2006

# Retail Meat Report

## National Antimicrobial Resistance Monitoring System

NARMS

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***ENTEROCOCCUS* DATA**



***ESCHERICHIA COLI* DATA**



**APPENDICES**

## ABBREVIATIONS USED IN THE REPORT, 2006

### 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 |
| CLSI | Clinical and Laboratory Standards Institute |
| PCR | Polymerase Chain Reaction |
| PFGE | Pulsed Field Gel Electrophoresis |
| PulseNet | National Molecular Subtyping Network for Foodborne Disease Surveillance |
| QC | Quality Control |
| RVR10 | Rappaport-Vassiliadis |
| 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 2006

### 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, the Centers for Disease Control and Prevention, and since 2005, all 10 of the current FoodNet laboratories: California, Colorado, Connecticut, Georgia, Maryland, Minnesota, New Mexico, New York, Oregon, and Tennessee. For calendar year 2006, all test sites began retail meat sampling in January. Approximately, 40 food samples were purchased per month comprised of 10 samples each of chicken breast, ground turkey, ground beef, and pork chops. All FoodNet sites cultured the meats and poultry samples for the presence of *Salmonella* and *Campylobacter*. Four of the 10 FoodNet laboratories (Georgia, Maryland, Oregon, and Tennessee) also cultured for the presence of *E. coli* and *Enterococcus*. Bacterial isolates were sent to FDA/CVM for confirmation of species and serotypes, antimicrobial susceptibility testing, and genetic analysis.

*Changes in 2006*

A total of 4769 meats samples were collected, compared with 4781 in 2005. The 2006 report is the first to include trend analysis for all genera of bacteria, beginning with the first year of retail meat testing in 2002. Since the 2003 retail meat report was published, the following changes have occurred for *Campylobacter*: 1) the testing method changed from agar dilution to broth microdilution; 2) the number of antimicrobials tested was expanded from 5 to 9 compounds; and 3) doxycycline was replaced with tetracycline on the panel. In addition, the CLSI established

official resistant breakpoints for doxycycline (8 µg/ml) and erythromycin (8 µg/ml) that differed from NARMS original values of 16 µg/ml and 32 µg/ml), respectively. The breakpoints for gentamicin also were lowered from 16 µg/ml to 8 µg/ml. Resistance trends were recalculated for this report based on these new breakpoints. Lastly, PFGE of *Campylobacter* isolates was done only for strains resistant to erythromycin or ciprofloxacin.

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**Acknowledgements**

Much thanks to Deborah Brooks, Michelle Talley and Hung Dang for providing outstanding web support to the NARMS program.

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## Surveillance and Laboratory Testing Methods

### Isolate Collection and Submission

The goal of the NARMS retail meat program is to determine the prevalence of antimicrobial resistance among non-Typi *Salmonella*, *Campylobacter*, *E. coli* and *Enterococcus* isolated from chicken breast, ground turkey, ground beef and pork chop. The isolates are derived from meat samples collected in the 10 CDC FoodNet sites, which include California, Colorado, Connecticut, Georgia, Maryland, Minnesota, New Mexico, New York, Oregon, and Tennessee. When retail meat testing began in January 2002, 6 of the 10 FoodNet sites participated (Connecticut, Georgia, Maryland, Minnesota, Oregon, and Tennessee ). New York and California joined in 2003, followed by Colorado and New Mexico in 2004.

Each site used a randomized list of area grocery stores derived from the "Grocery Store Chain Guide". All sites culture the meat samples for *Campylobacter* and *Salmonella*. In addition, MD, TN, GA and OR cultured the same samples for *E. coli* and *Enterococcus*. Testing and reporting is based on a single isolate from each culture-positive meat sample.

### Microbiological Analysis and Testing Methods at the Foodnet Site

In the laboratory, 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 at the start of examination. For chicken and pork samples, one piece of meat was examined; for ground beef and ground turkey, 25 g of product was processed. Portions from each sample were placed in separate sterile plastic bags with 250 mL of buffered peptone water, and the bags were vigorously shaken. Fifty milliliters of the rinsate from each sample was transferred to separate sterile containers for bacterial isolation as outlined below.

### *Salmonella* Isolation

Fifty milliliters of double strength lactose broth was 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 agar plate (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 -60 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 Legacy 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 from The Centers for Disease Control (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, one colony 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 oxdiase, the isolates was presumptively identified as *Campylobacter*. Otherwise, the culture was considered negative. All isolates presumptively identified as *Campylobacter* were frozen at -60 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, Maryland, Oregon and Tennessee)**

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 24 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 24 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 24 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 -60 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, Maryland, Oregon and Tennessee)**

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 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 (EA) plate. The plates were incubated at 35°C for 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 24 hours in ambient air. Presumptive *Enterococcus* isolates were subsequently frozen at -60 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 Legacy microbial identification system (bioMérieux, Hazelwood, MO).

## Antimicrobial Susceptibility Testing

Antimicrobial minimum inhibitory concentrations (MICs) were determined by broth microdilution according to Clinical 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 QC organisms each time antimicrobial susceptibility testing was performed. The QC 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. PFGE was performed according to protocols developed by CDC (1). Agarose-embedded DNA was digested with the enzyme *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 Test Methods and Interpretive Criteria: NARMS Retail Meat, 2006

## 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, 2002-2006**

| | | *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% | | | | | | |
| | **Total** | **476** | **339** | **71.2%** | **476** | **58** | **12.2%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **333** | **133** | **39.9%** | **333** | **20** | **6.0%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **540** | **374** | **69.3%** | **540** | **95** | **17.6%** | | | | | | |
| 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% |
| | **Total** | **600** | **346** | **57.7%** | **600** | **53** | **8.8%** | **600** | **599** | **99.8%** | **600** | **575** | **95.8%** |
| 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% |
| | **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% | | | | | | |
| | **Total** | **586** | **235** | **40.1%** | **586** | **77** | **13.1%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **358** | **99** | **27.7%** | **359** | **26** | **7.2%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **475** | **269** | **56.6%** | **480** | **59** | **12.3%** | | | | | | |
| 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% |
| | **Total** | **519** | **206** | **39.7%** | **520** | **69** | **13.3%** | **510** | **505** | **99.0%** | **518** | **330** | **63.7%** |
| 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% |
| | **Total** | **581** | **291** | **50.1%** | **581** | **58** | **10.0%** | **581** | **566** | **97.4%** | **568** | **452** | **79.6%** |
| | | **5068** | **2589** | **51.1%** | **5075** | **605** | **11.9%** | **2291** | **2239** | **97.7%** | **2286** | **1889** | **82.6%** |

[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 2b. Percent Positive Samples for Ground Turkey by Bacterium and Site, 2002-2006**

| | | *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% | | | | | | |
| | **Total** | **479** | **1** | **0.2%** | **479** | **35** | **7.3%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **337** | **10** | **3.0%** | **337** | **42** | **12.5%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **540** | **9** | **1.7%** | **540** | **75** | **13.9%** | | | | | | |
| 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% |
| | **Total** | **600** | **14** | **2.3%** | **600** | **144** | **24.0%** | **600** | **597** | **99.5%** | **600** | **572** | **95.3%** |
| 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% |
| | **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% | | | | | | |
| | **Total** | **597** | **18** | **3.0%** | **597** | **85** | **14.2%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **358** | **2** | **0.6%** | **358** | **48** | **13.4%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **479** | **3** | **0.6%** | **479** | **58** | **12.1%** | | | | | | |
| 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% |
| | **Total** | **520** | **0** | **0.0%** | **520** | **37** | **7.1%** | **510** | **471** | **92.4%** | **520** | **267** | **51.3%** |
| 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% |
| | **Total** | **534** | **3** | **0.6%** | **534** | **77** | **14.4%** | **533** | **529** | **99.2%** | **524** | **436** | **83.2%** |
| | | **5044** | **65** | **1.3%** | **5044** | **672** | **13.3%** | **2243** | **2129** | **94.9%** | **2244** | **1797** | **80.1%** |

[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 2c. Percent Positive Samples for Ground Beef by Bacterium and Site, 2002-2006**

| Site[1] | Year | *Campylobacter* | | | *Salmonella* | | | *Enterococcus* | | | *Escherichia coli* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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% | | | | | | |
| | **Total** | **480** | **0** | **0.0%** | **480** | **4** | **0.8%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **342** | **0** | **0.0%** | **342** | **2** | **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% | | | | | | |
| | **Total** | **536** | **0** | **0.0%** | **536** | **15** | **2.8%** | | | | | | |
| 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% |
| | **Total** | **600** | **0** | **0.0%** | **600** | **9** | **1.5%** | **600** | **590** | **98.3%** | **599** | **470** | **78.5%** |
| 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% |
| | **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% | | | | | | |
| | **Total** | **593** | **0** | **0.0%** | **593** | **3** | **0.5%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **360** | **0** | **0.0%** | **360** | **3** | **0.8%** | | | | | | |
| 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% | | | | | | |
| | **Total** | **480** | **0** | **0.0%** | **480** | **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% |
| | **Total** | **520** | **0** | **0.0%** | **520** | **11** | **2.1%** | **510** | **473** | **92.7%** | **519** | **308** | **59.3%** |
| 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% | 122 | 5 | 4.2% | 117 | 111 | 94.9% | 112 | 84 | 75.0% |
| | **Total** | **588** | **0** | **0.0%** | **589** | **7** | **1.2%** | **586** | **572** | **97.6%** | **569** | **376** | **66.1%** |
| | | **5099** | **1** | **0.0%** | **5100** | **60** | **1.2%** | **2296** | **2147** | **93.5%** | **2287** | **1554** | **67.9%** |

[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 2d. Percent Positive Samples for Pork Chop by Bacterium and Site, 2002-2006**

| | | *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% | | | | | | |
| | **Total** | **480** | **3** | **0.6%** | **480** | **4** | **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% | | | | | | |
| | **Total** | **331** | **0** | **0.0%** | **331** | **0** | **0.0%** | | | | | | |
| **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% | | | | | | |
| | **Total** | **540** | **3** | **0.6%** | **540** | **8** | **1.5%** | | | | | | |
| **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% |
| | **Total** | **600** | **0** | **0.0%** | **600** | **4** | **0.7%** | **600** | **583** | **97.2%** | **600** | **323** | **53.8%** |
| **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% |
| | **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% | | | | | | |
| | **Total** | **583** | **1** | **0.2%** | **583** | **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% | | | | | | |
| | **Total** | **359** | **2** | **0.6%** | **359** | **2** | **0.6%** | | | | | | |
| **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% | | | | | | |
| | **Total** | **480** | **0** | **0.0%** | **480** | **7** | **1.5%** | | | | | | |
| **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% |
| | **Total** | **520** | **3** | **0.6%** | **520** | **7** | **1.3%** | **510** | **438** | **85.9%** | **518** | **155** | **29.9%** |
| **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% |
| | **Total** | **583** | **3** | **0.5%** | **583** | **1** | **0.2%** | **579** | **544** | **94.0%** | **566** | **250** | **44.2%** |
| | | **5076** | **17** | **0.3%** | **5076** | **43** | **0.8%** | **2289** | **1997** | **87.2%** | **2284** | **1021** | **44.7%** |

[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, 2002-2006**

| 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 | (0.2) | 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

