Tetracyclines																					
Tetracycline	2002 (n=304)	0.3	**77.0**	(71.8 - 81.6)									22.7	0.3	**0.3**	**1.6**	**75.0**				
	2003 (n=333)	0.9	**77.8**	(72.9 - 82.1)									21.3	0.9	**0.3**	**0.9**	**76.6**				
	2004 (n=376)	0.5	**74.2**	(69.5 - 78.6)									25.3	0.5		**6.9**	**67.3**				
	2005 (n=396)	0.3	**78.0**	(73.6 - 82.0)									21.7	0.3		**2.0**	**76.0**				
	2006 (n=388)	0.3	**76.5**	(72.0 - 80.7)									23.2	0.3	**0.3**	**1.8**	**74.5**				
	2007 (n=315)	0.0	**80.0**	(75.2 - 84.3)									20.0			**4.1**	**75.9**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 25c. MIC Distribution among *E. coli* from Ground Beef

Antimicrobial	Year # 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	2002 (n=295)	0.0	**0.0**	(0.0 - 1.2)						0.7	27.1	61.0	9.8	1.4							
	2003 (n=311)	0.0	**0.0**	(0.0 - 1.2)							18.6	68.8	11.6	1.0							
	2004 (n=338)	0.0	**0.0**	(0.0 - 1.1)							15.7	69.8	12.4	1.8	0.3						
	2005 (n=316)	0.0	**0.0**	(0.0 - 1.2)						0.3	11.7	68.4	18.0	1.6							
	2006 (n=295)	0.0	**0.0**	(0.0 - 1.2)						0.3	1.7	60.3	31.9	5.4	0.3						
	2007 (n=256)	0.0	**0.0**	(0.0 - 1.4)						0.4	5.5	68.0	21.5	4.7							
Gentamicin	2002 (n=295)	0.0	**0.3**	(0.0 - 1.9)					6.8	69.8	19.3	3.1	0.7		**0.3**						
	2003 (n=311)	0.6	**1.0**	(0.2 - 2.8)					4.2	62.7	28.0	3.5		0.6	**0.6**	**0.3**					
	2004 (n=338)	0.0	**0.6**	(0.1 - 2.1)					9.2	67.8	20.7	1.8				**0.6**					
	2005 (n=316)	0.0	**0.0**	(0.0 - 1.2)					6.3	65.2	26.3	2.2									
	2006 (n=295)	1.6	**4.1**	(2.1 - 7.0)					1.0	64.1	23.1	6.1		1.7	**2.0**	**2.0**					
	2007 (n=256)	1.2	**0.0**	(0.0 - 1.4)					3.5	66.8	25.4	2.7	0.4	1.2							
Kanamycin	2002 (n=295)	0.0	**2.4**	(1.0 - 4.8)										96.6	1.0		**0.3**	**2.0**			
	2003 (n=311)	0.0	**2.9**	(1.3 - 5.4)										93.2	3.9			**2.9**			
	2004 (n=338)	0.0	**2.4**	(1.0 - 4.6)										95.6	2.1			**2.4**			
	2005 (n=316)	0.0	**0.6**	(0.1 - 2.3)										98.1	1.3			**0.6**			
	2006 (n=295)	0.3	**4.8**	(2.6 - 7.9)										92.2	2.7	0.3	**0.7**	**4.1**			
	2007 (n=256)	0.0	**1.6**	(0.4 - 4.0)										97.7	0.8			**1.6**			
Streptomycin	2002 (n=295)	N/A	**9.5**	(6.4 - 13.4)												90.5	**5.4**	**4.1**			
	2003 (n=311)	N/A	**9.0**	(6.1 - 12.7)												91.0	**3.5**	**5.5**			
	2004 (n=338)	N/A	**11.8**	(8.6 - 15.8)												88.2	**4.7**	**7.1**			
	2005 (n=316)	N/A	**5.4**	(3.2 - 8.5)												94.6	**3.5**	**1.9**			
	2006 (n=295)	N/A	**14.3**	(10.5 - 18.8)												85.8	**6.1**	**8.1**			
	2007 (n=256)	N/A	**6.3**	(3.6 - 10.0)												93.8	**2.0**	**4.3**			
Aminopenicillins																					
Ampicillin	2002 (n=295)	0.3	**6.1**	(3.7 - 9.5)							4.8	32.2	51.9	4.8	0.3	**2.0**	**4.1**				
	2003 (n=311)	0.3	**5.1**	(3.0 - 8.2)							8.4	28.3	52.4	5.5	0.3		**5.1**				
	2004 (n=338)	0.9	**5.3**	(3.2 - 8.3)							8.9	46.2	37.9	0.9	0.9	**0.3**	**5.0**				
	2005 (n=316)	1.3	**3.5**	(1.8 - 6.1)							14.9	49.7	30.1	0.6	1.3		**3.5**				
	2006 (n=295)	0.7	**9.2**	(6.1 - 13.1)							5.1	46.4	37.6	1.0	0.7		**9.2**				
	2007 (n=256)	0.0	**6.6**	(3.9 - 10.4)							11.3	49.2	32.4	0.4		**0.4**	**6.3**				
β-Lactam/β-Lactamase Inhibitor Combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=295)	0.3	**2.0**	(0.7 - 4.4)							3.7	22.0	61.7	10.2	0.3	**1.4**	**0.7**				
	2003 (n=311)	0.6	**2.3**	(0.9 - 4.6)							7.4	19.6	62.4	7.7	0.6	**1.6**	**0.6**				
	2004 (n=338)	0.3	**3.8**	(2.1 - 6.5)							4.4	23.4	60.9	7.1	0.3	**3.6**	**0.3**				
	2005 (n=316)	0.0	**1.3**	(0.3 - 3.2)							9.8	20.3	60.8	7.9		**0.6**	**0.6**				
	2006 (n=295)	1.4	**2.4**	(1.0 - 4.8)							1.4	19.0	64.1	11.9	1.4	**2.0**	**0.3**				
	2007 (n=256)	0.0	**0.8**	(0.1 - 2.8)							4.7	25.0	59.0	10.5							
Cephalosporins																					
Ceftiofur	2002 (n=295)	0.0	**0.0**	(0.0 - 1.2)				11.9	60.7	26.4	0.7	0.3									
	2003 (n=311)	0.0	**0.3**	(0.0 - 1.8)				11.3	55.3	31.5	1.6			**0.3**							
	2004 (n=338)	0.6	**0.9**	(0.2 - 2.6)				5.0	49.4	41.7	2.1	0.3	0.6		**0.9**						
	2005 (n=316)	1.0	**0.9**	(0.1 - 2.3)				8.5	54.4	32.9	1.3	0.9	0.9	**0.6**	**0.3**						
	2006 (n=295)	0.3	**1.0**	(0.2 - 3.0)				0.7	31.9	64.1	2.0		0.3	**0.7**	**0.3**						
	2007 (n=256)	0.0	**0.8**	(0.1 - 2.8)				5.1	43.0	51.2				**0.4**	**0.4**						
Ceftriaxone	2002 (n=295)	0.0	**0.0**	(0.0 - 1.2)					99.3	0.3		0.3									
	2003 (n=311)	0.0	**0.0**	(0.0 - 1.2)					98.4	0.6	0.3	0.3		0.3							
	2004 (n=338)	1.2	**0.0**	(0.0 - 1.1)					95.9	1.8	0.6	0.3		0.3	0.6	0.6					
	2005 (n=316)	1.0	**0.0**	(0.0 - 1.2)					94.6	1.6	1.6		0.6	0.6	0.6	0.3					
	2006 (n=295)	0.9	**0.0**	(0.0 - 1.2)					97.6	0.3	0.3		0.3	0.3	0.7	0.3					
	2007 (n=256)	0.8	**0.0**	(0.0 - 1.4)					99.2						0.4	0.4					

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 25c. MIC Distribution among *E. coli* from Ground Beef continued

Antimicrobial	Year # 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	2002 (n=295)	1.0	**1.4**	(0.4 - 3.4)							1.7	23.7	57.6	14.6	1.0	**1.4**					
	2003 (n=311)	2.6	**0.3**	(0.0 - 1.8)							1.6	21.2	56.3	18.0	2.6	**0.3**					
	2004 (n=338)	1.8	**1.2**	(0.3 - 3.0)							4.1	30.2	53.8	8.9	1.8	**0.3**	**0.9**				
	2005 (n=316)	0.3	**0.9**	(0.2 - 2.7)							7.9	37.3	45.9	7.6	0.3	**0.3**	**0.6**				
	2006 (n=295)	1.6	**2.0**	(0.8 - 4.4)							0.3	12.5	66.8	16.6	1.7	**0.3**	**1.7**				
	2007 (n=256)	1.2	**0.8**	(0.1 - 2.8)						0.4	2.3	18.8	66.8	9.8	1.2		**0.8**				
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=295)	N/A	**9.8**	(6.7 - 13.8)											88.1	1.69			0.34		**9.8**
	2003 (n=311)	N/A	**10.3**	(7.1 - 14.2)											89.1	0.6				**0.3**	**10.0**
Sulfisoxazole	2004 (n=338)	N/A	**13.0**	(9.6 - 17.1)											84.6		2.4			**13.0**	
	2005 (n=316)	N/A	**7.0**	(4.4 - 10.4)											75.3	13.6	4.1			**7.0**	
	2006 (n=295)	N/A	**12.6**	(9.0 - 16.9)											58.6	27.1	0.7	0.3	0.7	**12.5**	
	2007 (n=256)	N/A	**9.4**	(6.1 - 13.6)											75.4	15.2				**9.4**	
Trimethoprim-Sulfamethoxazole	2002 (n=295)	N/A	**0.7**	(0.1 - 2.4)				93.6	3.4	2.4				**0.7**							
	2003 (n=311)	N/A	**0.3**	(0.0 - 1.8)				97.4	1.3	1.0				**0.3**							
	2004 (n=338)	N/A	**0.6**	(0.1 - 2.1)				97.0	2.1		0.3			**0.6**							
	2005 (n=316)	N/A	**0.6**	(0.1 - 2.3)				89.6	8.5	0.9	0.3			**0.6**							
	2006 (n=295)	N/A	**1.4**	(0.4 - 3.4)				84.1	10.8	2.4	1.4		**0.3**	**1.0**							
	2007 (n=256)	N/A	**1.2**	(0.2 - 3.4)				73.8	24.2	0.4	0.4		**0.4**	**0.8**							
Phenicols																					
Chloramphenicol	2002 (n=295)	0.7	**1.0**	(0.2 - 2.9)								0.3	30.2	67.8	0.7		**1.0**				
	2003 (n=311)	5.1	**2.3**	(0.9 - 4.6)								1.0	15.4	76.2	5.1	**1.3**	**1.0**				
	2004 (n=338)	0.9	**3.6**	(1.8 - 6.1)								0.3	26.9	68.3	0.9	**0.3**	**3.3**				
	2005 (n=316)	1.3	**1.6**	(0.5 - 3.7)								1.9	36.7	58.5	1.3	**0.3**	**1.3**				
	2006 (n=295)	0.7	**1.4**	(0.4 - 3.4)								1.0	32.5	64.4	0.7	**0.3**	**1.0**				
	2007 (n=256)	1.6	**3.9**	(1.9 - 7.1)								1.6	32.8	60.2	1.6		**3.9**				
Quinolones																					
Ciprofloxacin	2002 (n=295)	0.0	**0.0**	(0.0 - 1.2)	95.3	4.8															
	2003 (n=311)	0.0	**0.0**	(0.0 - 1.2)	95.5	3.5		0.6	0.3												
	2004 (n=338)	0.0	**0.0**	(0.0 - 1.1)	94.4	3.8		0.6	0.9	0.3											
	2005 (n=316)	0.0	**0.0**	(0.0 - 1.2)	90.2	3.8	1.9	2.5	1.3		0.3										
	2006 (n=295)	0.0	**0.0**	(0.0 - 1.2)	98.0	1.4		0.3	0.3												
	2007 (n=256)	0.0	**0.0**	(0.0 - 1.4)	99.2				0.8												
Nalidixic Acid	2002 (n=295)	N/A	**0.0**	(0.0 - 1.2)							1.0	15.6	80.7	2.7							
	2003 (n=311)	N/A	**1.0**	(0.2 - 2.8)							1.6	44.1	51.1	2.3			**1.0**				
	2004 (n=338)	N/A	**1.5**	(0.5 - 3.4)							3.0	67.5	26.9	1.2		**0.9**	**0.6**				
	2005 (n=316)	N/A	**1.3**	(0.3 - 3.2)						0.3	6.3	70.9	17.1	1.3	2.8	**0.9**	**0.3**				
	2006 (n=295)	N/A	**0.7**	(0.1 - 2.4)							4.7	74.6	20.0				**0.7**				
	2007 (n=256)	N/A	**0.4**	(0.0 - 2.2)						0.4	7.4	80.1	11.3	0.4			**0.4**				
Tetracyclines																					
Tetracycline	2002 (n=295)	4.8	**30.8**	(25.6 - 36.5)									64.4	4.8	**4.4**	**2.0**	**24.4**				
	2003 (n=311)	3.5	**25.1**	(20.4 - 30.3)									71.4	3.5	**2.6**	**1.0**	**21.5**				
	2004 (n=338)	6.5	**22.8**	(18.4 - 27.6)									70.7	6.5	**2.7**	**1.2**	**18.9**				
	2005 (n=316)	6.3	**16.5**	(12.5 - 21.0)									77.2	6.3	**1.6**	**0.6**	**14.2**				
	2006 (n=295)	7.5	**25.4**	(20.6 - 30.9)									67.1	7.5	**2.0**	**4.1**	**19.3**				
	2007 (n=256)	4.3	**21.9**	(17.0 - 27.4)									73.8	4.3	**1.6**	**2.3**	**18.0**				