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

**Figure 1. Percent Positive Samples for *Campylobacter* by Meat Type, All Sites, 2002-2006**

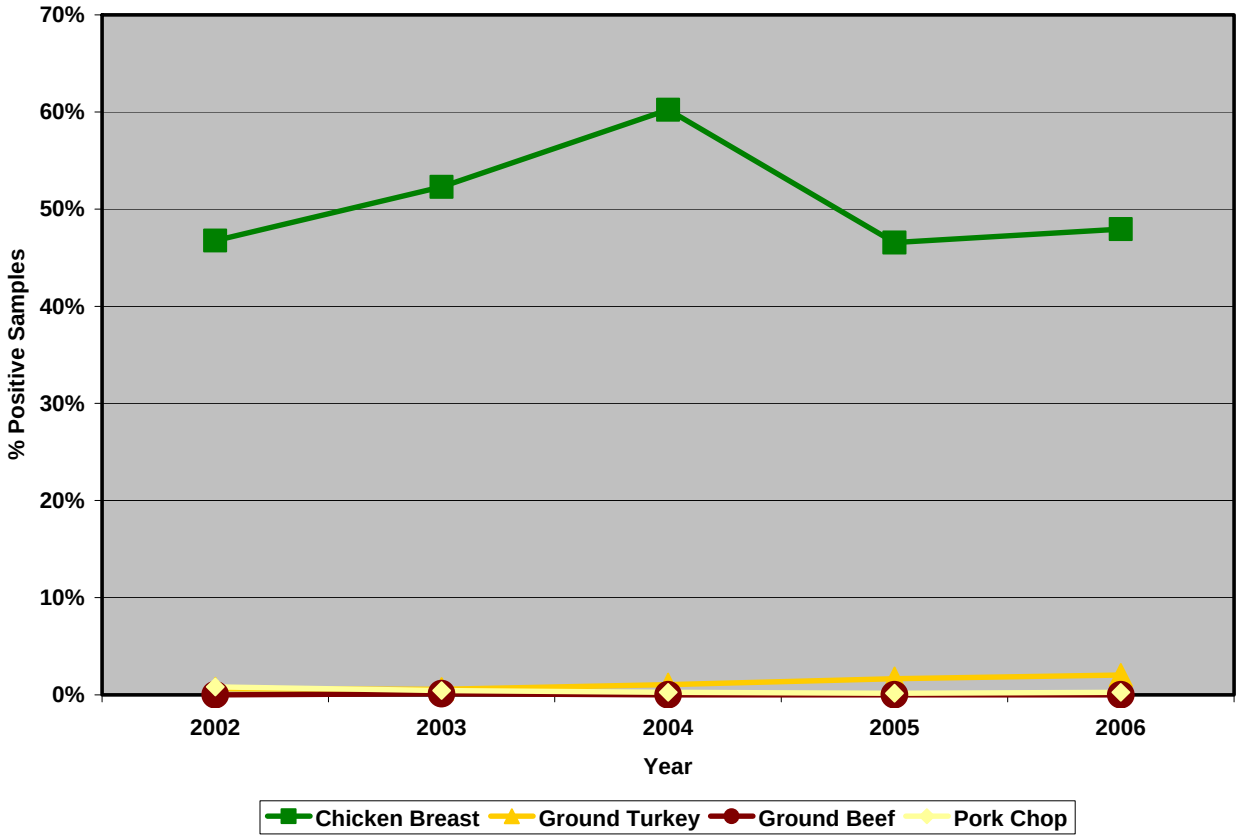
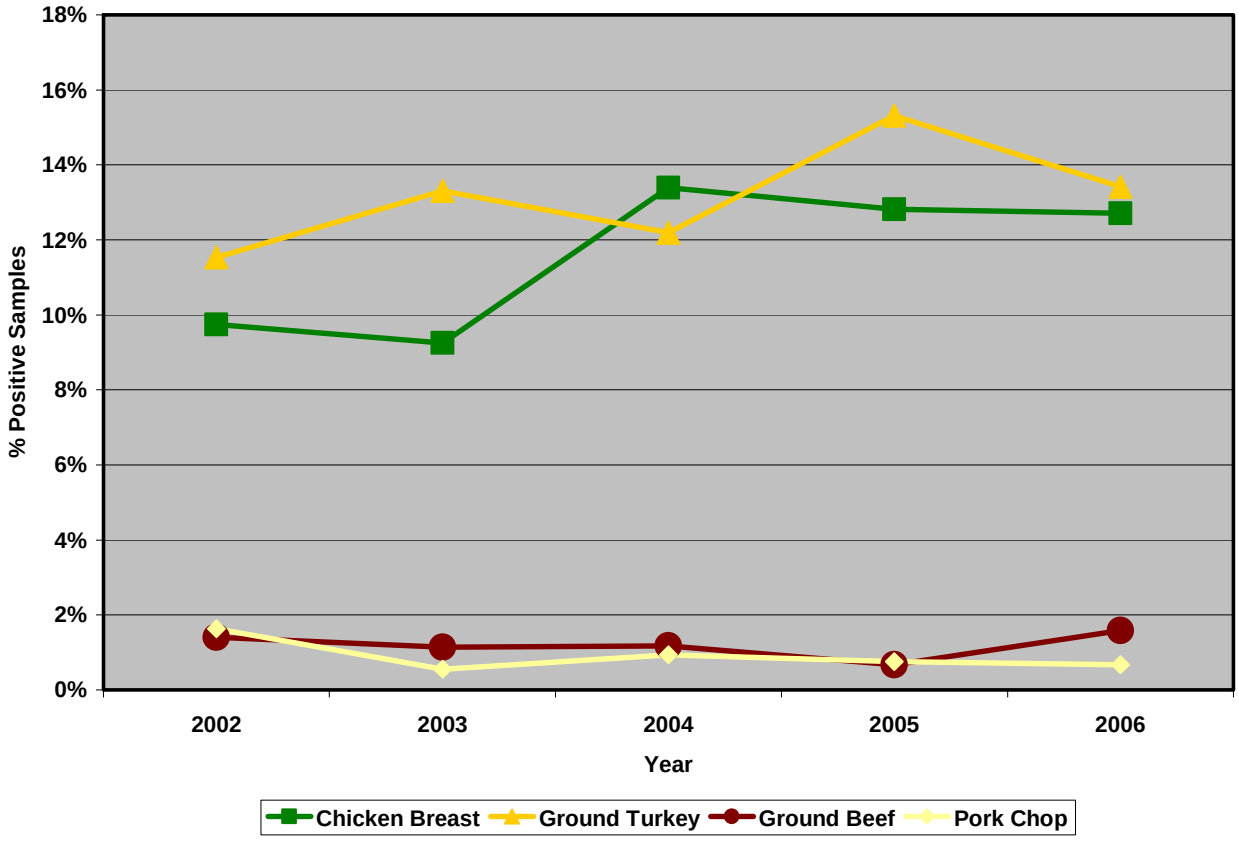



**Figure 2. Percent Positive Samples for *Salmonella* by Meat Type, All Sites, 2002-2006**



## Table 4. Overall *Salmonella* Serotypes Identified, 2006

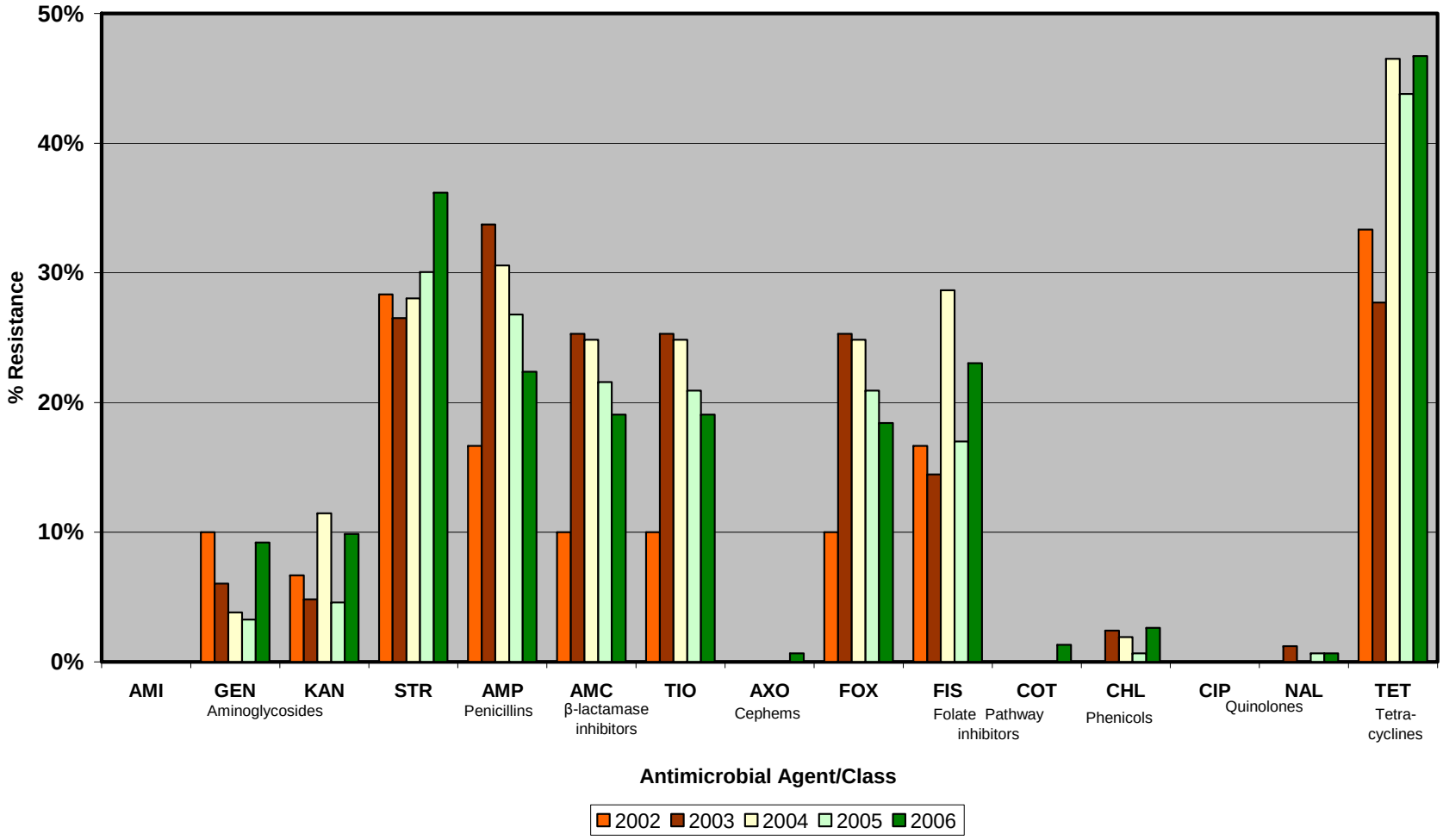
| Serotype | n |
|---|---|
| 1. Heidelberg | 69 |
| 2. Kentucky | 60 |
| 3. Hadar | 26 |
| 4. Typhimurium | 24 |
| 5. Saintpaul | 19 |
| 6. Enteritidis | 17 |
| 7. Montevideo | 16 |
| 8. Senftenberg | 12 |
| 9. Schwarzengrund | 11 |
| 10. Agona | 9 |
| 11. I 4,5,12:i:- | 9 |
| 12. Reading | 8 |
| 13. Berta | 7 |
| 14. IIIa 18:z4,z23:- | 6 |
| 15. Brandenburg | 4 |
| 16. I 4,12:d:- | 4 |
| 17. Mbandaka | 4 |
| 18. Anatum | 3 |
| 19. IIIa 18:z4,z32:- | 3 |
| 20. Infantis | 3 |
| 21. Albany | 2 |
| 22. Blockley | 2 |
| 23. Chester | 2 |
| 24. Derby | 2 |
| 25. I 4,12:i:- | 2 |
| 26. Johannesburg | 2 |
| 27. Muenchen | 2 |
| 28. Muenster | 2 |
| 29. Quakam | 2 |
| 30. Bredeney | 1 |
| 31. Dublin | 1 |
| 32. I.4,5,12:R:- | 1 |
| 33. Litchfield | 1 |
| 34. Sinstorf | 1 |
| 35. Tennessee | 1 |
| **Total** | 338 |

## Table 5. *Salmonella* by Serotype and Meat Type, 2006

| Serotype | Chicken Breast | | Ground Turkey | | Ground Beef | | Pork Chop | |
|---|---|---|---|---|---|---|---|---|
| | n | %* | n | % | n | % | n | % |
| 1. Heidelberg (n=69) | 30 | 43.5% | 35 | 50.7% | | | 4 | 5.8% |
| 2. Kentucky (n=60) | 59 | 98.3% | 1 | 1.7% | | | | |
| 3. Hadar (n=26) | 1 | 3.8% | 25 | 96.2% | | | | |
| 4. Typhimurium (n=24) | 21 | 87.5% | | | 1 | 4.2% | 2 | 8.3% |
| 5. Saintpaul (n=19) | | | 19 | 100.0% | | | | |
| 6. Enteritidis (n=17) | 17 | 100.0% | | | | | | |
| 7. Montevideo (n=16) | 2 | 12.5% | 8 | 50.0% | 6 | 37.5% | | |
| 8. Senftenberg (n=12) | 1 | 8.3% | 11 | 91.7% | | | | |
| 9. Schwarzengrund (n=11) | 5 | 45.5% | 5 | 45.5% | 1 | 9.1% | | |
| 10. Agona (n=9) | | | 9 | 100.0% | | | | |
| 11. I 4,5,12:i:- (n=9) | 8 | 88.9% | 1 | 11.1% | | | | |
| 12. Reading (n=8) | | | 8 | 100.0% | | | | |
| 13. Berta (n=7) | | | 7 | 100.0% | | | | |
| 14. IIIa 18:z4,z23:- (n=6) | | | 6 | 100.0% | | | | |
| 15. Brandenburg (n=4) | | | 4 | 100.0% | | | | |
| 16. I 4,12:d:- (n=4) | | | 4 | 100.0% | | | | |
| 17. Mbandaka (n=4) | 1 | 25.0% | 1 | 25.0% | 2 | 50.0% | | |
| 18. Anatum (n=3) | 1 | 33.3% | | | 2 | 66.7% | | |
| 19. IIIa 18:z4,z32:- (n=3) | | | 3 | 100.0% | | | | |
| 20. Infantis (n=3) | 1 | 33.3% | | | | | 2 | 66.7% |
| 21. Albany (n=2) | | | 2 | 100.0% | | | | |
| 22. Blockley (n=2) | 1 | 50.0% | | | 1 | 50.0% | | |
| 23. Chester (n=2) | | | 2 | 100.0% | | | | |
| 24. Derby (n=2) | | | 2 | 100.0% | | | | |
| 25. I 4,12:i:- (n=2) | 1 | 50.0% | 1 | 50.0% | | | | |
| 26. Johannesburg (n=2) | 1 | 50.0% | | | 1 | 50.0% | | |
| 27. Muenchen (n=2) | | | 1 | 50.0% | 1 | 50.0% | | |
| 28. Muenster (n=2) | | | 1 | 50.0% | 1 | 50.0% | | |
| 29. Quakam (n=2) | 2 | 100.0% | | | | | | |
| 30. Bredeney (n=1) | | | 1 | 100.0% | | | | |
| 31. Dublin (n=1) | | | | | 1 | 100.0% | | |
| 32. I.4,5,12:R:- (n=1) | | | 1 | 100.0% | | | | |
| 33. Litchfield (n=1) | | | | | 1 | 100.0% | | |
| 34. Sinstorf (n=1) | | | 1 | 100.0% | | | | |
| 35. Tennessee (n=1) | | | | | 1 | 100.0% | | |
| **Total (N)** | **152** | **45.0%** | **159** | **47.0%** | **19** | **5.6%** | **8** | **2.4%** |

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

**Figure 3a. Antimicrobial Resistance among *Salmonella* from Chicken Breast, 2002-2006**

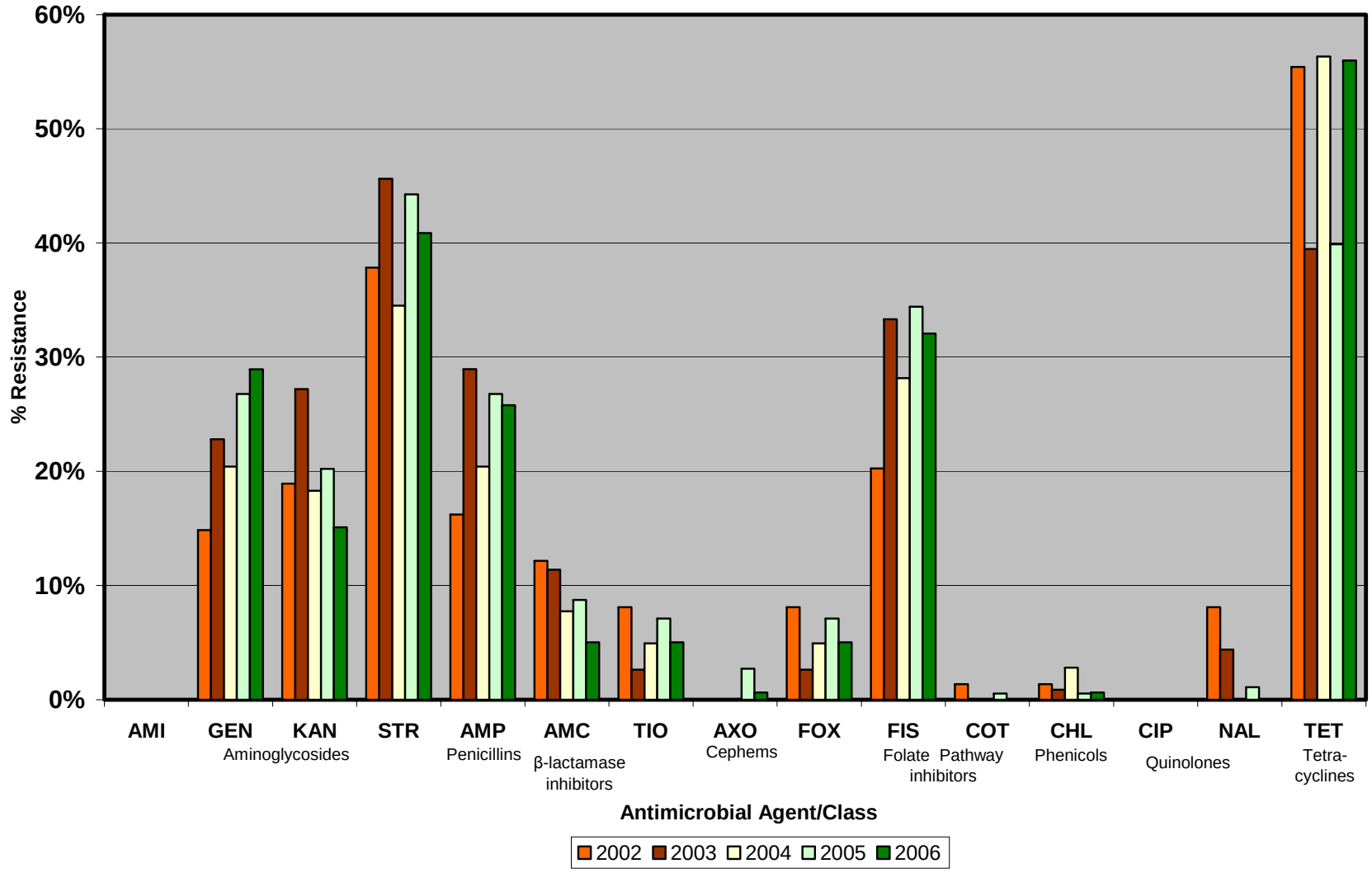


## Table 6a. Trends in Resistance among *Salmonella* Isolates in Chicken Breast, 2002-2006

| Class or Subclass | Antimicrobial/Resistance Breakpoint (µg/ml) | 2002 (N=60) | | 2003 (N=83) | | 2004 (N=157) | | 2005 (N=153) | | 2006 (N=152) | | Cochran-Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P value[3] |
| Aminoglycosides | Amikacin (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Gentamicin (MIC≥ 16) | 6 | 10.0% | 5 | 6.0% | 6 | 3.8% | 5 | 3.3% | 14 | 9.2% | 0.1198 | 0.9046 |
| | Kanamycin (MIC≥ 64) | 4 | 6.7% | 4 | 4.8% | 18 | 11.5% | 7 | 4.6% | 15 | 9.9% | 0.5738 | 0.5661 |
| | Streptomycin (MIC≥ 64) | 17 | 28.3% | 22 | 26.5% | 44 | 28.0% | 46 | 30.1% | 55 | 36.2% | 1.5819 | 0.1137 |
| Aminopenicillins | Ampicillin (MIC≥ 32) | 10 | 16.7% | 28 | 33.7% | 48 | 30.6% | 41 | 26.8% | 34 | 22.4% | 0.4772 | 0.6332 |
| Beta-lactamase inhibitor combinations | Amoxicillin-Clavulanic acid (MIC≥ 32) | 6 | 10.0% | 21 | 25.3% | 39 | 24.8% | 33 | 21.6% | 29 | 19.1% | 0.3337 | 0.7386 |
| Cephalosporins (3rd Gen) | Ceftiofur (MIC≥8) | 6 | 10.0% | 21 | 25.3% | 39 | 24.8% | 32 | 20.9% | 29 | 19.1% | 0.2891 | 0.7725 |
| | Ceftriaxone (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 1 | 0.7% | 1.2443 | 0.2134 |
| Cephamycins | Cefoxitin (MIC≥ 32) | 6 | 10.0% | 21 | 25.3% | 39 | 24.8% | 32 | 20.9% | 28 | 18.4% | 0.1655 | 0.8686 |
| Folate pathway inhibitors | Sulfisoxazole (MIC≥ 512)[4] | 10 | 16.7% | 12 | 14.5% | 45 | 28.7% | 26 | 17.0% | 35 | 23.0% | 0.8036 | 0.4216 |
| | Trimethoprim-sulfamethoxazole (MIC≥ 4) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 2 | 1.3% | 1.7611 | 0.0782 |
| Phenicols | Chloramphenicol (MIC≥ 32) | 0 | 0.0% | 2 | 2.4% | 3 | 1.9% | 1 | 0.7% | 4 | 2.6% | 0.7029 | 0.4821 |
| Quinolones | Ciprofloxacin (MIC≥ 4) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Nalidixic Acid (MIC≥ 32) | 0 | 0.0% | 1 | 1.2% | 0 | 0.0% | 1 | 0.7% | 1 | 0.7% | 0.3372 | 0.7360 |
| Tetracycline | Tetracycline (MIC≥ 16) | 20 | 33.3% | 23 | 27.7% | 73 | 46.5% | 67 | 43.8% | 71 | 46.7% | 2.5511 | 0.0107 |

[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, 2002-2006**

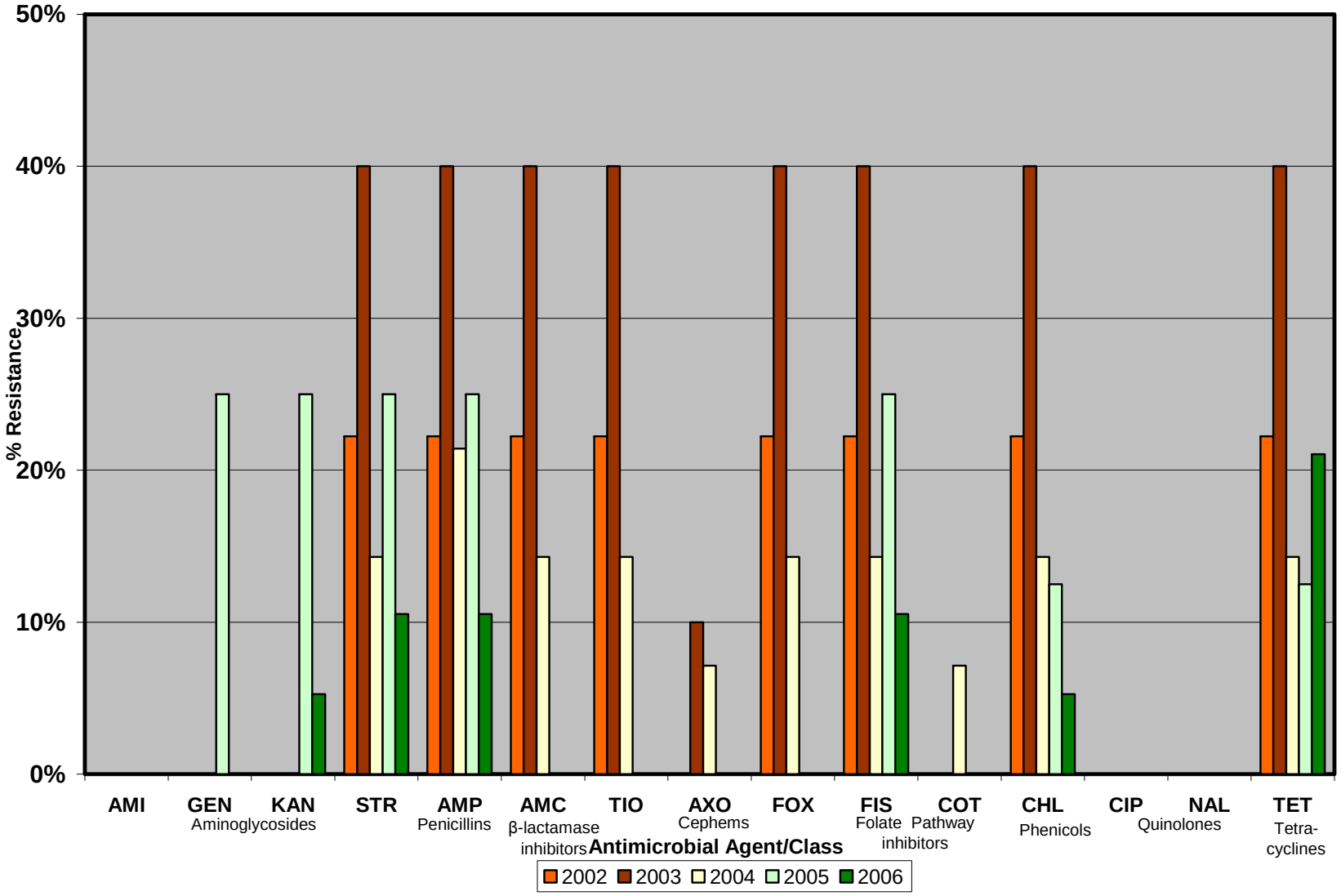


## Table 6b. Trends in Resistance among *Salmonella* Isolates in Ground Turkey, 2002- 2006

| | | 2002 (N=74) | | 2003 (N=114) | | 2004 (N=142) | | 2005 (N=183) | | 2006 (N=159) | | Cochran-Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Class or Subclass | Antimicrobial/Resistance Breakpoint (µg/ml) | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P value[3] |
| Aminoglycosides | Amikacin (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Gentamicin (MIC≥ 16) | 11 | 14.9% | 26 | 22.8% | 29 | 20.4% | 49 | 26.8% | 46 | 28.9% | 2.4756 | 0.0133 |
| | Kanamycin (MIC≥ 64) | 14 | 18.9% | 31 | 27.2% | 26 | 18.3% | 37 | 20.2% | 24 | 15.1% | -1.5588 | 0.1191 |
| | Streptomycin (MIC≥ 64) | 28 | 37.8% | 52 | 45.6% | 49 | 34.5% | 81 | 44.3% | 65 | 40.9% | 0.3124 | 0.7548 |
| Aminopenicillins | Ampicillin (MIC≥ 32) | 12 | 16.2% | 33 | 28.9% | 29 | 20.4% | 49 | 26.8% | 41 | 25.8% | 1.0788 | 0.2807 |
| Beta-lactamase inhibitor combinations | Amoxicillin-Clavulanic acid (MIC≥ 32) | 9 | 12.2% | 13 | 11.4% | 11 | 7.7% | 16 | 8.7% | 8 | 5.0% | -2.0451 | 0.0408 |
| Cephalosporins (3rd Gen) | Ceftiofur (MIC≥8) | 6 | 8.1% | 3 | 2.6% | 7 | 4.9% | 13 | 7.1% | 8 | 5.0% | 0.1090 | 0.9132 |
| | Ceftriaxone (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 5 | 2.7% | 1 | 0.6% | 1.5294 | 0.1262 |
| Cephamycins | Cefoxitin (MIC≥ 32) | 6 | 8.1% | 3 | 2.6% | 7 | 4.9% | 13 | 7.1% | 8 | 5.0% | 0.1090 | 0.9132 |
| Folate pathway inhibitors | Sulfisoxazole (MIC≥ 512)[4] | 15 | 20.3% | 38 | 33.3% | 40 | 28.2% | 63 | 34.4% | 51 | 32.1% | 1.4972 | 0.1343 |
| | Trimethoprim-sulfamethoxazole (MIC≥ 4) | 1 | 1.4% | 0 | 0.0% | 0 | 0.0% | 1 | 0.5% | 0 | 0.0% | -0.9288 | 0.3530 |
| Phenicols | Chloramphenicol (MIC≥ 32) | 1 | 1.4% | 1 | 0.9% | 4 | 2.8% | 1 | 0.5% | 1 | 0.6% | -0.7756 | 0.4380 |
| Quinolones | Ciprofloxacin (MIC≥ 4) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Nalidixic Acid (MIC≥ 32) | 6 | 8.1% | 5 | 4.4% | 0 | 0.0% | 2 | 1.1% | 0 | 0.0% | -4.2123 | <.0001 |
| Tetracycline | Tetracycline (MIC≥ 16) | 41 | 55.4% | 45 | 39.5% | 80 | 56.3% | 73 | 39.9% | 89 | 56.0% | 0.4345 | 0.6640 |