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 25d. MIC Distribution among *E. coli* from Pork Chop

Antimicrobial	Year # 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	2002 (n=184)	0.0	**0.0**	(0.0 - 2.0)						0.5	17.4	64.7	14.7	2.7							
	2003 (n=218)	0.0	**0.0**	(0.0 - 1.7)						0.5	16.5	61.5	15.6	6.0							
	2004 (n=232)	0.0	**0.0**	(0.0 - 1.6)						0.4	15.5	56.0	26.3	1.3	0.4						
	2005 (n=205)	0.5	**0.0**	(0.0 - 1.8)						1.5	11.2	62.0	19.5	5.4		0.5					
	2006 (n=182)	0.0	**0.0**	(0.0 - 2.0)							4.4	47.8	39.6	7.7	0.5						
	2007 (n=152)	0.0	**0.0**	(0.0 - 2.4)							4.6	58.6	32.2	3.9	0.7						
Gentamicin	2002 (n=184)	0.0	**1.1**	(0.1 - 3.9)					4.9	66.3	21.2	6.0	0.5		**1.1**						
	2003 (n=218)	0.0	**1.4**	(0.3 - 4.0)					3.7	53.2	36.2	5.0	0.5		**0.5**	**0.9**					
	2004 (n=232)	0.4	**1.3**	(0.3 - 3.7)					10.3	57.8	26.7	3.4		0.4		**1.3**					
	2005 (n=205)	1.0	**0.0**	(0.0 - 1.8)					6.8	56.1	34.1	2.0		1.0							
	2006 (n=182)	1.7	**1.1**	(0.1 - 3.9)					2.7	47.8	41.2	4.4	1.1	1.6	**0.5**	**0.5**					
	2007 (n=152)	0.7	**1.3**	(0.2 - 4.7)					4.6	54.6	32.9	5.9		0.7	**0.7**	**0.7**					
Kanamycin	2002 (n=184)	0.5	**5.4**	(2.6 - 9.8)										92.9	1.1	0.5		**5.4**			
	2003 (n=218)	0.0	**8.7**	(5.3 - 13.3)										89.9	1.4			**8.7**			
	2004 (n=232)	0.0	**8.2**	(5.0 - 12.5)										89.2	2.6			**8.2**			
	2005 (n=205)	0.0	**7.3**	(4.2 - 11.8)										92.7			**1.5**	**5.9**			
	2006 (n=182)	0.0	**6.0**	(3.1 - 10.6)										91.2	2.7			**6.0**			
	2007 (n=152)	0.0	**4.6**	(1.9 - 9.3)										94.1	1.3		**0.7**	**3.9**			
Streptomycin	2002 (n=184)	N/A	**22.3**	(16.5 - 29.0)												77.7	**10.9**	**11.4**			
	2003 (n=218)	N/A	**19.7**	(14.7 - 25.6)												80.3	**6.9**	**12.8**			
	2004 (n=232)	N/A	**21.1**	(16.1 - 26.9)												78.9	**8.6**	**12.5**			
	2005 (n=205)	N/A	**13.2**	(8.9 - 18.6)												86.8	**7.3**	**5.9**			
	2006 (n=182)	N/A	**13.7**	(9.1 - 19.6)												86.3	**7.7**	**6.0**			
	2007 (n=152)	N/A	**13.8**	(8.8 - 20.3)												86.2	**7.9**	**5.9**			
Aminopenicillins																					
Ampicillin	2002 (n=184)	1.6	**13.6**	(9.0 - 19.4)							1.1	30.4	47.8	5.4	1.6		**13.6**				
	2003 (n=218)	1.4	**13.3**	(9.1 - 18.5)							1.8	25.7	52.8	5.0	1.4		**13.3**				
	2004 (n=232)	0.9	**15.1**	(10.7 - 20.4)							12.9	44.4	25.0	1.7	0.9	**0.9**	**14.2**				
	2005 (n=205)	2.4	**16.1**	(11.3 - 21.9)							9.3	40.5	28.3	3.4	2.4	**2.0**	**14.1**				
	2006 (n=182)	1.6	**15.9**	(10.9 - 22.1)							3.8	47.8	30.2	0.5	1.6	**1.6**	**14.3**				
	2007 (n=152)	0.0	**15.8**	(10.4 - 22.6)							5.9	48.0	28.9	1.3			**15.8**				
β-Lactam/β-Lactamase Inhibitor Combinations																					
Amoxicillin-Clavulanic Acid	2002 (n=184)	0.5	**5.4**	(2.6 - 9.8)							1.6	23.9	56.0	12.5	0.5	**4.4**	**1.1**				
	2003 (n=218)	0.5	**5.0**	(2.5 - 8.8)							3.2	17.9	54.1	19.3	0.5	**2.8**	**2.3**				
	2004 (n=232)	0.4	**5.6**	(3.0 - 9.4)							4.3	27.6	46.6	15.5	0.4	**4.7**	**0.9**				
	2005 (n=205)	0.5	**2.9**	(1.1 - 6.3)							2.9	21.0	52.2	20.5	0.5	**2.0**	**1.0**				
	2006 (n=182)	3.3	**2.2**	(0.6 - 5.5)								23.1	59.3	12.1	3.3	**2.2**					
	2007 (n=152)	0.0	**0.7**	(0.0 - 3.6)							1.3	18.4	63.8	15.8		**0.7**					
Cephalosporins																					
Ceftiofur	2002 (n=184)	0.0	**0.5**	(0.0 - 3.0)				7.1	64.1	27.2	0.5	0.5		**0.5**							
	2003 (n=218)	0.0	**0.9**	(0.1 - 3.3)				5.5	53.7	38.1	1.8			**0.9**							
	2004 (n=232)	0.0	**0.4**	(0.0 - 2.4)				7.3	51.7	39.7	0.9			**0.4**							
	2005 (n=205)	1.0	**0.5**	(0.0 - 1.8)				3.4	58.0	34.6	2.0	0.5	1.0		**0.5**						
	2006 (n=182)	0.5	**0.0**	(0.0 - 2.0)				0.5	41.2	53.8	3.8		0.5								
	2007 (n=152)	0.0	**0.7**	(0.0 - 3.6)				1.3	50.0	48.0					**0.7**						
Ceftriaxone	2002 (n=184)	0.0	**0.0**	(0.0 - 2.0)					97.8	1.1	0.5			0.5							
	2003 (n=218)	0.5	**0.0**	(0.0 - 1.7)					97.7	0.9	0.5			0.5	0.5						
	2004 (n=232)	0.4	**0.0**	(0.0 - 1.6)					97.0	1.7	0.9				0.4						
	2005 (n=205)	0.5	**0.0**	(0.0 - 1.8)					96.1	2.4	1.0				0.5						
	2006 (n=182)	0.0	**0.0**	(0.0 - 2.0)					97.8	0.5	1.1			0.5							
	2007 (n=152)	0.7	**0.0**	(0.0 - 2.4)					99.3						0.7						

[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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 25d. MIC Distribution among *E. coli* from Pork Chop continued

Antimicrobial	Year # 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	2002 (n=184)	1.6	**3.3**	(1.2 - 7.0)								20.1	58.2	16.9	1.6	**3.3**					
	2003 (n=218)	3.2	**2.3**	(0.7 - 5.3)								12.4	54.1	28.0	3.2	**2.3**					
	2004 (n=232)	0.4	**2.2**	(0.7 - 5.0)						0.9	2.6	26.7	59.9	7.3	0.4	**1.3**	**0.9**				
	2005 (n=205)	0.5	**2.0**	(0.3 - 4.2)							1.5	30.2	55.6	10.2	0.5	**0.5**	**1.5**				
	2006 (n=182)	2.7	**1.6**	(0.3 - 4.7)								12.6	68.7	14.3	2.7	**1.6**					
	2007 (n=152)	0.0	**0.7**	(0.0 - 3.6)							0.7	18.4	63.8	16.4		**0.7**					
Folate Pathway Inhibitors																					
Sulfamethoxazole	2002 (n=184)	N/A	**12.5**	(0.0 - 100.0)											83.2	3.26	0.5	0.54			**12.5**
	2003 (n=218)	N/A	**15.1**	(0.0 - 100.0)											83.5	0.9	0.5				**15.1**
Sulfisoxazole	2004 (n=232)	N/A	**19.4**	(14.5 - 25.1)											69.8	3.0	6.9	0.4	0.4	**19.4**	
	2005 (n=205)	N/A	**14.1**	(9.7 - 19.7)											62.4	18.0	4.4	0.5	0.5	**14.1**	
	2006 (n=182)	N/A	**20.3**	(14.7 - 26.9)											48.4	28.6	1.1	0.5	1.1	**20.3**	
	2007 (n=152)	N/A	**11.8**	(7.2 - 18.1)											72.4	15.1	0.7			**11.8**	
Trimethoprim-Sulfamethoxazole	2002 (n=184)	N/A	**1.1**	(0.1 - 3.9)				88.6	4.4	5.4	0.5		**0.5**	**0.5**							
	2003 (n=218)	N/A	**2.8**	(1.0 - 5.9)				92.2	3.2	1.4	0.5			**2.8**							
	2004 (n=232)	N/A	**3.9**	(1.8 - 7.2)				93.1	2.2	0.9				**3.9**							
	2005 (n=205)	N/A	**1.5**	(0.3 - 4.2)				75.1	18.0	4.4	1.0			**1.5**							
	2006 (n=182)	N/A	**2.2**	(0.6 - 5.5)				73.1	15.4	8.2	1.1			**2.2**							
	2007 (n=152)	N/A	**1.3**	(0.2 - 4.7)				65.1	29.6	2.6	0.7	0.7		**1.3**							
Phenicols																					
Chloramphenicol	2002 (n=184)	2.2	**1.6**	(0.3 - 4.7)								0.5	31.5	64.1	2.2	**1.6**					
	2003 (n=218)	6.9	**4.1**	(1.9 - 7.7)								0.9	15.1	72.9	6.9	**2.3**	**1.8**				
	2004 (n=232)	0.9	**4.3**	(2.1 - 7.8)								0.9	34.1	59.9	0.9	**1.3**	**3.0**				
	2005 (n=205)	2.4	**3.4**	(1.4 - 6.9)								2.9	35.1	56.1	2.4	**2.0**	**1.5**				
	2006 (n=182)	1.1	**6.6**	(3.5 - 11.2)								0.5	33.0	58.8	1.1	**2.7**	**3.8**				
	2007 (n=152)	1.3	**3.9**	(1.5 - 8.4)								0.7	27.0	67.1	1.3	**0.7**	**3.3**				
Quinolones																					
Ciprofloxacin	2002 (n=184)	0.0	**0.0**	(0.0 - 2.0)	96.2	2.7	1.1														
	2003 (n=218)	0.0	**0.0**	(0.0 - 1.7)	96.3	3.2			0.5												
	2004 (n=232)	0.0	**0.0**	(0.0 - 1.6)	97.8	0.9	0.4	0.4	0.4												
	2005 (n=205)	0.0	**0.5**	(0.0 - 2.7)	90.2	4.9	1.0	2.9	0.5					**0.5**							
	2006 (n=182)	0.0	**0.0**	(0.0 - 2.0)	97.8	1.6			0.5												
	2007 (n=152)	0.0	**0.0**	(0.0 - 2.4)	99.3	0.7															
Nalidixic Acid	2002 (n=184)	N/A	**0.5**	(0.0 - 3.0)							2.2	16.9	74.5	5.4	0.5	**0.5**					
	2003 (n=218)	N/A	**0.5**	(0.0 - 2.5)							2.8	44.5	50.0	2.3			**0.5**				
	2004 (n=232)	N/A	**0.0**	(0.0 - 1.6)							9.9	68.5	19.4	1.3	0.9						
	2005 (n=205)	N/A	**1.5**	(0.3 - 4.2)							9.8	67.3	18.0	2.4	1.0	**1.5**					
	2006 (n=182)	N/A	**0.5**	(0.0 - 3.0)							9.9	75.8	12.6	1.1			**0.5**				
	2007 (n=152)	N/A	**0.0**	(0.0 - 2.4)						0.7	11.2	77.0	11.2								
Tetracyclines																					
Tetracycline	2002 (n=184)	0.5	**52.7**	(45.2 - 60.1)									46.7	0.5	**2.2**	**1.6**	**48.9**				
	2003 (n=218)	0.9	**46.3**	(39.6 - 53.2)									52.8	0.9	**1.8**	**0.9**	**43.6**				
	2004 (n=232)	2.2	**56.0**	(49.4 - 62.5)									41.8	2.2		**6.0**	**50.0**				
	2005 (n=205)	1.0	**45.9**	(38.9 - 52.9)									53.2	1.0		**2.4**	**43.4**				
	2006 (n=182)	0.5	**52.7**	(45.2 - 60.2)									46.7	0.5	**1.6**	**4.9**	**46.2**				
	2007 (n=152)	1.3	**50.0**	(41.8 - 58.2)									48.7	1.3	**1.3**	**3.3**	**45.4**				

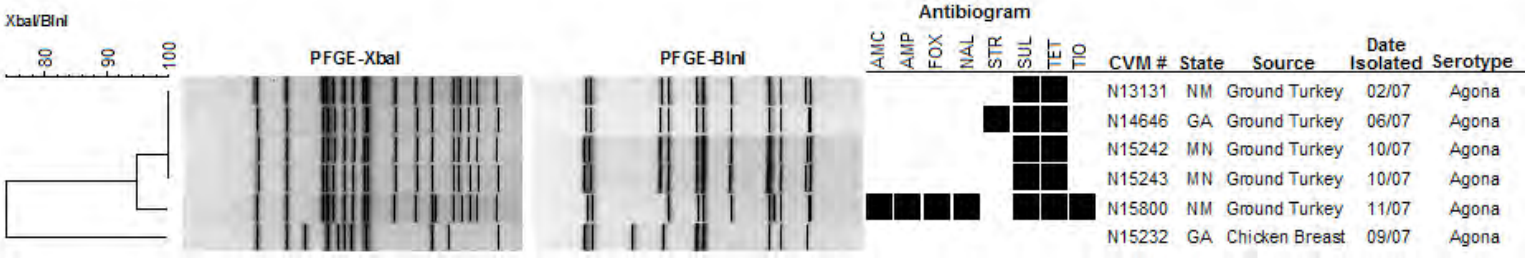
[1] Percent of isolates with intermediate susceptibility.

[2] Percent of isolates that were resistant. Discrepancies between %R and sums of distribution %s are due to rounding.

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

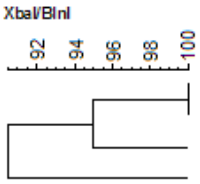
[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs greater than the highest concentrations on the Sensititre plate. 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.

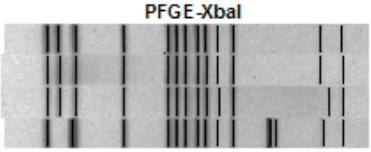
A-1a. PFGE Profiles for *Salmonella* Agona

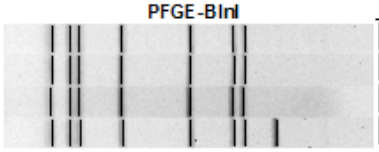


CVM #	State	Source	Date Isolated	Serotype
N13131	NM	Ground Turkey	02/07	Agona
N14646	GA	Ground Turkey	06/07	Agona
N15242	MN	Ground Turkey	10/07	Agona
N15243	MN	Ground Turkey	10/07	Agona
N15800	NM	Ground Turkey	11/07	Agona
N15232	GA	Chicken Breast	09/07	Agona

A-1b. PFGE Profiles for *Salmonella* Albany



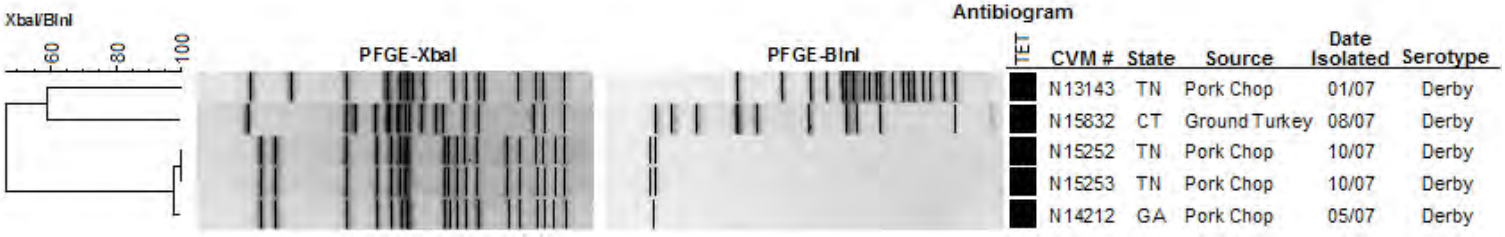




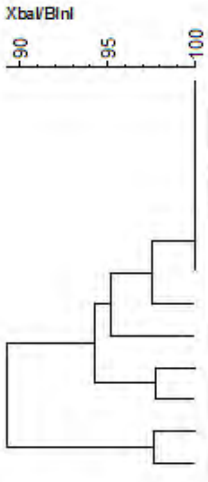
Antibiogram

GEN	STR	SUL	CVM #	State	Source	Date Isolated	Serotype
■	■	■	N15236	GA	Ground Turkey	09/07	Albany
■	■	■	N15753	GA	Ground Turkey	10/07	Albany
■		■	N13151	CA	Ground Turkey	07/07	Albany
■	■	■	N15237	GA	Ground Turkey	09/07	Albany

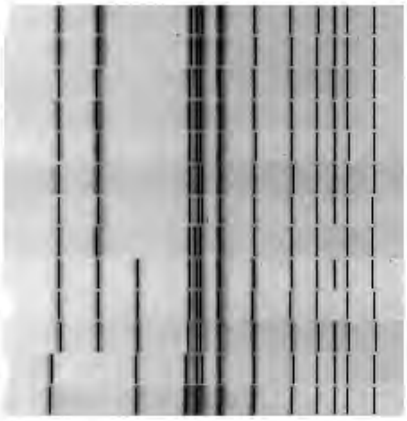
A-1c. PFGE Profiles for *Salmonella* Derby



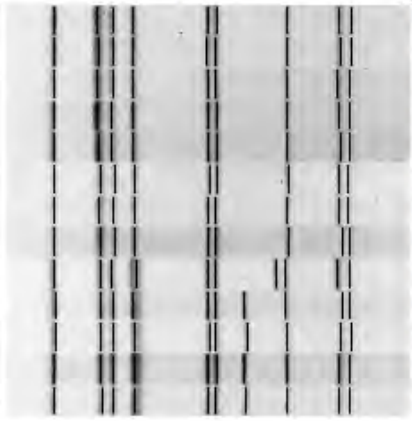
A-1d. PFGE Profiles for *Salmonella* Enteritidis