[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, 2002-2006**

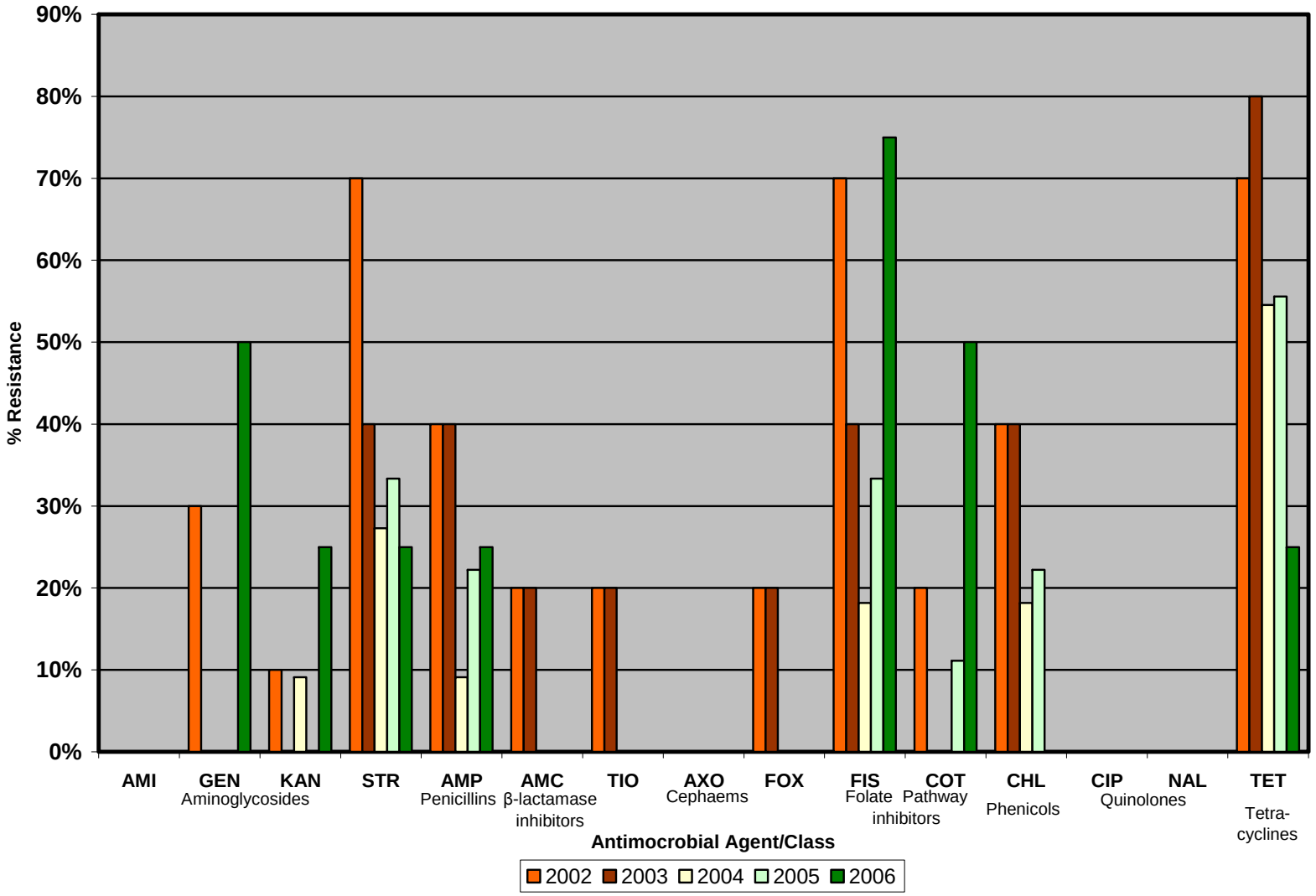


## Table 6c. Trends in Resistance among *Salmonella* Isolates in Ground Beef 2002-2006

| | | 2002 (N=9) | | 2003 (N=10) | | 2004 (N=14) | | 2005 (N=8) | | 2006 (N=19) | | Cochran-Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Class or Subclass | Antimicrobial/Resistance Breakpoint (µg/ml) | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P value[3] |
| Aminoglycosides | Amikacin (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Gentamicin (MIC≥ 16) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 2 | 25.0% | 0 | 0.0% | 0.6987 | 0.4847 |
| | Kanamycin (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 2 | 25.0% | 1 | 5.3% | 1.2743 | 0.2026 |
| | Streptomycin (MIC≥ 64) | 2 | 22.2% | 4 | 40.0% | 2 | 14.3% | 2 | 25.0% | 2 | 10.5% | -1.2542 | 0.2098 |
| Aminopenicillins | Ampicillin (MIC≥ 32) | 2 | 22.2% | 4 | 40.0% | 3 | 21.4% | 2 | 25.0% | 2 | 10.5% | -1.2830 | 0.1995 |
| Beta-lactamase inhibitor combinations | Amoxicillin-clavulanic acid (MIC≥ 32) | 2 | 22.2% | 4 | 40.0% | 2 | 14.3% | 0 | 0.0% | 0 | 0.0% | -2.7408 | 0.0061 |
| Cephalosporins (3rd Gen) | Ceftiofur (MIC≥8) | 2 | 22.2% | 4 | 40.0% | 2 | 14.3% | 0 | 0.0% | 0 | 0.0% | -2.7408 | 0.0061 |
| | Ceftriaxone (MIC≥ 64) | 0 | 0.0% | 1 | 10.0% | 1 | 7.1% | 0 | 0.0% | 0 | 0.0% | -0.7985 | 0.4246 |
| Cephamycins | Cefoxitin (MIC≥ 32) | 2 | 22.2% | 4 | 40.0% | 2 | 14.3% | 0 | 0.0% | 0 | 0.0% | -2.7408 | 0.0061 |
| Folate Pathway inhibitors | Sulfisoxazole (MIC≥ 512)[4] | 2 | 22.2% | 4 | 40.0% | 2 | 14.3% | 2 | 25.0% | 2 | 10.5% | -1.2542 | 0.2098 |
| | Trimethoprim-sulfamethoxazole (MIC≥ 4) | 0 | 0.0% | 0 | 0.0% | 1 | 7.1% | 0 | 0.0% | 0 | 0.0% | -0.2099 | 0.8337 |
| Phenicols | Chloramphenicol (MIC≥ 32) | 2 | 22.2% | 4 | 40.0% | 2 | 14.3% | 1 | 12.5% | 1 | 5.3% | -1.9231 | 0.0545 |
| Quinolones | Ciprofloxacin (MIC≥ 4) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Nalidixic Acid (MIC≥ 32) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| Tetracycline | Tetracycline (MIC≥ 16) | 2 | 22.2% | 4 | 40.0% | 2 | 14.3% | 1 | 12.5% | 4 | 21.1% | -0.6306 | 0.5283 |

[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, 2002-2006**



## Table 6d. Trends in Resistance among *Salmonella* Isolates in Pork Chop, 2002-2006

| | | 2002 (N=10) | | 2003 (N=5) | | 2004 (N=11) | | 2005 (N=9) | | 2006 (N=8) | | Cochran-Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Class or Subclass | Antimicrobial/Resistance Breakpoint (µg/ml) | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P value[3] |
| Aminoglycosides | Amikacin (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Gentamicin (MIC≥ 16) | 3 | 30.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 4 | 50.0% | 0.5842 | 0.5591 |
| | Kanamycin (MIC≥ 64) | 1 | 10.0% | 0 | 0.0% | 1 | 9.1% | 0 | 0.0% | 2 | 25.0% | 0.7425 | 0.4578 |
| | Streptomycin (MIC≥ 64) | 7 | 70.0% | 2 | 40.0% | 3 | 27.3% | 3 | 33.3% | 2 | 25.0% | -1.9850 | 0.0471 |
| Aminopenicillins | Ampicillin (MIC≥ 32) | 4 | 40.0% | 2 | 40.0% | 1 | 9.1% | 2 | 22.2% | 2 | 25.0% | -0.9886 | 0.3229 |
| Beta-lactamase inhibitor combinations | Amoxicillin-Clavulanic acid (MIC≥ 32) | 2 | 20.0% | 1 | 20.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | -2.1164 | 0.0343 |
| Cephalosporins (3rd Gen) | Ceftiofur (MIC≥8) | 2 | 20.0% | 1 | 20.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | -2.1164 | 0.0343 |
| | Ceftriaxone (MIC≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| Cephamycins | Cefoxitin (MIC≥ 32) | 2 | 20.0% | 1 | 20.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | -2.1164 | 0.0343 |
| Folate Pathway inhibitors | Sulfisoxazole (MIC≥ 512)[4] | 7 | 70.0% | 2 | 40.0% | 2 | 18.2% | 3 | 33.3% | 6 | 75.0% | -0.2162 | 0.8288 |
| | Trimethoprim-sulfamethoxazole (MIC≥ 4) | 2 | 20.0% | 0 | 0.0% | 0 | 0.0% | 1 | 11.1% | 4 | 50.0% | 1.4605 | 0.1442 |
| Phenicols | Chloramphenicol (MIC≥ 32) | 4 | 40.0% | 2 | 40.0% | 2 | 18.2% | 2 | 22.2% | 0 | 0.0% | -2.0420 | 0.0412 |
| Quinolones | Ciprofloxacin (MIC≥ 4) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Nalidixic Acid (MIC≥ 32) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| Tetracycline | Tetracycline (MIC≥ 16) | 7 | 70.0% | 4 | 80.0% | 6 | 54.5% | 5 | 55.6% | 2 | 25.0% | -1.9542 | 0.0507 |

[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 for 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, 2006

| 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 | ***Kentucky* (n=59)** | - | 8.5% | 8.5% | 69.5% | 22.0% | 22.0% | 22.0% | - | 22.0% | 8.5% | - | 6.8% | - | - | 72.9% |
| | ***Heidelberg* (n=30)** | - | 20.0% | - | 23.3% | 16.7% | 10.0% | 10.0% | - | 10.0% | 26.7% | 6.7% | - | - | 3.3% | 3.3% |
| | ***Typhimurium* (n=21)** | - | - | 47.6% | 9.5% | 57.1% | 57.1% | 57.1% | 4.8% | 52.4% | 90.5% | - | - | - | - | 90.5% |
| | ***Enteritidis* (n=17)** | - | - | - | - | 17.6% | - | - | - | - | - | - | - | - | - | 11.8% |
| | ***I 4,5,12:i:-* (n=8)** | - | 25.0% | - | 25.0% | 12.5% | 12.5% | 12.5% | - | 12.5% | 25.0% | - | - | - | - | 12.5% |
| | ***Schwarzengrund* (n=5)** | - | 20.0% | - | 20.0% | - | - | - | - | - | 20.0% | - | - | - | - | 20.0% |
| Ground Turkey | ***Heidelberg* (n=35)** | - | 31.4% | 34.3% | 45.7% | 31.4% | 17.1% | 17.1% | - | 17.1% | 37.1% | - | - | - | - | 68.6% |
| | ***Hadar* (n=25)** | - | 20.0% | - | 84.0% | 12.0% | - | - | - | - | 24.0% | - | - | - | - | 96.0% |
| | ***Saintpaul* (n=19)** | - | 26.3% | 15.8% | 15.8% | 31.6% | - | - | - | - | 26.3% | - | - | - | - | 73.7% |
| | ***Senftenberg* (n=11)** | - | 54.5% | 36.4% | 36.4% | 72.7% | - | - | - | - | 27.3% | - | 9.1% | - | - | 27.3% |
| | ***Agona* (n=9)** | - | 22.2% | - | 11.1% | 11.1% | - | - | - | - | 88.9% | - | - | - | - | 77.8% |
| | ***Montevideo* (n=8)** | - | 37.5% | 50.0% | 75.0% | - | - | - | - | - | 12.5% | - | - | - | - | - |
| Ground Beef | ***Montevideo* (n=6)** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | ***Anatum* (n=2)** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 50.0% |
| | ***Mbandaka* (n=2)** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | ***Blockley* (n=1)** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | ***Dublin* (n=1)** | - | - | 100.0% | 100.0% | 100.0% | - | - | - | - | 100.0% | - | - | - | - | - |
| | ***Johannesburg* (n=1)** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 100.0% |
| Pork Chop[2] | ***Heidelberg* (n=4)** | - | 75.0% | - | - | - | - | - | - | - | 100.0% | 100.0% | - | - | - | - |
| | ***Infantis* (n=2)** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | ***Typhimurium* (n=2)** | - | 50.0% | 100.0% | 100.0% | 100.0% | - | - | - | - | 100.0% | - | - | - | - | 100.0% |

[1] Where % Resistance= (# isolates per serotype resistant to antimicrobial) / (total # isolates per serotype).
[2] Gray areas indicate that only three serotypes recovered from that meat type.

## Table 8. Multidrug Resistance Patterns among *Salmonella* Isolates by Year, 2002-2006

| Year | | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|
| **Number of Isolates Tested** | **Chicken Breast** | 60 | 83 | 157 | 153 | 152 |
| | **Ground Turkey** | 74 | 114 | 142 | 183 | 159 |
| | **Ground Beef** | 9 | 10 | 14 | 8 | 19 |
| | **Pork Chop** | 10 | 5 | 11 | 9 | 8 |
| **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 |
| | **Ground Turkey** | 37.8% 28 | 34.2% 39 | 28.9% 41 | 30.1% 55 | 17.6% 28 |
| | **Ground Beef** | 77.8% 7 | 60.0% 6 | 78.6% 11 | 75.0% 6 | 73.7% 14 |
| | **Pork Chop** | 20.0% 2 | 20.0% 1 | 45.5% 5 | 44.4% 4 | 25.0% 2 |
| **2. At Least ACSSuT[1] Resistant** | **Chicken Breast** | 0.0% 0 | 2.4% 2 | 1.9% 3 | 0.7% 1 | 2.6% 4 |
| | **Ground Turkey** | 1.4% 1 | 0.9% 1 | 2.8% 4 | 0.5% 1 | 0.6% 1 |
| | **Ground Beef** | 22.2% 2 | 40.0% 4 | 14.3% 2 | 12.5% 1 | 5.3% 1 |
| | **Pork Chop** | 40.0% 4 | 40.0% 2 | 9.1% 1 | 22.2% 2 | 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 |
| | **Ground Turkey** | 1.4% 1 | 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 |
| | **Pork Chop** | 20.0% 2 | 0.0% 0 | 0.0% 0 | 11.1% 1 | 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 |
| | **Ground Turkey** | 33.3% 1 | 0.0% 1 | 0.0% 3 | 0.0% 1 | 0.0% 0 |
| | **Ground Beef** | 22.2% 2 | 40.0% 4 | 14.3% 2 | 0.0% 0 | 0.0% 0 |
| | **Pork Chop** | 20.0% 2 | 20.0% 1 | 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 |
| | **Ground Turkey** | 0.0% 0 | 0.9% 1 | 0.0% 0 | 0.0% 0 | 0.0% 0 |
| | **Ground Beef** | 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 |

[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 | | | | | | | | |
| 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** | | | | | |
| 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** | | | |
| 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** | | | |
| **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** | | | | |
| **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** | | | | |
| **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** | | | | | | |
| 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** | | | | |
| **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** | | | | |
| **Folate Pathway Inhibitors** | | | | | | | | | | | | | | | | | | | | | |
| Sulfamethoxazole | 2002 (n=60) | 0.0% | 16.7% | (8.3 - 28.5) | | | | | | | | | | | 38.3 | 31.67 | 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** | |
| 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** | | | | | | | |
| **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** | | | | |
| **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 | | | | | | | | | | | | |
| 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% | 0.7% | (0.0 - 3.6) | | | | | | | 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** | | | | |
| **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** | | | | |