PFGE-XbaI

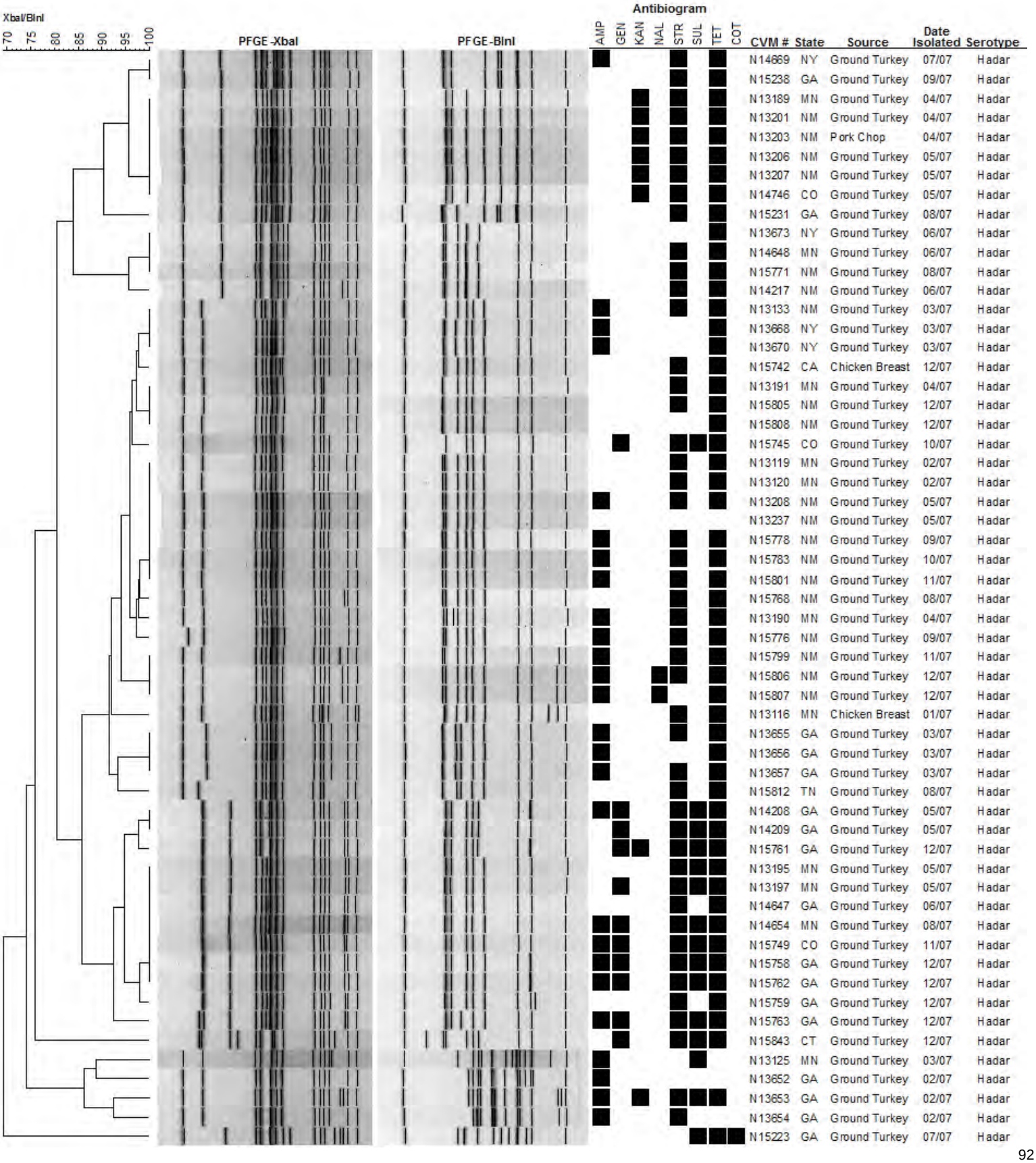


PFGE-BlnI

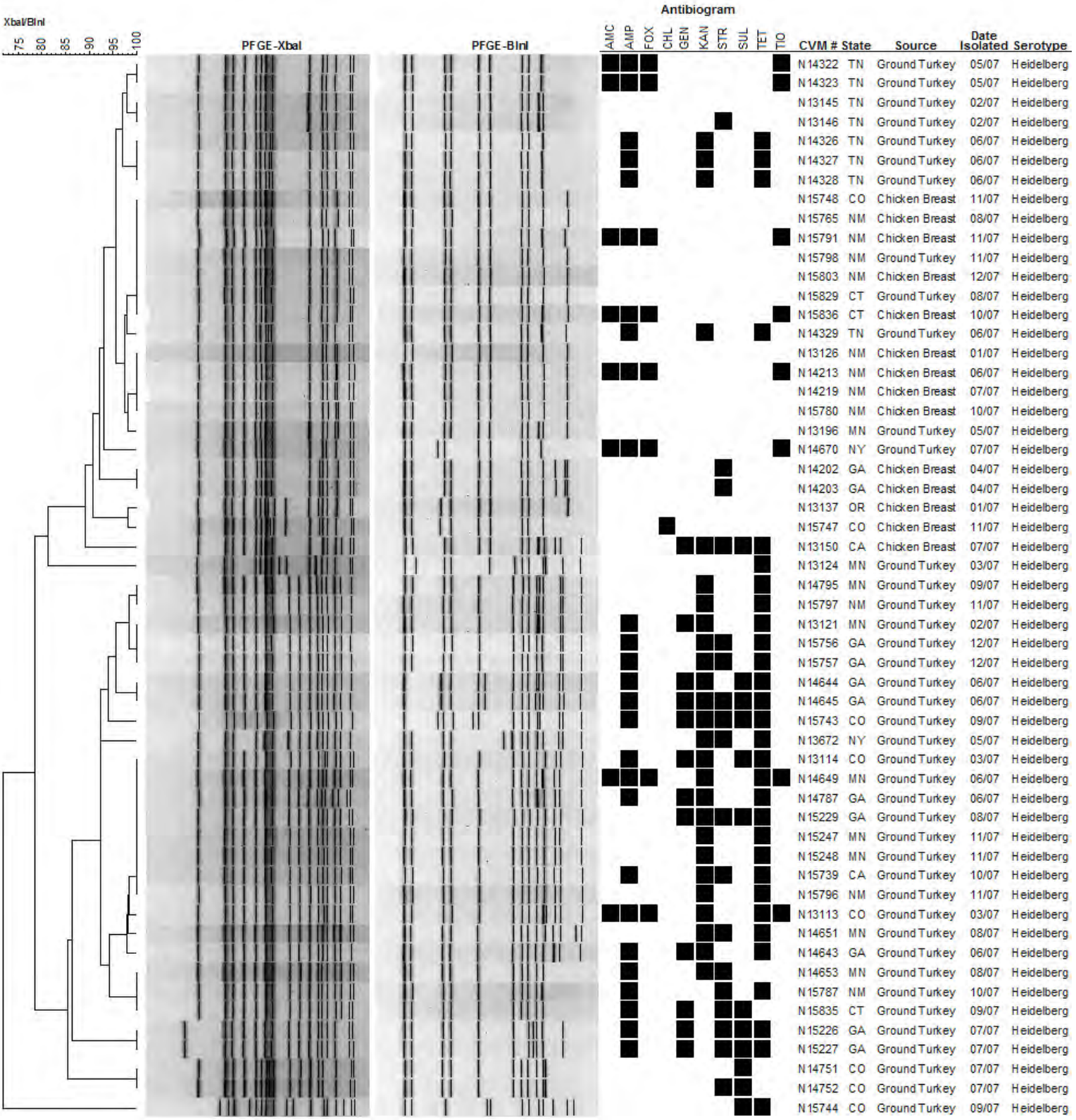


CVM #	State	Source	Date Isolated	Serotype
N13666	NY	Chicken Breast	03/07	Enteritidis
N13667	NY	Chicken Breast	03/07	Enteritidis
N15781	NM	Chicken Breast	10/07	Enteritidis
N15782	NM	Chicken Breast	10/07	Enteritidis
N15804	NM	Chicken Breast	12/07	Enteritidis
N15822	CT	Chicken Breast	06/07	Enteritidis
N15828	CT	Chicken Breast	08/07	Enteritidis
N15819	CT	Chicken Breast	02/07	Enteritidis
N14221	NM	Chicken Breast	07/07	Enteritidis
N14220	NM	Chicken Breast	07/07	Enteritidis
N14325	TN	Chicken Breast	06/07	Enteritidis
N15254	TN	Chicken Breast	12/07	Enteritidis
N15755	GA	Chicken Breast	12/07	Enteritidis

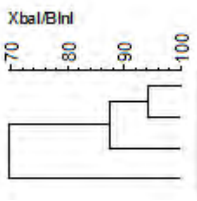
A-1e. PFGE Profiles for *Salmonella* Hadar

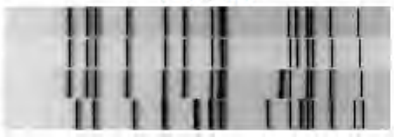


A-1f. PFGE Profiles for *Salmonella* Heidelberg



A-1g. PFGE Profiles for *Salmonella* I 4,[5],12:i:-

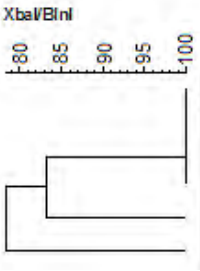


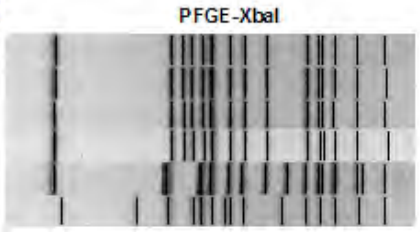


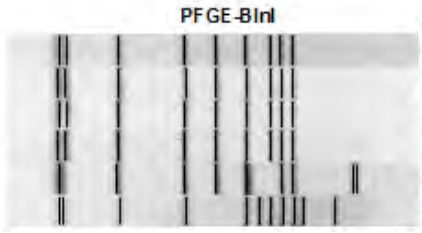
Antibiogram

GEN	SUL	CVM #	State	Source	Date Isolated	Serotype
■	■	N13205	NM	Chicken Breast	05/07	I 4,[5],12:i:-
		N15779	NM	Chicken Breast	10/07	I 4,[5],12:i:-
■	■	N14792	MN	Ground Beef	09/07	I 4,[5],12:i:-
		N14747	CO	Ground Beef	05/07	I 4,[5],12:i:-

A-1h. PFGE Profiles for *Salmonella* Infantis

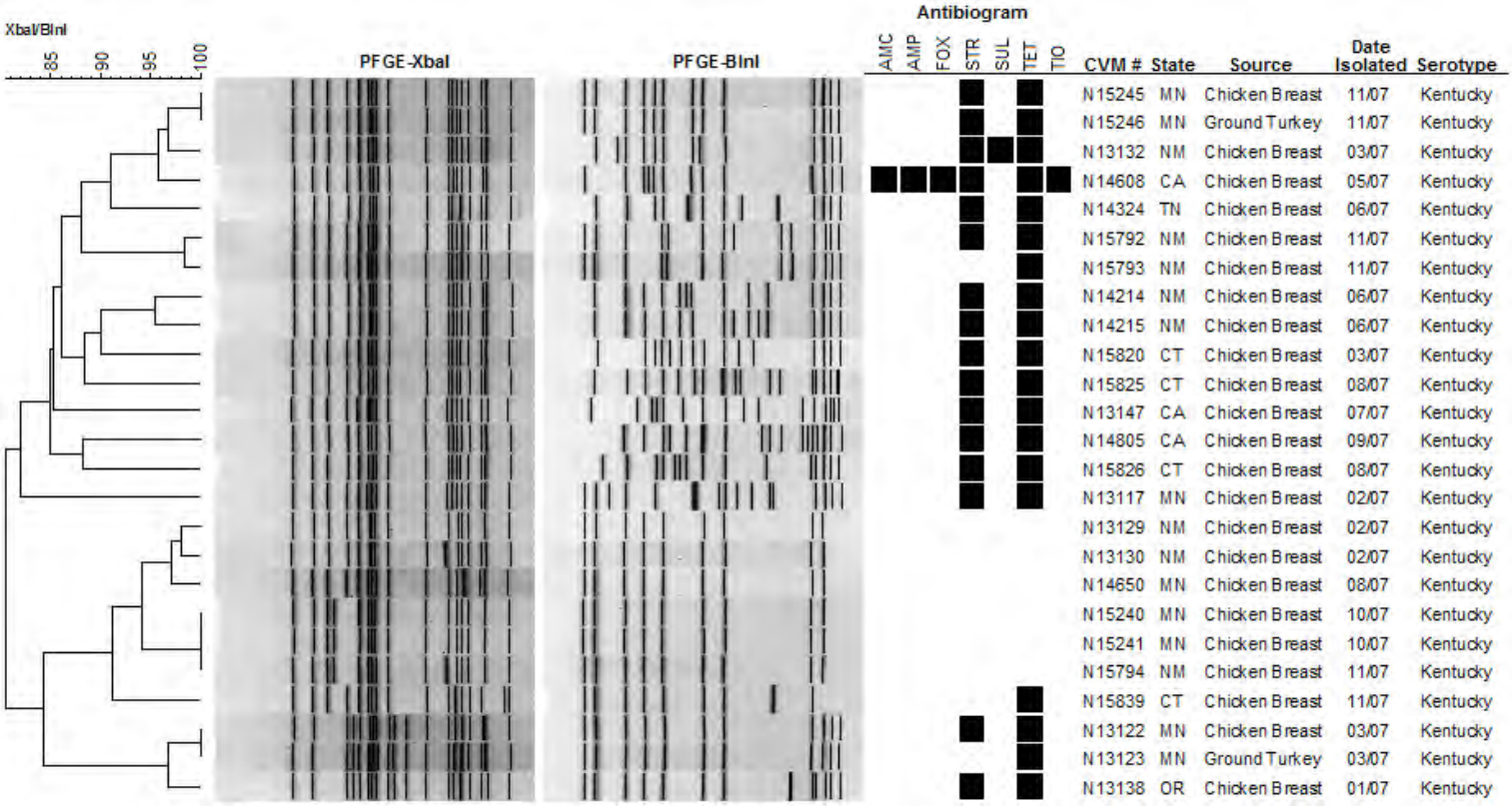






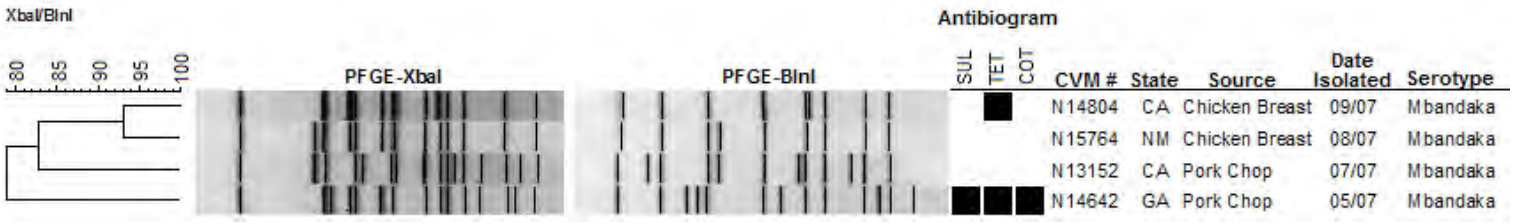
CVM #	State	Source	Date Isolated	Serotype
N15773	NM	Pork Chop	08/07	Infantis
N15774	NM	Pork Chop	08/07	Infantis
N15775	NM	Pork Chop	08/07	Infantis
N15790	NM	Pork Chop	10/07	Infantis
N15228	GA	Pork Chop	07/07	Infantis
N13139	TN	Chicken Breast	01/07	Infantis

A-1i. PFGE Profiles for *Salmonella* Kentucky



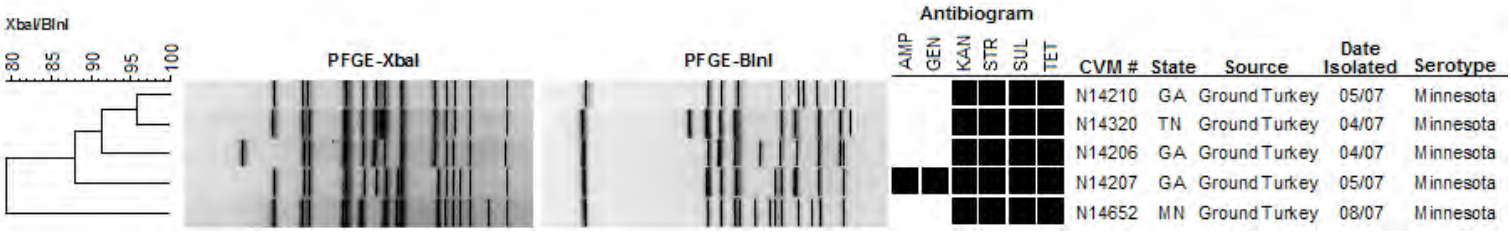
CVM #	State	Source	Date Isolated	Serotype
N15245	MN	Chicken Breast	11/07	Kentucky
N15246	MN	Ground Turkey	11/07	Kentucky
N13132	NM	Chicken Breast	03/07	Kentucky
N14608	CA	Chicken Breast	05/07	Kentucky
N14324	TN	Chicken Breast	06/07	Kentucky
N15792	NM	Chicken Breast	11/07	Kentucky
N15793	NM	Chicken Breast	11/07	Kentucky
N14214	NM	Chicken Breast	06/07	Kentucky
N14215	NM	Chicken Breast	06/07	Kentucky
N15820	CT	Chicken Breast	03/07	Kentucky
N15825	CT	Chicken Breast	08/07	Kentucky
N13147	CA	Chicken Breast	07/07	Kentucky
N14805	CA	Chicken Breast	09/07	Kentucky
N15826	CT	Chicken Breast	08/07	Kentucky
N13117	MN	Chicken Breast	02/07	Kentucky
N13129	NM	Chicken Breast	02/07	Kentucky
N13130	NM	Chicken Breast	02/07	Kentucky
N14650	MN	Chicken Breast	08/07	Kentucky
N15240	MN	Chicken Breast	10/07	Kentucky
N15241	MN	Chicken Breast	10/07	Kentucky
N15794	NM	Chicken Breast	11/07	Kentucky
N15839	CT	Chicken Breast	11/07	Kentucky
N13122	MN	Chicken Breast	03/07	Kentucky
N13123	MN	Ground Turkey	03/07	Kentucky
N13138	OR	Chicken Breast	01/07	Kentucky

A-1j. PFGE Profiles for *Salmonella* Mbandaka



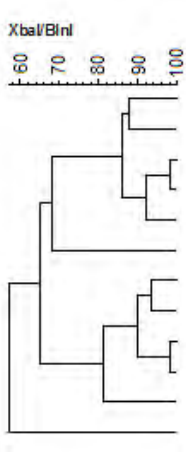
CVM #	State	Source	Date Isolated	Serotype
N14804	CA	Chicken Breast	09/07	Mbandaka
N15764	NM	Chicken Breast	08/07	Mbandaka
N13152	CA	Pork Chop	07/07	Mbandaka
N14642	GA	Pork Chop	05/07	Mbandaka

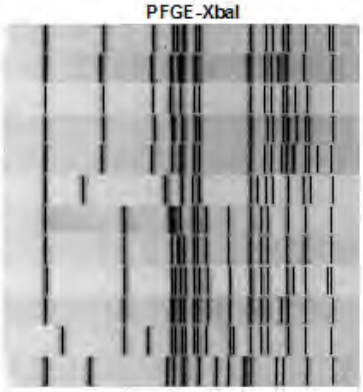
A-1k. PFGE Profiles for *Salmonella* Minnesota

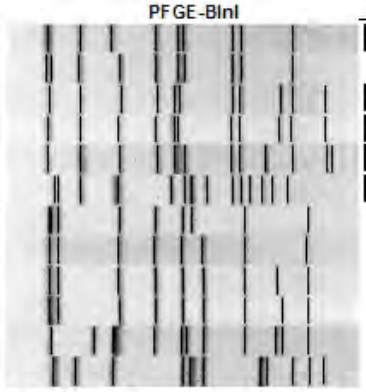


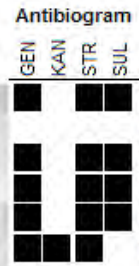
CVM #	State	Source	Date Isolated	Serotype
N14210	GA	Ground Turkey	05/07	Minnesota
N14320	TN	Ground Turkey	04/07	Minnesota
N14206	GA	Ground Turkey	04/07	Minnesota
N14207	GA	Ground Turkey	05/07	Minnesota
N14652	MN	Ground Turkey	08/07	Minnesota