[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 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 MIC 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

| 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 | | | | | | | |
| 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** | | | | | |
| 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** | | | |
| 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** | | | |
| **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** | | | | |
| **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** | | | | |
| **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** | | | | | | |
| 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** | | | | |
| **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** | | | | |
| **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** | |
| 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 | | | | | | | | | | | |
| **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** | | | | |
| **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 | | | | | | | | | | | |
| 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 | | | | | | |
| **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** | | | | |

[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 | | | | | | | |
| 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 | | | | | | | | | | |
| 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** | | | |
| 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** | | | |
| **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** | | | | |
| **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 | | | | | | |
| **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 | | | | | | | | | | |
| 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 | | | | | | | | | | | | |
| **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 | | | | | | | | |
| **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** | |
| 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 | | | | | | | | | | | | |
| **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** | | | | |
| **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 | | | | | | | | | | | | | | | |
| Nalidixic Acid | 2002 (n=9) | 0.0% | 0.0% | (0.0 - 33.6) | | | | | | | | | 66.7 | 2.2 | 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 | | | | | | | | |
| **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** | | | | |

[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 | | | | | | | | | |
| 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** | | | | | |
| 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** | | | |
| 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** | | | |
| **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** | | | | |
| **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 | | | | | | |
| **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 | | | | | | | | | |
| 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 | | | | | | | | | | | | |
| **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 | | | | | | |
| **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** | |
| 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** | | | | | | | | |
| **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 | | | | | | |
| **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 | | | | | | | | | | | | | | |
| 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 | | | | | | | |
| **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** | | | | |

[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, 2002-2006

| | Species | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total (a) Isolates in that year** | ***C. jejuni*** | **202** | | **330** | | **517** | | **414** | | **439** | |
| | ***C. coli*** | **95** | | **147** | | **204** | | **160** | | **157** | |
| | ***C. lari*** | **0** | | **2** | | **0** | | **2** | | **3** | |
| **Meat Type[1]** | **Total (A)** | **297** | | **479** | | **721** | | **576** | | **599** | |
| | **Species** | **n** | **%[2]** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| **Chicken Breast** | *C. jejuni* | 198 | 98.0% | 325 | 98.5% | 510 | 98.6% | 403 | 97.3% | 426 | 97.0% |
| | *C. coli* | 90 | 94.7% | 142 | 96.6% | 196 | 96.1% | 151 | 94.4% | 145 | 92.4% |
| | *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%** |
| **Ground Turkey** | *C. jejuni* | 2 | 1.0% | 4 | 1.2% | 7 | 1.4% | 10 | 2.4% | 12 | 2.7% |
| | *C. coli* | 2 | 2.1% | 1 | 0.7% | 5 | 2.5% | 9 | 5.6% | 10 | 6.4% |
| | *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% |
| **Ground Beef** | *C. jejuni* | | | 1 | 0.3% | | | | | | |
| | **Total** | | | **1** | **0.2%** | | | | | | |
| **Pork Chop** | *C. jejuni* | 2 | 1.0% | | | | | 1 | 0.2% | 1 | 0.2% |
| | *C. coli* | 3 | 3.2% | 4 | 0.8% | 3 | 1.5% | | | 2 | 1.3% |
| | *C. lari* | | | | | | | 1 | 50.0% | | |
| | **Total (N)** | **5** | **1.7%** | **4** | **0.8%** | **3** | **0.4%** | **2** | **0.3%** | 3 | 0.5% |

[1] Blank and gray 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 in Chicken Breast by Month for All Sites, 2002-2006

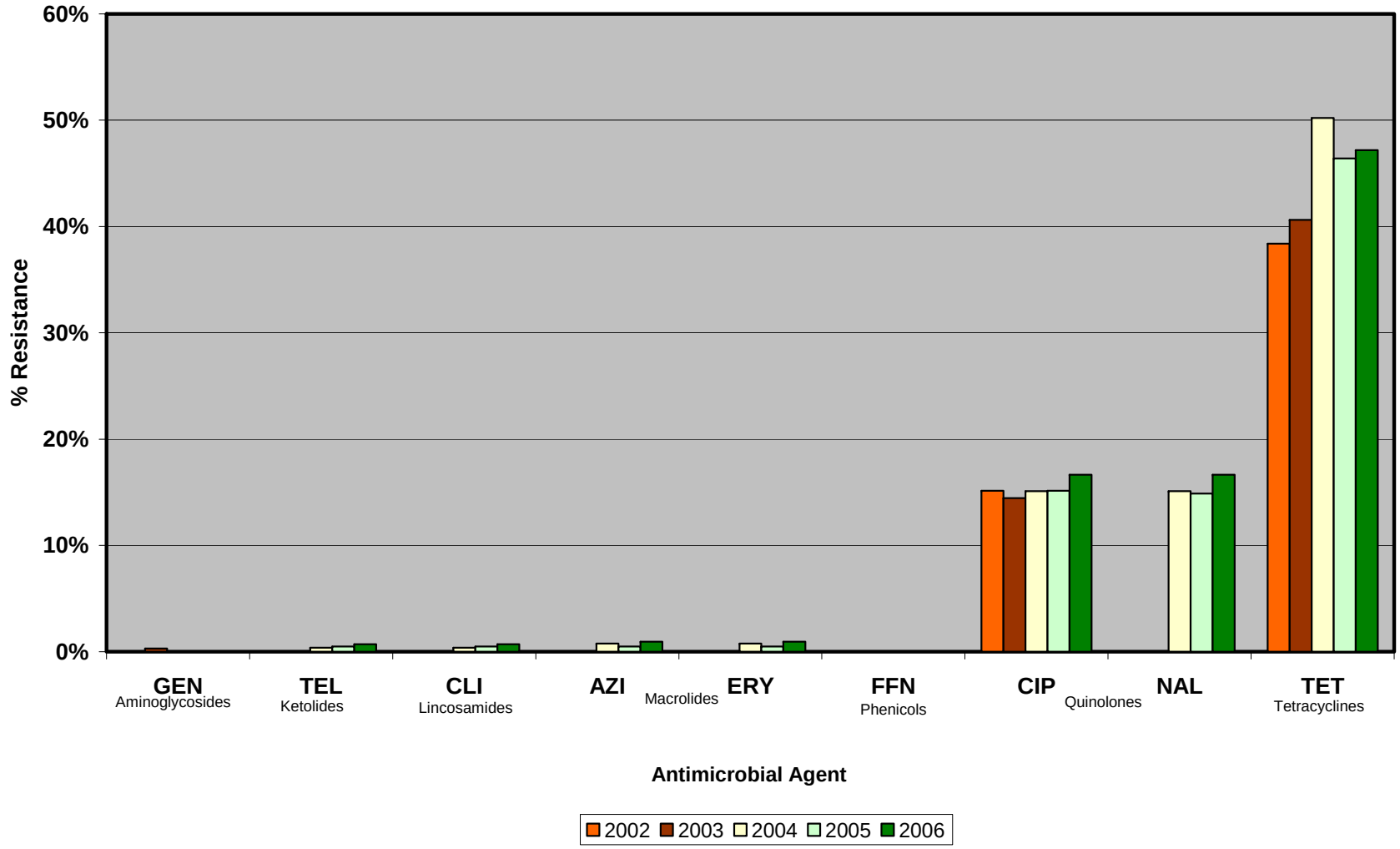
| | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Month** | **n** | **%[1]** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| **January** | 13 | 6.6 | 26 | 8.0 | 42 | 8.2 | 30 | 7.4 | 32 | 7.5 |
| **February** | 25 | 12.6 | 26 | 8.0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

## Table 11b. *Campylobacter coli* isolates in Chicken Breast by Month for All Sites, 2002-2006

| | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Month** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| **January** | 5 | 5.6 | 4 | 2.8 | 18 | 9.2 | 15 | 9.9 | 7 | 4.8 |
| **February** | 4 | 4.4 | 5 | 3.5 | 19 | 9.7 | 16 | 10.6 | 8 | 5.5 |
| **March** | 6 | 6.7 | 6 | 4.2 | 15 | 7.7 | 9 | 6.0 | 10 | 6.9 |
| **April** | 6 | 6.7 | 15 | 10.6 | 8 | 4.1 | 11 | 7.3 | 11 | 7.6 |
| **May** | 11 | 12.2 | 11 | 7.7 | 10 | 5.1 | 10 | 6.6 | 12 | 8.3 |
| **June** | 17 | 18.9 | 11 | 7.7 | 10 | 5.1 | 17 | 11.3 | 12 | 8.3 |
| **July[2]** | | | 24 | 16.9 | 16 | 8.2 | 15 | 9.9 | 16 | 11.0 |
| **August** | 7 | 7.8 | 5 | 3.5 | 17 | 8.7 | 6 | 4.0 | 7 | 4.8 |
| **September** | 8 | 8.9 | 20 | 14.1 | 20 | 10.2 | 7 | 4.6 | 14 | 9.7 |
| **October** | 10 | 11.1 | 19 | 13.4 | 18 | 9.2 | 19 | 12.6 | 14 | 9.7 |
| **November** | 2 | 2.2 | 4 | 2.8 | 25 | 12.8 | 11 | 7.3 | 23 | 15.9 |
| **December** | 14 | 15.6 | 18 | 85.7 | 20 | 10.2 | 15 | 9.9 | 11 | 7.6 |
| **Total** | **90** | **100.0** | **142** | **100.0** | **196** | **100.0** | **151** | **100.0** | **145** | **100.0** |

[1] Where % = (# of isolates that month) / (total # of isolates that year).
[2] Grey area indicates that no isolates were identified in that month.

**Figure 4a. Antimicrobial Resistance among *Campylobacter jejuni* from Chicken Breast, 2002-2006**



## Table 12a. Trends in Resistance among *Campylobacter jejuni* in Chicken Breast Isolates, 2002-2006

| | | 2002 (N=198) | | 2003 (N=325) | | 2004 (N=510) | | 2005 (N=403) | | 2006 (N=426) | | Cochran-Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Antimicrobial Class** | **Antimicrobial/Resistance Breakpoint (µg/ml)** | **n** | **%R[1]** | **n** | **%R** | **n** | **%R** | **n** | **%R:** | **n** | **%R:** | **Z Statistic** | **P value[2]** |
| **Aminoglycosides** | **Gentamicin (MIC ≥8)** | 0 | 0.0% | 1 | 0.3% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | -1.0023 | 0.3162 |
| **Ketolides** | **Telithromycin (MIC ≥16)** | Not Tested | | Not Tested | | 2 | 0.4% | 2 | 0.5% | 3 | 0.7% | 0.6541 | 0.5130[3] |
| **Lincosamides** | **Clindamycin (MIC ≥8)** | Not Tested | | Not Tested | | 2 | 0.4% | 2 | 0.5% | 3 | 0.7% | 0.6541 | 0.5130[3] |
| **Macrolides** | **Azithromycin (MIC ≥8)** | Not Tested | | Not Tested | | 4 | 0.8% | 2 | 0.5% | 4 | 0.9% | 0.2388 | 0.8112[3] |
| | **Erythromycin (MIC ≥32)** | 0 | 0.0% | 0 | 0.0% | 4 | 0.8% | 2 | 0.5% | 4 | 0.9% | -1.1355 | 0.2562 |
| **Phenicols** | **Florfenicol[4]** | Not Tested | | Not Tested | | 0 | - | 0 | - | 0 | - | N/A[5] | N/A |
| **Quinolones** | **Ciprofloxacin (MIC≥4)** | 30 | 15.2% | 47 | 14.5% | 77 | 15.1% | 61 | 15.1% | 71 | 16.7% | 0.6996 | 0.4842 |
| | **Nalidixic Acid (MIC≥64)** | Not Tested | | Not Tested | | 77 | 15.1% | 60 | 14.9% | 71 | 16.7% | 0.6378 | 0.5236[3] |
| **Tetracycline[6]** | **Tetracycline (MIC≥16)** | 76 | 38.4% | 132 | 40.6% | 256 | 50.2% | 187 | 46.4% | 201 | 47.2% | -0.9578 | 0.3382 |