A-1l. PFGE Profiles for *Salmonella* Montevideo



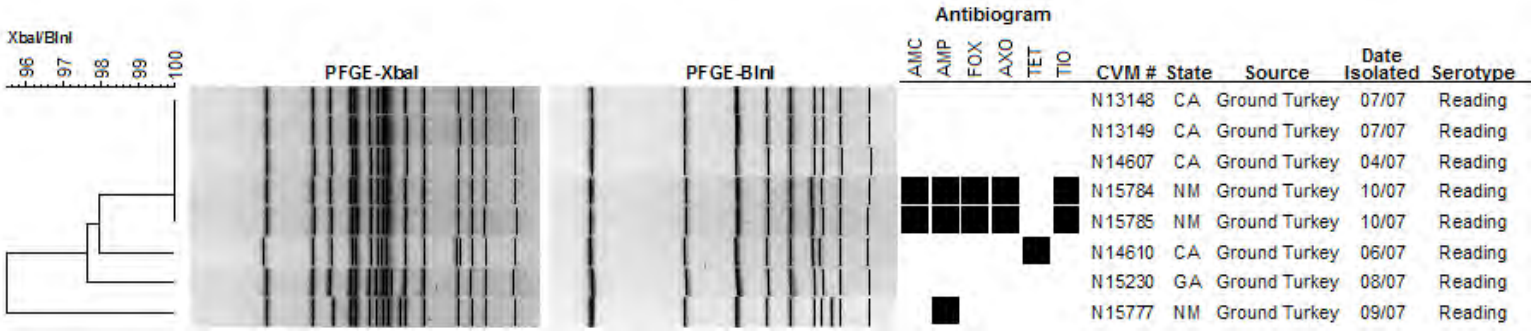






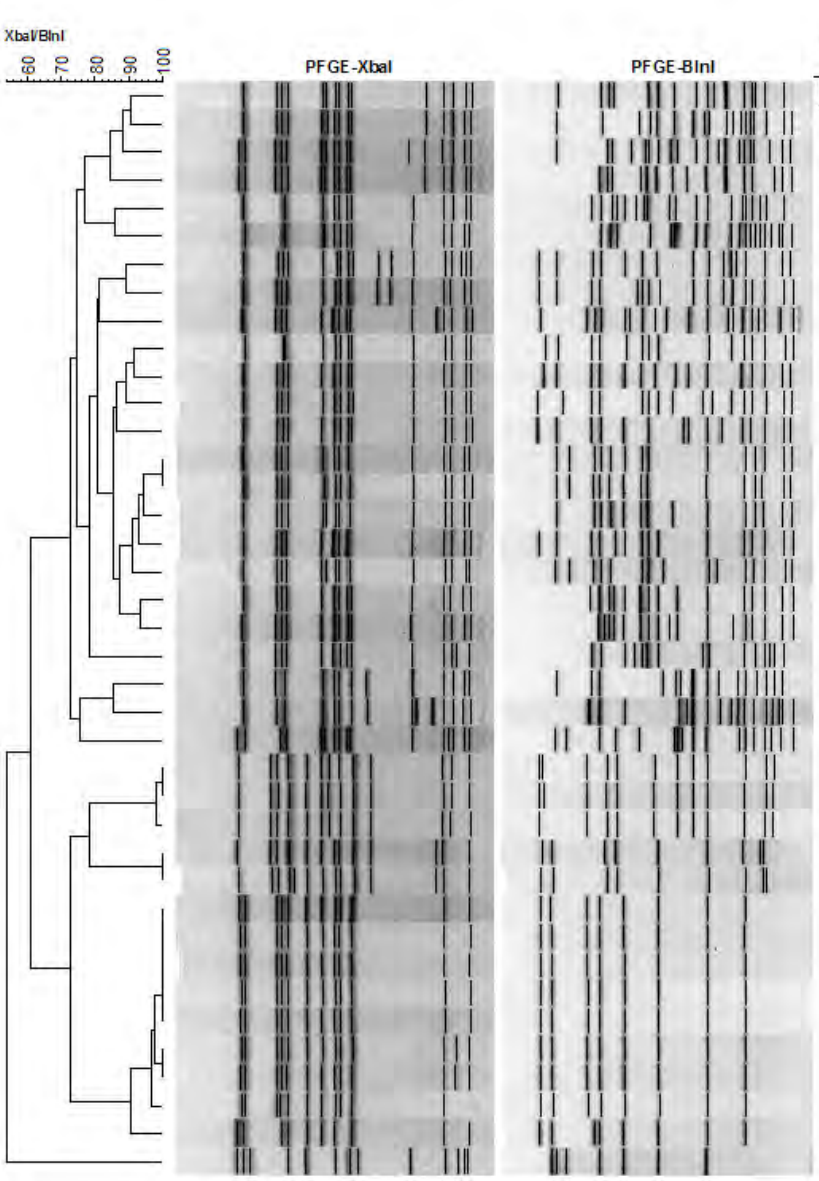
CVM #	State	Source	Date Isolated	Serotype
N13204	NM	Chicken Breast	05/07	Montevideo
N14802	CA	Chicken Breast	07/07	Montevideo
N13154	CA	Chicken Breast	07/07	Montevideo
N14749	CO	Pork Chop	06/07	Montevideo
N15741	CA	Chicken Breast	12/07	Montevideo
N14318	TN	Ground Turkey	04/07	Montevideo
N15746	CO	Ground Turkey	10/07	Montevideo
N15813	TN	Ground Beef	08/07	Montevideo
N14222	NM	Chicken Breast	07/07	Montevideo
N15772	NM	Ground Beef	08/07	Montevideo
N14612	CA	Ground Beef	06/07	Montevideo
N15239	MN	Chicken Breast	10/07	Montevideo

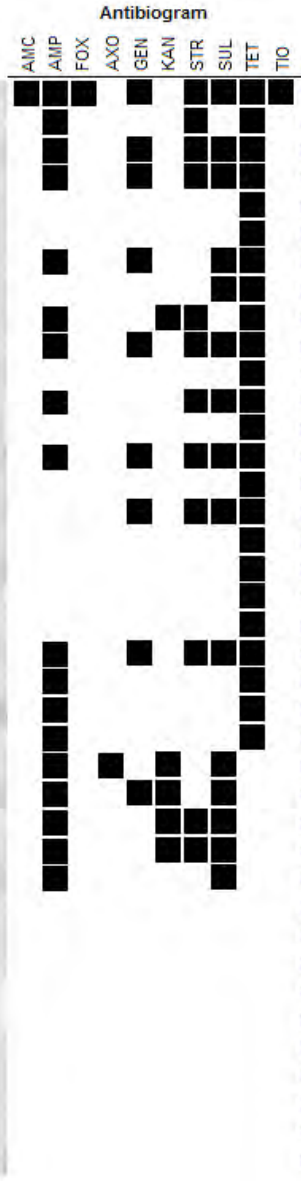
A-1m. PFGE Profiles for *Salmonella* Reading



CVM #	State	Source	Date Isolated	Serotype
N13148	CA	Ground Turkey	07/07	Reading
N13149	CA	Ground Turkey	07/07	Reading
N14607	CA	Ground Turkey	04/07	Reading
N15784	NM	Ground Turkey	10/07	Reading
N15785	NM	Ground Turkey	10/07	Reading
N14610	CA	Ground Turkey	06/07	Reading
N15230	GA	Ground Turkey	08/07	Reading
N15777	NM	Ground Turkey	09/07	Reading

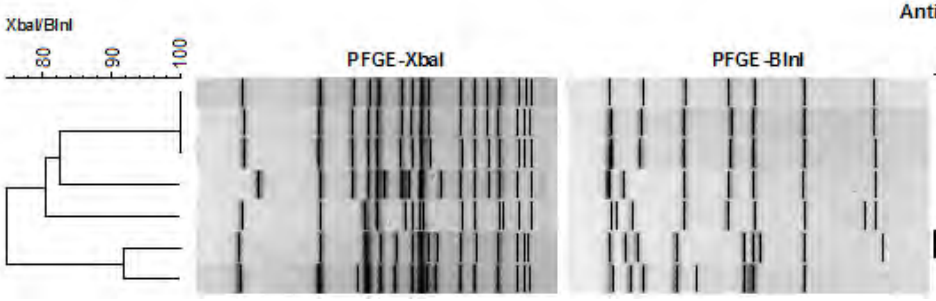
A-1n. PFGE Profiles for *Salmonella* Saintpaul





CVM #	State	Source	Date Isolated	Serotype
N14211	GA	Ground Turkey	05/07	Saintpaul
N14748	CO	Ground Turkey	06/07	Saintpaul
N14796	MN	Ground Turkey	09/07	Saintpaul
N14676	OR	Ground Turkey	09/07	Saintpaul
N13112	CO	Ground Turkey	03/07	Saintpaul
N15750	CO	Ground Turkey	12/07	Saintpaul
N14330	TN	Ground Turkey	07/07	Saintpaul
N14753	CO	Ground Turkey	08/07	Saintpaul
N15251	TN	Ground Turkey	10/07	Saintpaul
N13651	GA	Ground Turkey	01/07	Saintpaul
N14205	GA	Ground Turkey	04/07	Saintpaul
N14334	TN	Pork Chop	07/07	Saintpaul
N14204	GA	Ground Turkey	04/07	Saintpaul
N15751	CO	Ground Turkey	12/07	Saintpaul
N15760	GA	Ground Turkey	12/07	Saintpaul
N15255	TN	Ground Turkey	12/07	Saintpaul
N13136	NM	Ground Turkey	03/07	Saintpaul
N15795	NM	Ground Turkey	11/07	Saintpaul
N14788	GA	Ground Turkey	06/07	Saintpaul
N14789	GA	Ground Turkey	06/07	Saintpaul
N15244	MN	Chicken Breast	11/07	Saintpaul
N15224	GA	Ground Turkey	07/07	Saintpaul
N15786	NM	Ground Turkey	10/07	Saintpaul
N14672	NY	Ground Turkey	08/07	Saintpaul
N15831	CT	Ground Turkey	08/07	Saintpaul
N15834	CT	Ground Turkey	09/07	Saintpaul
N15830	CT	Ground Turkey	08/07	Saintpaul
N13134	NM	Ground Turkey	03/07	Saintpaul
N13238	NM	Ground Turkey	05/07	Saintpaul
N14744	CO	Ground Turkey	04/07	Saintpaul
N15234	GA	Ground Turkey	09/07	Saintpaul
N15235	GA	Ground Turkey	09/07	Saintpaul
N15767	NM	Ground Turkey	08/07	Saintpaul
N15769	NM	Ground Turkey	08/07	Saintpaul
N14223	NM	Ground Turkey	07/07	Saintpaul
N14224	NM	Ground Turkey	07/07	Saintpaul
N15766	NM	Ground Turkey	08/07	Saintpaul
N14319	TN	Ground Turkey	04/07	Saintpaul
N13128	NM	Ground Beef	01/07	Saintpaul

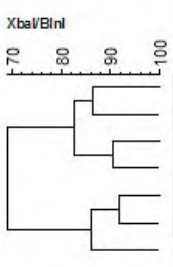
A-1o. PFGE Profiles for *Salmonella* Schwarzengrund