[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, 2002-2006**

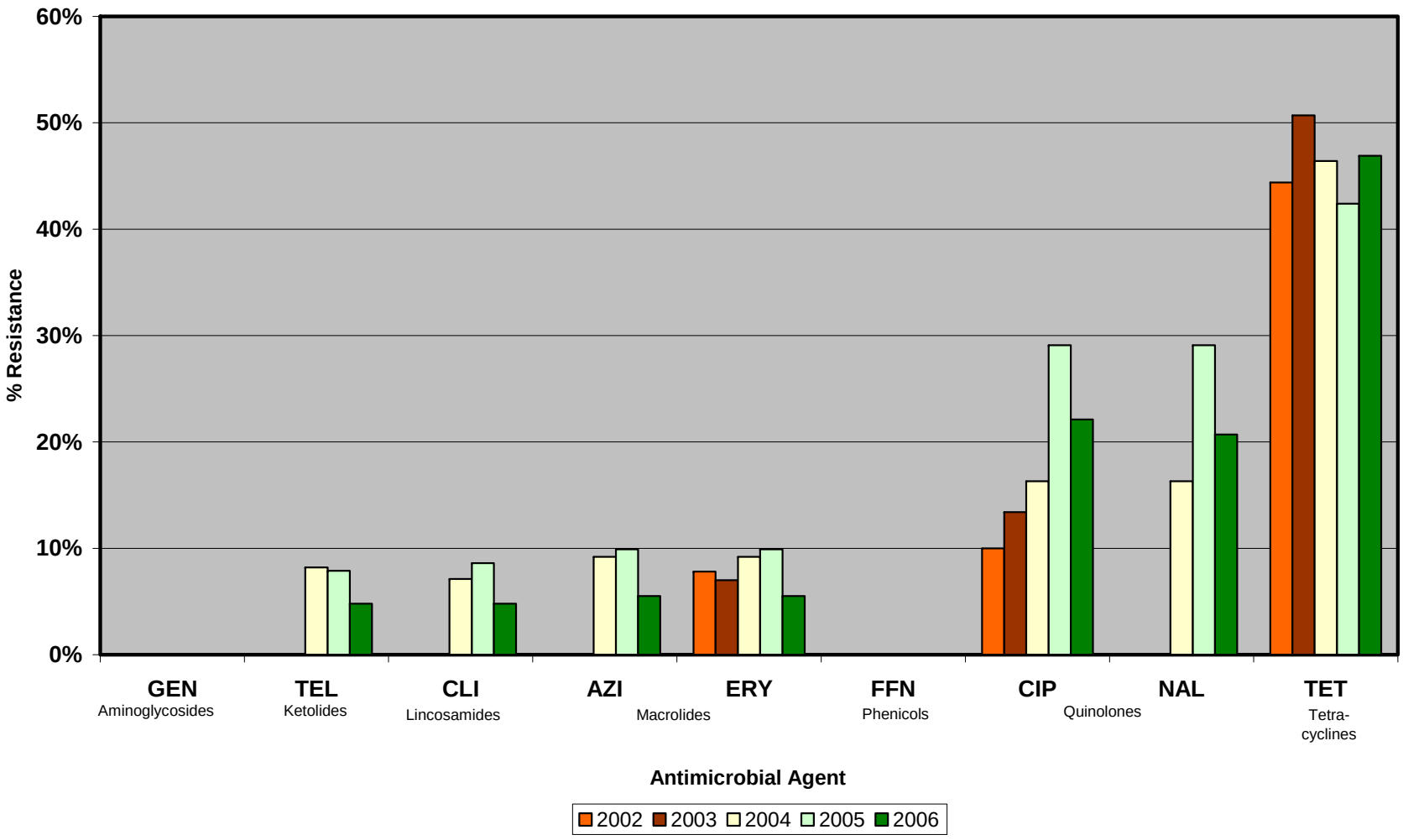


**Table 12b. Trends in Resistance among *Campylobacter coli* in Chicken Breast Isolates, 2002-2006**

| | | 2002 (N=90) | | 2003 (N=142) | | 2004 (N=196) | | 2005 (N=151) | | 2006 (N=145) | | Cochran-Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Antimicrobial Class** | **Antimicrobial/Resistance Breakpoint (µg/ml)** | **n** | **%R[1]** | **n** | **%R** | **n** | **%R** | **n** | **%R:** | **n** | **%R:** | **Z Statistic** | **P value[2]** |
| **Aminoglycosides** | **Gentamicin (MIC ≥8)** | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A[3] | N/A |
| **Ketolides** | **Telithromycin (MIC ≥16)** | Not Tested | | Not Tested | | 16 | 8.2% | 12 | 7.9% | 7 | 4.8% | -1.1406 | 0.2541[4] |
| **Lincosamides** | **Clindamycin (MIC ≥8)** | Not Tested | | Not Tested | | 14 | 7.1% | 13 | 8.6% | 7 | 4.8% | -0.7479 | 0.4545[4] |
| **Macrolides** | **Azithromycin (MIC ≥8)** | Not Tested | | Not Tested | | 18 | 9.2% | 15 | 9.9% | 8 | 5.5% | -1.1355 | 0.2562[4] |
| | **Erythromycin (MIC ≥32)** | 17 | 18.9% | 13 | 9.2% | 18 | 9.2% | 15 | 9.9% | 8 | 5.5% | -2.6709 | 0.0076 |
| **Phenicols** | **Florfenicol[5]** | Not Tested | | Not Tested | | 0 | - | 0 | - | 0 | - | N/A | N/A |
| **Quinolones** | **Ciprofloxacin (MIC≥4)** | 9 | 10.0% | 19 | 13.4% | 32 | 16.3% | 44 | 29.1% | 32 | 22.1% | 3.5754 | 0.0003 |
| | **Nalidixic Acid (MIC≥64)** | Not Tested | | Not Tested | | 32 | 16.3% | 44 | 29.1% | 30 | 20.7% | 1.1931 | 0.2328[4] |
| **Tetracycline[6]** | **Tetracycline (MIC≥16)** | 40 | 44.4% | 72 | 50.7% | 91 | 46.4% | 64 | 42.4% | 68 | 46.9% | 0.3799 | 0.7040 |

[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] N/A= Z Statistic and P value could not be calculated due to insufficient data or no resistance observed.
[4] Z statistic and P value calculated based on 3 years data.
[5] 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
[6] Results for 2002 and 2003 are for Doxycycline.

## Table 13. Antimicrobial Resistance among *Campylobacter* Species by Meat Type, 2002-2006

| | | | Aminoglycosides | Ketolides | Lincosamides | Macrolides | | Phenicols | Quinolones | | Tetracyclines | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meat Type[1] | Species | Year | GEN | TEL | CLI | AZI | ERY | FFN | CIP | NAL | DOX | TET |
| Chicken Breast | *C. jejuni* | 2002 (n=198) | -[2] | | | | - | | 15.2% | | 38.4% | |
| | | 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% |
| | | Total (n=1862) | 0.1% | 0.5% | 0.5% | 0.7% | 0.5% | - | 15.4% | 15.5% | 39.8% | 48.1% |
| | *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% |
| | | Total (n=724) | - | 7.1% | 6.9% | 8.3% | 8.0% | - | 18.8% | 21.5% | 48.3% | 45.3% |
| | *C. lari* | 2003 (n=2) | - | | | | - | | - | | - | |
| | | 2006 (n=1) | - | - | - | - | - | - | 100.0% | 100.0% | | - |
| | | Total (n=3) | - | - | - | - | - | - | 33.3% | 100.0% | - | - |
| | Total (n=2589) | | - | 2.3% | 2.2% | 2.8% | 2.6% | - | 16.3% | 17.2% | 42.3% | 47.3% |
| 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% |
| | | Total (n=35) | - | - | - | - | - | - | 28.6% | 31.0% | 83.3% | 65.5% |
| | *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% |
| | | Total (n=27) | - | 8.3% | - | 8.3% | 7.4% | - | 37.0% | 33.3% | 66.7% | 66.7% |
| | *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=65) | | - | 3.6% | - | 3.6% | 3.1% | - | 35.4% | 35.7% | 77.8% | 62.5% |
| Ground Beef | *C. jejuni* | 2003 (n=1) | - | | | | - | | - | | - | |
| | | Total (n=1) | - | | | | - | | - | | - | |
| | Total (n=1) | | - | - | | | | - | | - | | - |
| 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% | - | - | - | | - |
| | | Total (n=12) | - | 20.0% | 40.0% | 40.0% | 50.0% | - | - | - | 57.1% | 40.0% |
| | *C. lari* | 2005 (n=1) | - | - | - | - | - | - | - | 100.0% | | - |
| | | Total (n=1) | - | - | - | - | - | - | - | 100.0% | | - |
| | Total (n=17) | | - | 12.5% | 25.0% | 25.0% | 35.3% | - | 5.9% | 25.0% | 44.4% | 25.0% |
| Total (n=2672) | | | - | 2.4% | 2.3% | 2.9% | 2.8% | - | 16.7% | 17.8% | 42.7% | 47.7% |

[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, 2002-2006

| Meat Type | Number of Antimicrobials | 2002 (n=202) | 2003 (n=330) | 2004 (n=517) | 2005 (n=414) | 2006 (n=439) | Total |
|---|---|---|---|---|---|---|---|
| Chicken Breast | 0 | 131 | 215 | 209 | 175 | 187 | **917** |
| | 1 | 63 | 98 | 220 | 166 | 164 | **711** |
| | 2-4 | 4 | 12 | 79 | 61 | 72 | **228** |
| | 5-7 | 0 | 0 | 2 | 1 | 3 | **6** |
| | ≥8 | N/A* | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **198** | **325** | **510** | **403** | **426** | **1862** |
| Ground Turkey | 0 | 0 | 1 | 3 | 3 | 2 | **9** |
| | 1 | 2 | 3 | 2 | 6 | 4 | **17** |
| | 2-4 | 0 | 0 | 2 | 1 | 6 | **9** |
| | 5-7 | 0 | 0 | 0 | 0 | 0 | **0** |
| | ≥8 | N/A | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **2** | **4** | **7** | **10** | **12** | **35** |
| Ground Beef | 0 | 0 | 1 | 0 | 0 | 0 | **1** |
| | 1 | 0 | 0 | 0 | 0 | 0 | **0** |
| | 2-4 | 0 | 0 | 0 | 0 | 0 | **0** |
| | 5-7 | 0 | 0 | 0 | 0 | 0 | **0** |
| | ≥8 | N/A | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **0** | **1** | **0** | **0** | **0** | **1** |
| Pork Chop | 0 | 2 | 0 | 0 | 0 | 1 | **3** |
| | 1 | 0 | 0 | 0 | 0 | 0 | **0** |
| | 2-4 | 0 | 0 | 0 | 1 | 0 | **1** |
| | 5-7 | 0 | 0 | 0 | 0 | 0 | **0** |
| | ≥8 | N/A | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **2** | **0** | **0** | **1** | **1** | **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, 2002-2006

| Meat Type | Number of Antimicrobials | 2002 (n=95) | 2003 (n=147) | 2004 (n=204) | 2005 (n=160) | 2006 (n=157) | Total |
|---|---|---|---|---|---|---|---|
| Chicken Breast | 0 | 41 | 66 | 75 | 55 | 56 | **293** |
| | 1 | 35 | 61 | 72 | 39 | 51 | **258** |
| | 2-4 | 14 | 15 | 46 | 49 | 35 | **159** |
| | 5-7 | 0 | 0 | 3 | 8 | 3 | **14** |
| | ≥8 | N/A* | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **90** | **142** | **196** | **151** | **145** | **724** |
| Ground Turkey | 0 | 1 | 0 | 5 | 1 | 2 | **9** |
| | 1 | 1 | 1 | 0 | 3 | 5 | **10** |
| | 2-4 | 0 | 0 | 0 | 3 | 3 | **6** |
| | 5-7 | 0 | 0 | 0 | 2 | 0 | **2** |
| | ≥8 | N/A | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **2** | **1** | **5** | **9** | **10** | **27** |
| Ground Beef | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| | 1 | 0 | 0 | 0 | 0 | 0 | **0** |
| | 2-4 | 0 | 0 | 0 | 0 | 0 | **0** |
| | 5-7 | 0 | 0 | 0 | 0 | 0 | **0** |
| | ≥8 | N/A | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **0** | **0** | **0** | **0** | **0** | **0** |
| Pork Chop | 0 | 2 | 1 | 1 | 0 | 1 | **5** |
| | 1 | 0 | 1 | 1 | 0 | 0 | **2** |
| | 2-4 | 1 | 2 | 1 | 0 | 1 | **5** |
| | 5-7 | 0 | 0 | 0 | 0 | 0 | **0** |
| | ≥8 | N/A | N/A | 0 | 0 | 0 | **0** |
| | **Total** | **3** | **4** | **3** | **0** | **2** | **12** |

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

## Table 15a. MIC Distribution among *Campylobacter jejuni* from Chicken Breast

| 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 | | | | | | |
| **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** | | | |
| **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** | | | | |
| **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** |
| 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** |
| **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 | | | | | | |
| **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** | | |
| 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** |
| **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** |

[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

| 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 | | | | | | | |
| **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** | | | |
| **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** | | | | |
| **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** |
| 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** | | | |
| | 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** |
| **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 | | | | | |
| **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** | | |
| 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** |
| **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** |

[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.

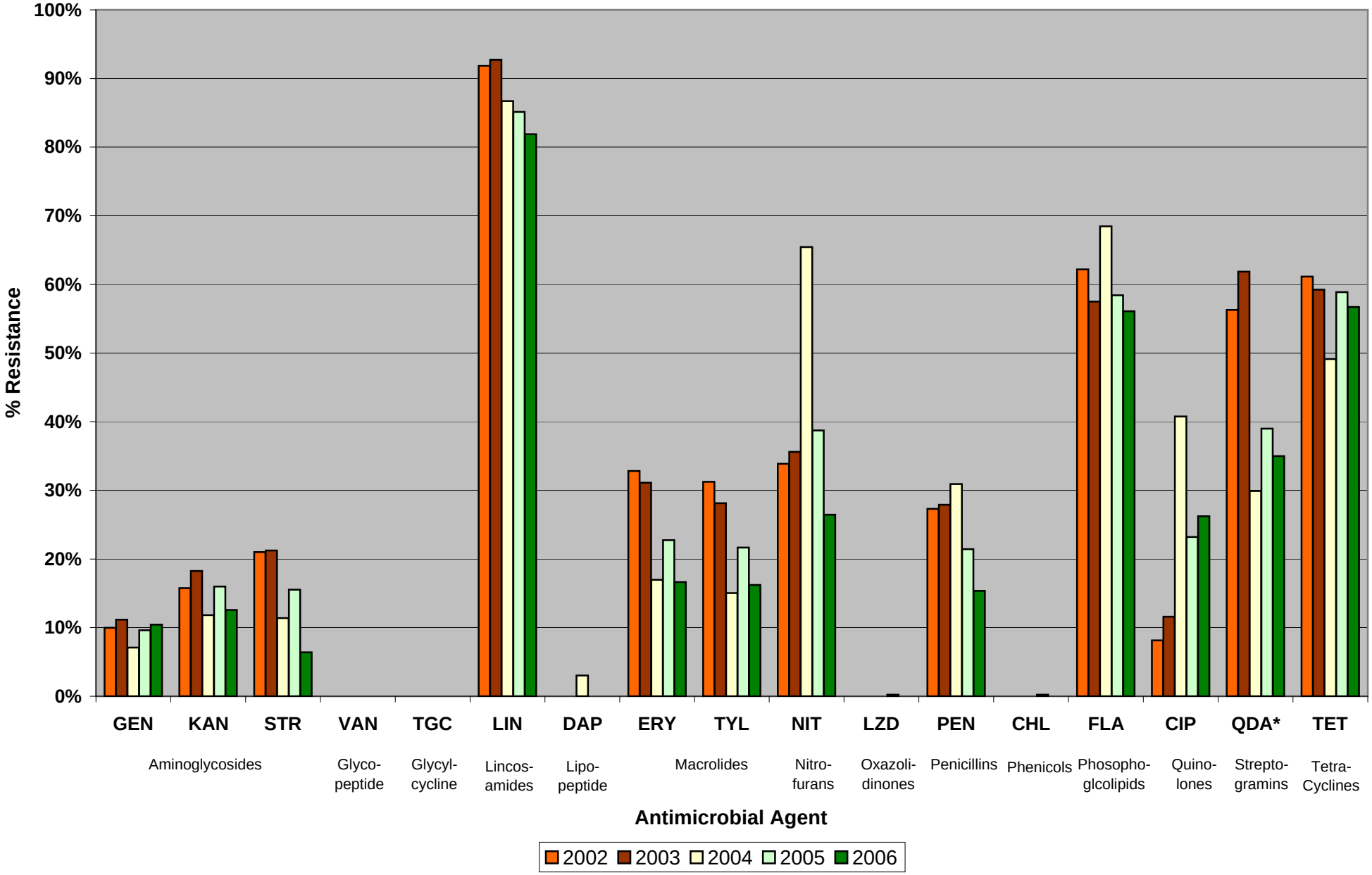
[5] For Florfenicol, percent non-susceptible is reported rather than percent resistant because a resistance breakpoint has not been established.

## Table 16. *Enterococcus* Species by Meat Type, 2002 - 2006

| | Species | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total (a) Isolates In that Year | *E. faecalis* | 893 | | 1014 | | 855 | | 1001 | | 945 | |
| | *E. faecium* | 506 | | 575 | | 757 | | 618 | | 649 | |
| | *E. hirae* | 102 | | 129 | | 129 | | 117 | | 115 | |
| | *E. durans* | 10 | | 8 | | 3 | | 19 | | 16 | |
| | *E. gallinarum* | 5 | | 12 | | 7 | | 10 | | 4 | |
| | *E. avium* | 4 | | 3 | | 0 | | 0 | | 0 | |
| | *E. casseliflavus* | 0 | | 1 | | 3 | | 0 | | 2 | |
| | *E. mundtii* | 0 | | 0 | | 1 | | 0 | | 0 | |
| | **Total (A)** | 1520 | | 1742 | | 1755 | | 1765 | | 1731 | |
| **Meat Type[1]** | **Species** | **n** | **%[2]** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| **Chicken Breast** | *E. faecalis* | 134 | 15.0% | 188 | 18.5% | 88 | 10.3% | 116 | 11.6% | 126 | 13.3% |
| | *E. faecium* | 231 | 45.7% | 248 | 43.1% | 348 | 46.0% | 307 | 49.7% | 315 | 48.5% |
| | *E. hirae* | 12 | 11.8% | 28 | 21.7% | 27 | 20.9% | 30 | 25.6% | 27 | 23.5% |
| | *E. durans* | 1 | 10.0% | 1 | 12.5% | 2 | 66.7% | 3 | 15.8% | 1 | 6.3% |
| | *E. gallinarum* | | | | | | | 1 | 10.0% | | |
| | *E. avium* | 3 | 75.0% | 1 | 33.3% | | | | | | |
| | *E. mundtii* | | | | | 1 | 100.0% | | | | |
| | **Total (N)[3]** | **381** | **25.1%** | **466** | **26.8%** | **466** | **26.6%** | **457** | **25.9%** | **469** | **27.1%** |
| **Ground Turkey** | *E. faecalis* | 294 | 32.9% | 289 | 28.5% | 260 | 30.4% | 339 | 33.9% | 291 | 30.8% |
| | *E. faecium* | 89 | 17.6% | 118 | 20.5% | 172 | 22.7% | 107 | 17.3% | 139 | 21.4% |
| | *E. hirae* | 2 | 2.0% | 3 | 2.3% | | | 1 | 0.9% | 3 | 2.6% |
| | *E. durans* | | | | | 1 | 33.3% | 1 | 5.3% | 2 | 12.5% |
| | *E. gallinarum* | 2 | 40.0% | 8 | 66.7% | 4 | 57.1% | 4 | 40.0% | | |
| | **Total (N)** | **387** | **25.5%** | **418** | **24.0%** | **437** | **24.9%** | **452** | **25.6%** | **435** | **25.1%** |
| **Ground Beef** | *E. faecalis* | 210 | 23.5% | 224 | 22.1% | 194 | 22.7% | 226 | 22.6% | 227 | 13.1% |
| | *E. faecium* | 93 | 18.4% | 112 | 19.5% | 162 | 21.4% | 129 | 20.9% | 125 | 19.3% |
| | *E. hirae* | 76 | 74.5% | 84 | 65.1% | 88 | 68.2% | 82 | 70.1% | 77 | 67.0% |
| | *E. durans* | 3 | 30.0% | 7 | 87.5% | | | 10 | 52.6% | 7 | 43.8% |
| | *E. gallinarum* | | | 4 | 33.3% | 2 | 28.6% | | | 2 | 50.0% |
| | *E. avium* | 1 | 25.0% | | | | | | | | |
| | *E. casseliflavus* | | | 1 | 100.0% | 2 | 66.7% | | | | |
| | **Total (N)** | **383** | **25.2%** | **432** | **24.8%** | **448** | **25.5%** | **447** | **25.3%** | **438** | **25.3%** |
| **Pork Chop** | *E. faecalis* | 255 | 28.6% | 313 | 30.9% | 313 | 36.6% | 320 | 32.0% | 301 | 31.9% |
| | *E. faecium* | 93 | 18.4% | 97 | 16.9% | 75 | 9.9% | 75 | 12.1% | 70 | 10.8% |
| | *E. hirae* | 12 | 11.8% | 14 | 10.9% | 14 | 10.9% | 4 | 3.4% | 8 | 7.0% |
| | *E. durans* | 6 | 60.0% | | | | | 5 | 26.3% | 6 | 37.5% |
| | *E. gallinarum* | 3 | 60.0% | | | 1 | 14.3% | 5 | 50.0% | 2 | 50.0% |
| | *E. avium* | | | 2 | 66.7% | | | | | | |
| | *E. casseliflavus* | | | | | 1 | 33.3% | | | 2 | 100.0% |
| | **Total (N)** | **369** | **24.3%** | **426** | **24.5%** | **404** | **23.0%** | **409** | **23.2%** | **389** | **22.5%** |

[1] Blank and gray 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).

## Figure 5a. Antimicrobial Resistance among *Enterococcus* from Chicken Breast, 2002-2006



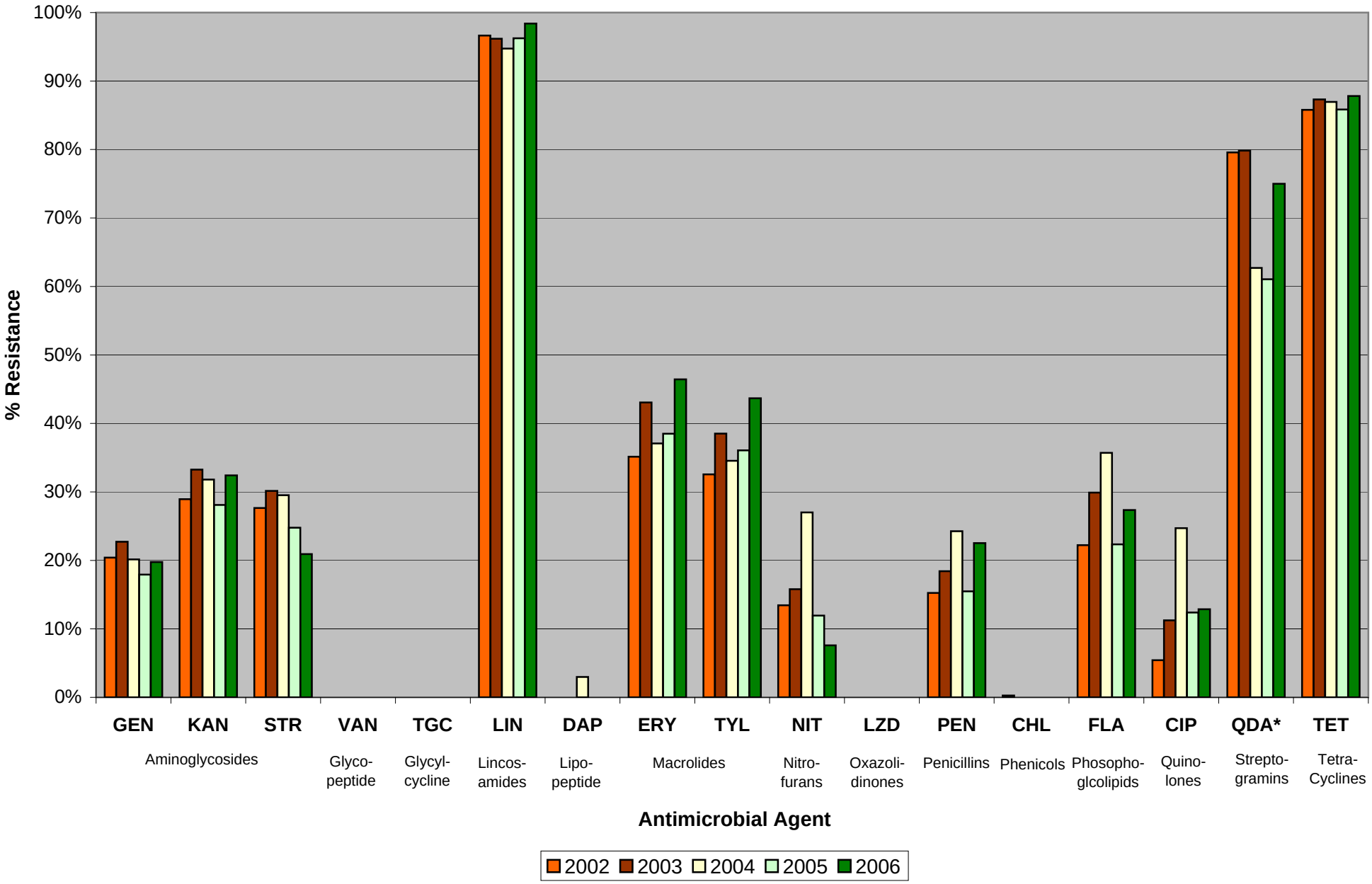

*Data presented for all species except *E. faecalis* , which is considered intrinsically resistant to Quinupristin-Dalfopristin.

## Table 17a. Trends in Resistance among *Enterococcus* in Chicken Breast Isolates, 2002 - 2006

| Class | Antimicrobial Agent[1] | 2002 (N=381) | | 2003 (N=466) | | 2004 (N=466) | | 2005 (N=457) | | 2006 (N=469) | | Cochran-Armitage Trend | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[2] | n | %R | n | %R | n | %R | n | %R | Z Statistic | P Value[3] |
| Aminoglycosides | Gentamicin | 38 | 10.0% | 52 | 11.2% | 33 | 7.1% | 44 | 9.6% | 49 | 10.4% | -0.1089 | 0.9133 |
| | Kanamycin | 60 | 15.7% | 85 | 18.2% | 55 | 11.8% | 73 | 16.0% | 59 | 12.6% | -1.6613 | 0.0966 |
| | Streptomycin | 80 | 21.0% | 99 | 21.2% | 53 | 11.4% | 71 | 15.5% | 30 | 6.4% | -6.5424 | <0.0001 |
| Glycopeptides | Vancomycin | 0 | -[4] | 0 | - | 0 | - | 0 | - | 0 | - | N/A | N/A[5] |
| Glycylcycline | Tigecycline | Not Tested | | Not Tested | | Not Tested | | 0 | - | 0 | - | N/A | N/A |
| Lincosamides | Lincomycin | 350 | 91.9% | 432 | 92.7% | 404 | 86.7% | 389 | 85.1% | 384 | 81.9% | -5.5769 | <0.0001 |
| Lipopeptides | Daptomycin | Not Tested | | Not Tested | | 14 | 3.0% | 0 | - | 0 | - | -5.6866 | <0.0001[6] |
| Macrolides | Erythromycin | 125 | 32.8% | 145 | 31.1% | 79 | 17.0% | 104 | 22.8% | 78 | 16.6% | -6.2525 | <0.0001 |
| | Tylosin | 119 | 31.2% | 131 | 28.1% | 70 | 15.0% | 99 | 21.7% | 76 | 16.2% | -5.6862 | <0.0001 |
| Nitrofurans | Nitrofurantoin | 129 | 33.9% | 166 | 35.6% | 305 | 65.5% | 177 | 38.7% | 124 | 26.4% | -2.0562 | 0.0398 |
| Oxazolidinones | Linezolid | 0 | - | 0 | - | 0 | - | 1 | 0.2% | 0 | - | 0.6671 | 0.5047 |
| Penicillins | Penicillin | 104 | 27.3% | 130 | 27.9% | 144 | 30.9% | 98 | 21.4% | 72 | 15.4% | -4.8489 | <0.0001 |
| Phenicols | Chloramphenicol | 0 | - | 0 | - | 0 | - | 1 | 0.2% | 0 | - | 0.6671 | 0.5047 |
| Phosphoglycolipids | Flavomycin | 237 | 62.2% | 268 | 57.5% | 319 | 68.5% | 267 | 58.4% | 263 | 56.1% | -1.5574 | 0.1194 |
| Quinolones | Ciprofloxacin | 31 | 8.1% | 54 | 11.6% | 190 | 40.8% | 106 | 23.2% | 123 | 26.2% | 7.2357 | <0.0001 |
| Streptogramins | Quinupristin-Dalfopristin[7] | 139 | 56.3% | 172 | 61.9% | 113 | 29.9% | 133 | 39.0% | 120 | 35.0% | -6.9300 | <0.0001 |
| Tetracyclines | Tetracycline | 233 | 61.2% | 276 | 59.2% | 229 | 49.1% | 269 | 58.9% | 266 | 56.7% | -1.1055 | 0.2689 |

[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 of P value could be calculated for this antibiotic.
[6] Z Statistic and P Value based on 3 years of data.
[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, 2002-2006