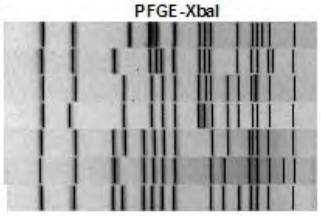


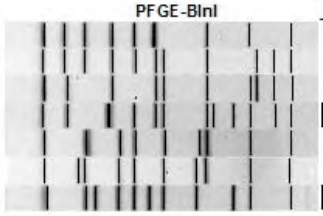
Antibiogram

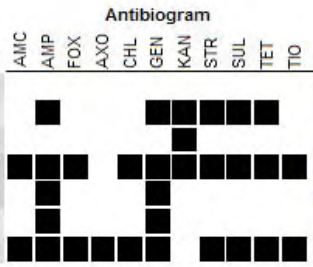
SUL	TET	CVM #	State	Source	Date Isolated	Serotype
		N15824	CT	Ground Turkey	07/07	Schwarzengrund
		N15837	CT	Ground Turkey	10/07	Schwarzengrund
		N15838	CT	Ground Turkey	10/07	Schwarzengrund
		N14216	NM	Ground Turkey	06/07	Schwarzengrund
		N13110	CO	Ground Turkey	02/07	Schwarzengrund
■	■	N13669	NY	Ground Turkey	03/07	Schwarzengrund
		N14609	CA	Ground Turkey	05/07	Schwarzengrund

A-1p. PFGE Profiles for *Salmonella* Senftenberg



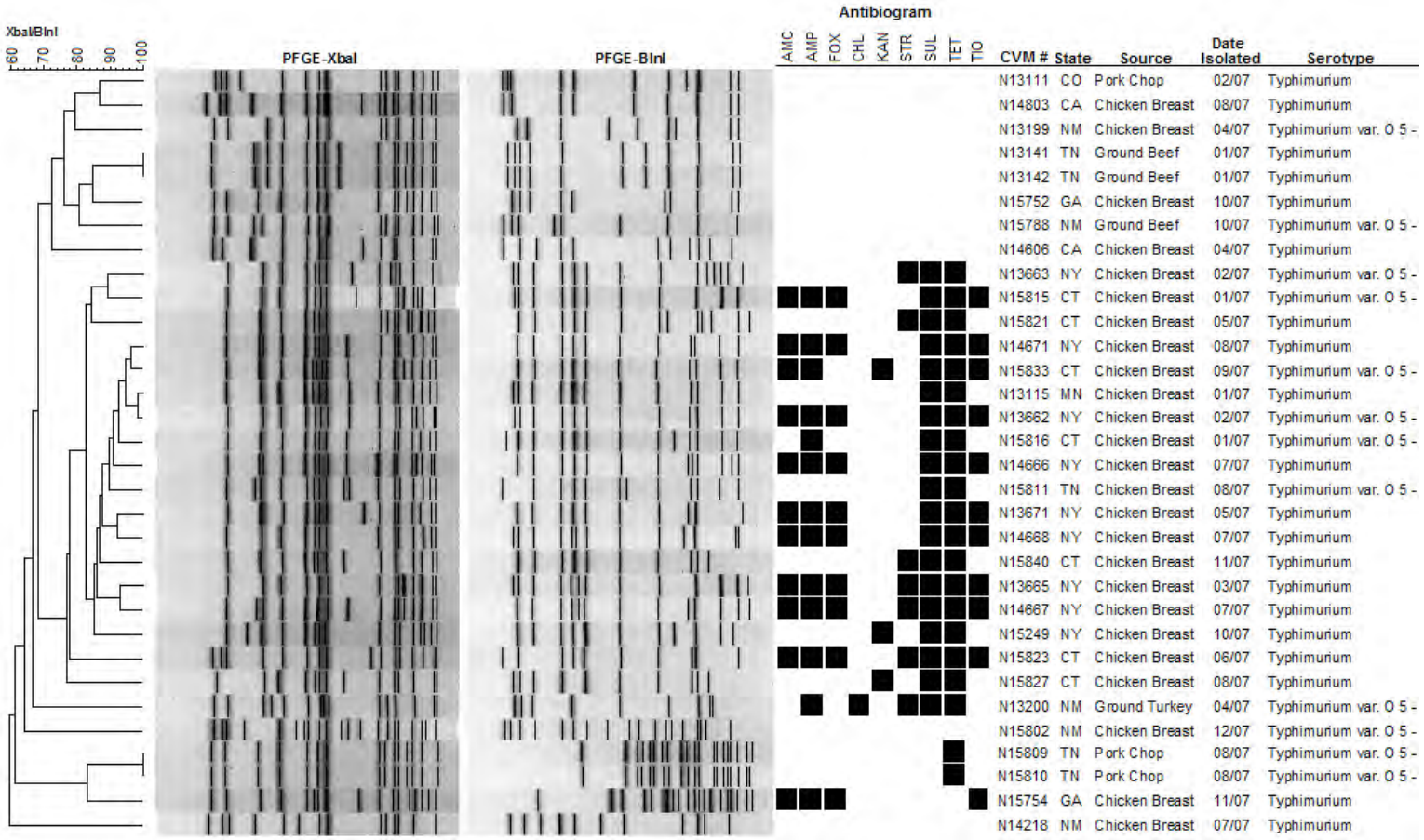






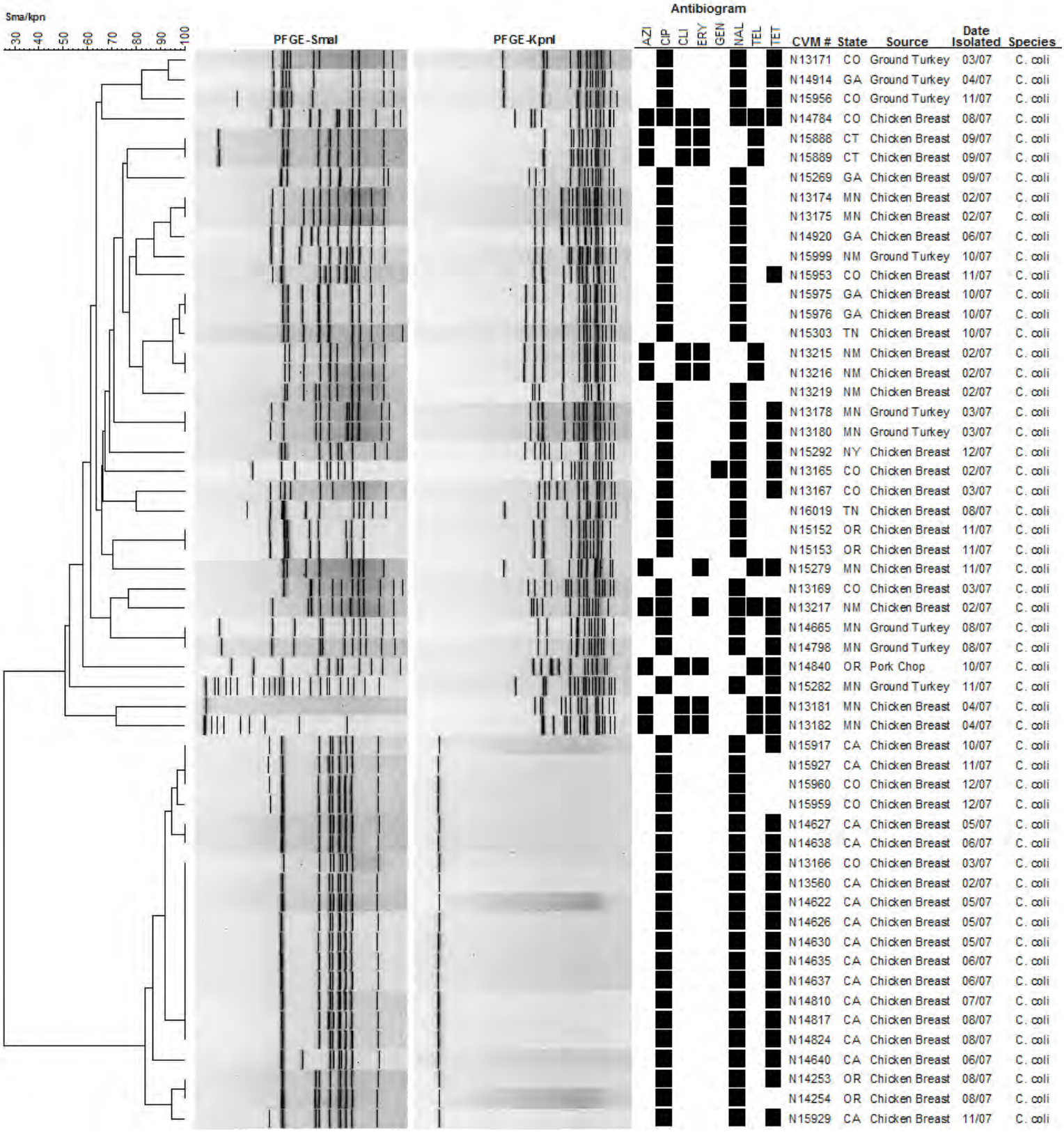
CVM #	State	Source	Date Isolated	Serotype
N13198	NM	Chicken Breast	04/07	Senftenberg
N15225	GA	Ground Turkey	07/07	Senftenberg
N13193	MN	Ground Turkey	05/07	Senftenberg
N14611	CA	Ground Turkey	06/07	Senftenberg
N13202	NM	Ground Turkey	04/07	Senftenberg
N14750	CO	Ground Turkey	07/07	Senftenberg
N13135	NM	Ground Turkey	03/07	Senftenberg

A-1q. PFGE Profiles for *Salmonella* Typhimurium

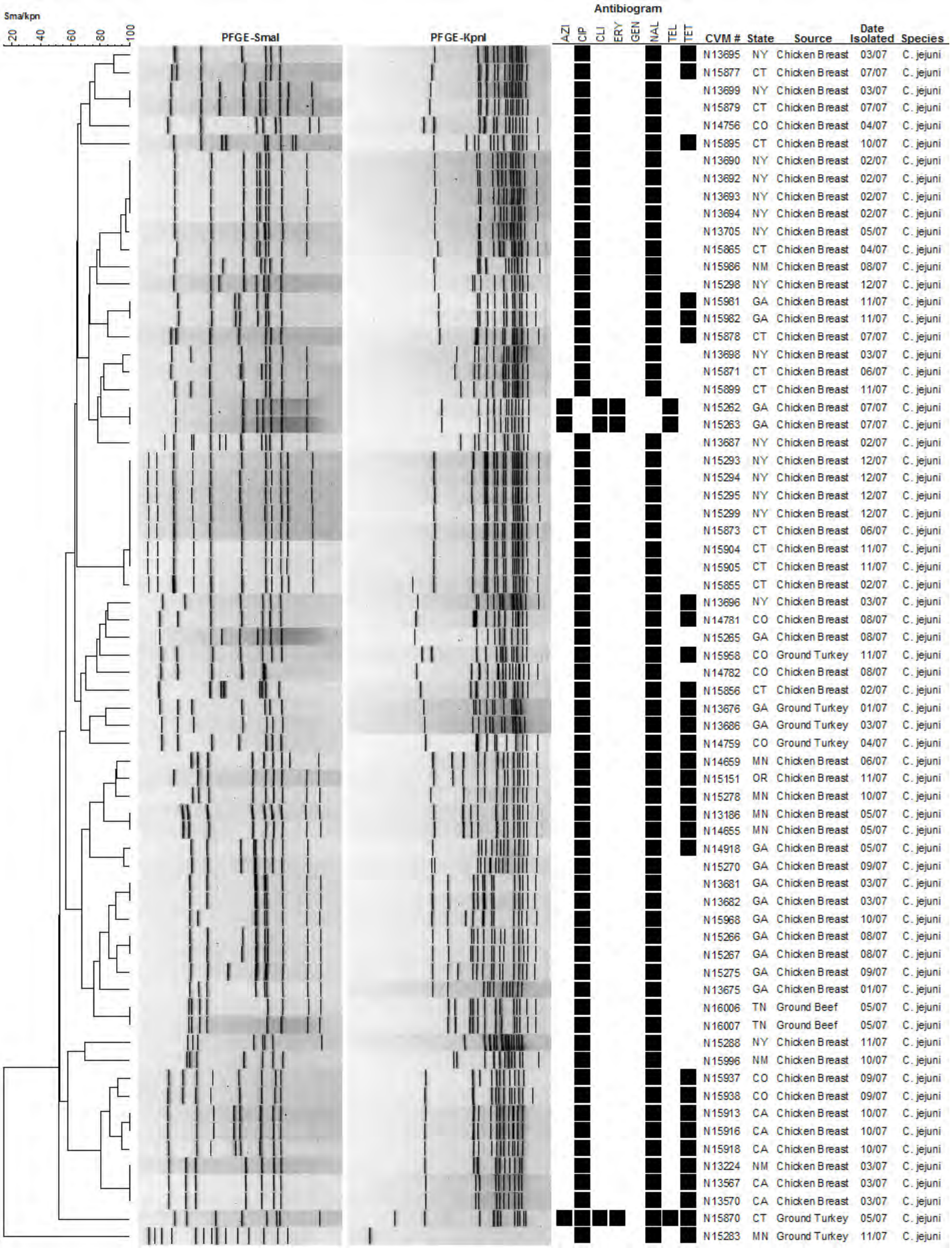


CVM #	State	Source	Date Isolated	Serotype
N13111	CO	Pork Chop	02/07	Typhimurium
N14803	CA	Chicken Breast	08/07	Typhimurium
N13199	NM	Chicken Breast	04/07	Typhimurium var. O 5 -
N13141	TN	Ground Beef	01/07	Typhimurium
N13142	TN	Ground Beef	01/07	Typhimurium
N15752	GA	Chicken Breast	10/07	Typhimurium
N15788	NM	Ground Beef	10/07	Typhimurium var. O 5 -
N14606	CA	Chicken Breast	04/07	Typhimurium
N13663	NY	Chicken Breast	02/07	Typhimurium var. O 5 -
N15815	CT	Chicken Breast	01/07	Typhimurium var. O 5 -
N15821	CT	Chicken Breast	05/07	Typhimurium
N14671	NY	Chicken Breast	08/07	Typhimurium
N15833	CT	Chicken Breast	09/07	Typhimurium var. O 5 -
N13115	MN	Chicken Breast	01/07	Typhimurium
N13662	NY	Chicken Breast	02/07	Typhimurium var. O 5 -
N15816	CT	Chicken Breast	01/07	Typhimurium var. O 5 -
N14666	NY	Chicken Breast	07/07	Typhimurium
N15811	TN	Chicken Breast	08/07	Typhimurium var. O 5 -
N13671	NY	Chicken Breast	05/07	Typhimurium
N14668	NY	Chicken Breast	07/07	Typhimurium
N15840	CT	Chicken Breast	11/07	Typhimurium
N13665	NY	Chicken Breast	03/07	Typhimurium
N14667	NY	Chicken Breast	07/07	Typhimurium
N15249	NY	Chicken Breast	10/07	Typhimurium
N15823	CT	Chicken Breast	06/07	Typhimurium
N15827	CT	Chicken Breast	08/07	Typhimurium
N13200	NM	Ground Turkey	04/07	Typhimurium var. O 5 -
N15802	NM	Chicken Breast	12/07	Typhimurium var. O 5 -
N15809	TN	Pork Chop	08/07	Typhimurium var. O 5 -
N15810	TN	Pork Chop	08/07	Typhimurium var. O 5 -
N15754	GA	Chicken Breast	11/07	Typhimurium
N14218	NM	Chicken Breast	07/07	Typhimurium

A-1r. PFGE Profiles for *Campylobacter coli*



A-1s. PFGE Profiles for *Campylobacter jejuni*



CVM #	State	Source	Date Isolated	Species
N13695	NY	Chicken Breast	03/07	C. jejuni
N15877	CT	Chicken Breast	07/07	C. jejuni
N13699	NY	Chicken Breast	03/07	C. jejuni
N15879	CT	Chicken Breast	07/07	C. jejuni
N14756	CO	Chicken Breast	04/07	C. jejuni
N15895	CT	Chicken Breast	10/07	C. jejuni
N13690	NY	Chicken Breast	02/07	C. jejuni
N13692	NY	Chicken Breast	02/07	C. jejuni
N13693	NY	Chicken Breast	02/07	C. jejuni
N13694	NY	Chicken Breast	02/07	C. jejuni
N13705	NY	Chicken Breast	05/07	C. jejuni
N15865	CT	Chicken Breast	04/07	C. jejuni
N15986	NM	Chicken Breast	08/07	C. jejuni
N15298	NY	Chicken Breast	12/07	C. jejuni
N15981	GA	Chicken Breast	11/07	C. jejuni
N15982	GA	Chicken Breast	11/07	C. jejuni
N15878	CT	Chicken Breast	07/07	C. jejuni
N13698	NY	Chicken Breast	03/07	C. jejuni
N15871	CT	Chicken Breast	06/07	C. jejuni
N15889	CT	Chicken Breast	11/07	C. jejuni
N15262	GA	Chicken Breast	07/07	C. jejuni
N15263	GA	Chicken Breast	07/07	C. jejuni
N13687	NY	Chicken Breast	02/07	C. jejuni
N15293	NY	Chicken Breast	12/07	C. jejuni
N15294	NY	Chicken Breast	12/07	C. jejuni
N15295	NY	Chicken Breast	12/07	C. jejuni
N15299	NY	Chicken Breast	12/07	C. jejuni
N15873	CT	Chicken Breast	06/07	C. jejuni
N15904	CT	Chicken Breast	11/07	C. jejuni
N15905	CT	Chicken Breast	11/07	C. jejuni
N15855	CT	Chicken Breast	02/07	C. jejuni
N13696	NY	Chicken Breast	03/07	C. jejuni
N14781	CO	Chicken Breast	08/07	C. jejuni
N15265	GA	Chicken Breast	08/07	C. jejuni
N15958	CO	Ground Turkey	11/07	C. jejuni
N14782	CO	Chicken Breast	08/07	C. jejuni
N15856	CT	Chicken Breast	02/07	C. jejuni
N13676	GA	Ground Turkey	01/07	C. jejuni
N13686	GA	Ground Turkey	03/07	C. jejuni
N14759	CO	Ground Turkey	04/07	C. jejuni
N14659	MN	Chicken Breast	06/07	C. jejuni
N15151	OR	Chicken Breast	11/07	C. jejuni
N15278	MN	Chicken Breast	10/07	C. jejuni
N13186	MN	Chicken Breast	05/07	C. jejuni
N14655	MN	Chicken Breast	05/07	C. jejuni
N14918	GA	Chicken Breast	05/07	C. jejuni
N15270	GA	Chicken Breast	09/07	C. jejuni
N13681	GA	Chicken Breast	03/07	C. jejuni
N13682	GA	Chicken Breast	03/07	C. jejuni
N15968	GA	Chicken Breast	10/07	C. jejuni
N15266	GA	Chicken Breast	08/07	C. jejuni
N15267	GA	Chicken Breast	08/07	C. jejuni
N15275	GA	Chicken Breast	09/07	C. jejuni
N13675	GA	Chicken Breast	01/07	C. jejuni
N16006	TN	Ground Beef	05/07	C. jejuni
N16007	TN	Ground Beef	05/07	C. jejuni
N15288	NY	Chicken Breast	11/07	C. jejuni
N15996	NM	Chicken Breast	10/07	C. jejuni
N15937	CO	Chicken Breast	09/07	C. jejuni
N15938	CO	Chicken Breast	09/07	C. jejuni
N15913	CA	Chicken Breast	10/07	C. jejuni
N15916	CA	Chicken Breast	10/07	C. jejuni
N15918	CA	Chicken Breast	10/07	C. jejuni
N13224	NM	Chicken Breast	03/07	C. jejuni
N13567	CA	Chicken Breast	03/07	C. jejuni
N13570	CA	Chicken Breast	03/07	C. jejuni
N15870	CT	Ground Turkey	05/07	C. jejuni
N15283	MN	Ground Turkey	11/07	C. jejuni

A-2 Retail Meat Surveillance Log Sheet Example

NATIONAL ANTIMICROBIAL RESISTANCE MONITORING SYSTEM -- RETAIL FOOD SURVEILLANCE ISOLATES MONTHLY LOG SHEET

STATE _____
MONTH _____
YEAR _____

Completed By (Initials): _____

Chicken Breast

PART I

Sample #	Sample ID	Store Name	Address	Organic Product (X One) Y	N	Cut/Ground IN-STORE (X One) Y	N	Sell-by Date (MM/DD/YY)	Purchase Date (MM/DD/YY)	Lab Process Date (MM/DD/YY)	Brand Code	Brand Name	Establishment Number
1	00CB01			N									
2	00CB02												
3	00CB03												
4	00CB04												
5	00CB05												
6	00CB06												
7	00CB07												
8	00CB08												
9	00CB09												
10	00CB10												

CONT.

PART II

	Growth (X One) Y	N	*Salmonella* IF GROWTH Serotype	Isolate ID	Growth (X One) Y	N	*Campylobacter* IF GROWTH Species	Isolate ID	Growth (X One) Y	N	*E. coli* (GA, MD, OR, TN) IF GROWTH Isolate ID	Growth (X One) Y	N	*Enterococci* (GA, MD, OR, TN) IF GROWTH Isolate ID
1					N				N					
2												N		
3														
4														
5														
6														
7														
8														
9														
10														

E-mail log sheet to ahy4@cdc.gov, sherry.ayers@fda.hhs.gov, and emily.tong@fda.hhs.gov;
Send original log sheet with isolates to FDA-CVM and keep a copy for your records. Thank you.

FOR CVM USE: DATE RECEIVED _____