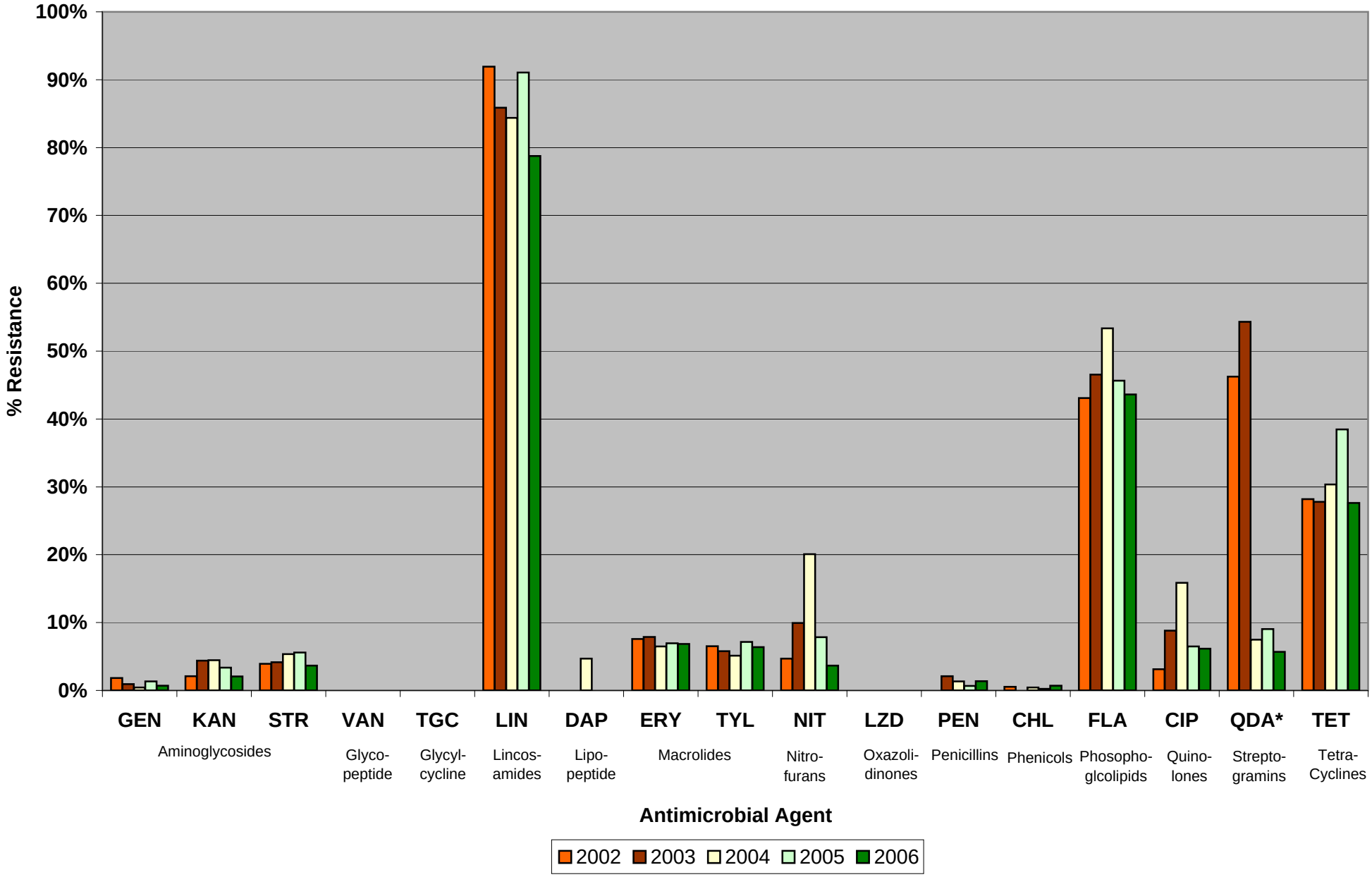

*Data presented for all species except *E. faecalis* , which is considered intrinsically resistant to Quinupristin-Dalfopristin.

## Table 17b. Trends in Resistance among *Enterococcus* in Ground Turkey Isolates, 2002 - 2006

| Class | Antimicrobial Agent[1] | 2002 (N=387) | | 2003 (N=418) | | 2004 (N=437) | | 2005 (N=452) | | 2006 (N=438) | | Cochran-Armitage Trend | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[2] | n | %R | n | %R | n | %R | n | %R | Z Statistic | P Value[3] |
| Aminoglycosides | Gentamicin | 79 | 20.4% | 95 | 22.7% | 88 | 20.1% | 81 | 17.9% | 86 | 19.8% | -1.0137 | 0.3107 |
| | Kanamycin | 112 | 28.9% | 139 | 33.3% | 139 | 31.8% | 127 | 28.1% | 141 | 32.4% | 0.1956 | 0.8450 |
| | Streptomycin | 107 | 27.6% | 126 | 30.1% | 129 | 29.5% | 112 | 24.8% | 91 | 20.9% | -2.8301 | 0.0047 |
| Glycopeptides | Vancomycin | 0 | -[4] | 0 | - | 0 | - | 0 | - | 0 | - | N/A | N/A[5] |
| Glycylcycline | Tigecycline | Not Tested | | Not Tested | | Not Tested | | 0 | - | 0 | - | N/A | N/A |
| Lincosamides | Lincomycin | 374 | 96.6% | 402 | 96.2% | 414 | 94.7% | 435 | 96.2% | 428 | 98.4% | 1.3086 | 0.1907 |
| Lipopeptides | Daptomycin | Not Tested | | Not Tested | | 13 | 3.0% | 0 | - | 0 | - | -4.4580 | <0.0001[6] |
| Macrolides | Erythromycin | 136 | 35.1% | 180 | 43.1% | 162 | 37.1% | 174 | 38.5% | 202 | 46.4% | 2.3390 | 0.0193 |
| | Tylosin | 126 | 32.6% | 161 | 38.5% | 151 | 34.6% | 163 | 36.1% | 190 | 43.7% | 2.6246 | 0.0087 |
| Nitrofurans | Nitrofurantoin | 52 | 13.4% | 66 | 15.8% | 118 | 27.0% | 54 | 11.9% | 33 | 7.6% | -3.0169 | 0.0026 |
| Oxazolidinones | Linezolid | 0 | - | 0 | - | 0 | - | 0 | - | 0 | - | N/A | N/A |
| Penicillins | Penicillin | 59 | 15.2% | 77 | 18.4% | 106 | 24.3% | 70 | 15.5% | 98 | 22.5% | 1.8094 | 0.0704 |
| Phenicols | Chloramphenicol | 1 | 0.3% | 0 | - | 0 | - | 0 | - | 0 | - | -1.4766 | 0.1398 |
| Phosphoglycolipids | Flavomycin | 86 | 22.2% | 125 | 29.9% | 156 | 35.7% | 101 | 22.3% | 119 | 27.4% | 0.2139 | 0.8306 |
| Quinolones | Ciprofloxacin | 21 | 5.4% | 47 | 11.2% | 108 | 24.7% | 56 | 12.4% | 56 | 12.9% | 2.7874 | 0.0053 |
| Streptogramins | Quinupristin-Dalfopristin[7] | 74 | 79.6% | 103 | 79.8% | 111 | 62.7% | 69 | 61.1% | 108 | 75.0% | -1.7285 | 0.0839 |
| Tetracyclines | Tetracycline | 332 | 85.8% | 365 | 87.3% | 380 | 87.0% | 388 | 85.8% | 382 | 87.8% | 0.4680 | 0.6398 |

[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] Z Statistic and P Value could not be calculated due to insufficient data or no resistance observed.
[6] Z Statistic and P Value based on 3 years of data.
[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, 2002-2006



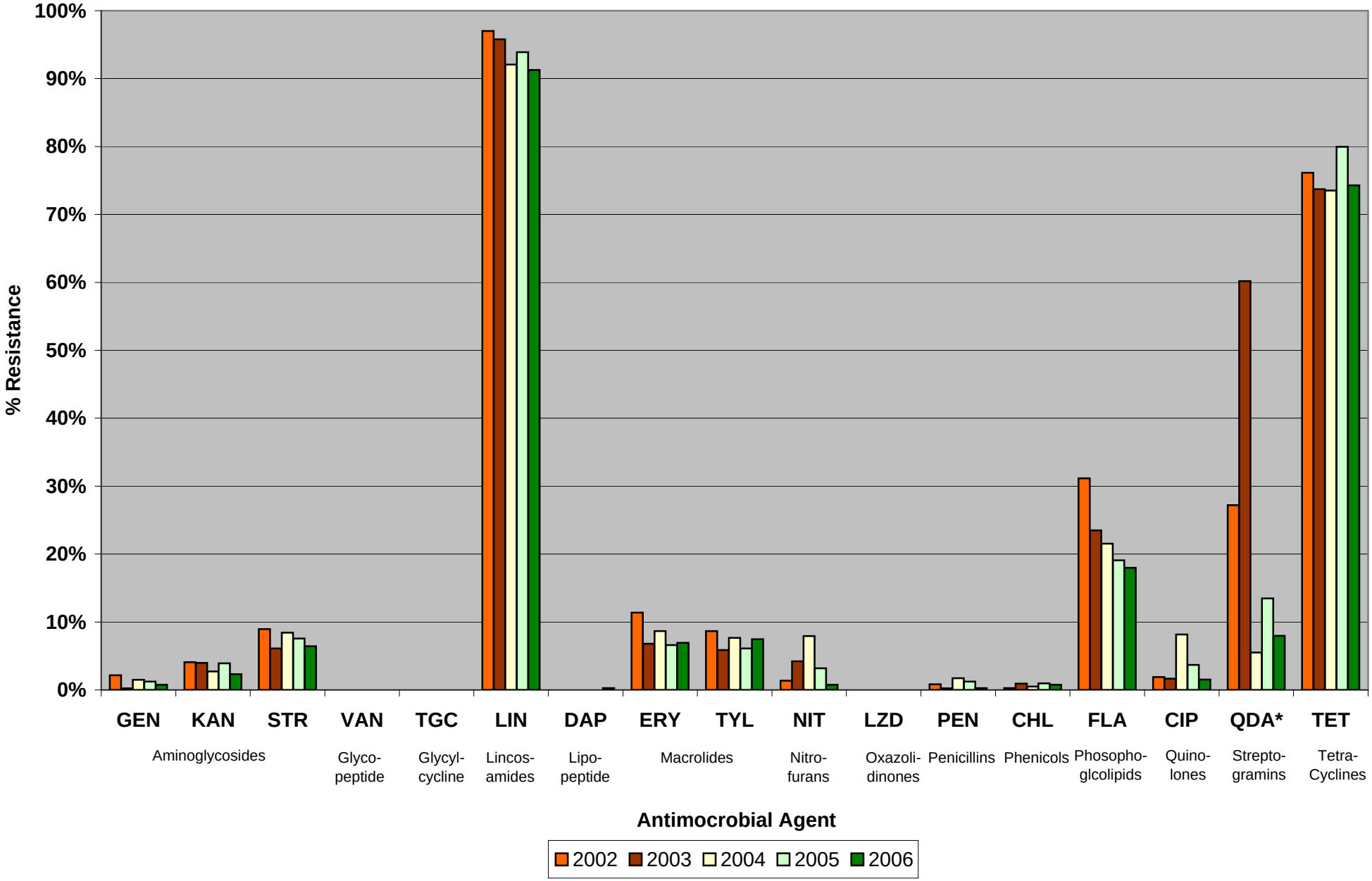

*Data presented for all species except *E. faecalis* , which is considered intrinsically resistant to Quinupristin-Dalfopristin

## Table 17c. Trends in Resistance among *Enterococcus* in Ground Beef Isolates, 2002 - 2006

| Class | Antimicrobial Agent[1] | 2002 (N=383) | | 2003 (N=432) | | 2004 (N=448) | | 2005 (N=447) | | 2006 (N=435) | | Cochran-Armitage Trend | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[2] | n | %R | n | %R | n | %R | n | %R | Z Statistic | P Value[3] |
| Aminoglycosides | Gentamycin | 7 | 1.8% | 4 | 0.9% | 2 | 0.4% | 6 | 1.3% | 3 | 0.7% | -1.1217 | 0.2620 |
| | Kanamycin | 8 | 2.1% | 19 | 4.4% | 20 | 4.5% | 15 | 3.4% | 9 | 2.1% | -0.5320 | 0.5947 |
| | Streptomycin | 15 | 3.9% | 18 | 4.2% | 24 | 5.4% | 25 | 5.6% | 16 | 3.7% | 0.2451 | 0.8064 |
| Glycopeptides | Vancomycin | 0 | -[4] | 0 | - | 0 | - | 0 | - | 0 | - | N/A | N/A[5] |
| Glycylcycline | Tigecycline | Not Tested | | Not Tested | | Not Tested | | 0 | - | 0 | - | N/A | N/A |
| Lincosamides | Lincomycin | 352 | 91.9% | 371 | 85.9% | 378 | 84.4% | 407 | 91.1% | 345 | 78.8% | -3.8683 | 0.0001 |
| Lipopeptides | Daptomycin | Not Tested | | Not Tested | | 21 | 4.7% | 0 | - | 0 | - | -5.6235 | <0.0001[6] |
| Macrolides | Erythromycin | 29 | 7.6% | 34 | 7.9% | 29 | 6.5% | 31 | 6.9% | 30 | 6.8% | -0.5973 | 0.5503 |
| | Tylosin | 25 | 6.5% | 25 | 5.8% | 23 | 5.1% | 32 | 7.2% | 28 | 6.4% | 0.3386 | 0.7349 |
| Nitrofurans | Nitrofurantoin | 18 | 4.7% | 43 | 10.0% | 90 | 20.1% | 35 | 7.8% | 16 | 3.7% | -1.2625 | 0.2068 |
| Oxazolidinones | Linezolid | 0 | - | 0 | - | 0 | - | 0 | - | 0 | - | N/A | N/A |
| Penicillins | Penicillin | 0 | - | 9 | 2.1% | 6 | 1.3% | 3 | 0.7% | 6 | 1.4% | 0.6794 | 0.4969 |
| Phenicols | Chloramphenicol | 2 | 0.5% | 0 | - | 2 | 0.4% | 1 | 0.2% | 3 | 0.7% | 0.6454 | 0.5187 |
| Phosphoglycolipids | Flavomycin | 165 | 43.1% | 201 | 46.5% | 239 | 53.3% | 204 | 45.6% | 191 | 43.6% | -0.0993 | 0.9209 |
| Quinolones | Ciprofloxacin | 12 | 3.1% | 38 | 8.8% | 71 | 15.8% | 29 | 6.5% | 27 | 6.2% | 0.6036 | 0.5461 |
| Streptogramins | Quinupristin-Dalfopristin[7] | 80 | 46.2% | 113 | 54.3% | 19 | 7.5% | 20 | 9.0% | 12 | 5.7% | -13.4191 | <0.0001 |
| Tetracyclines | Tetracycline | 108 | 28.2% | 120 | 27.8% | 136 | 30.4% | 172 | 38.5% | 121 | 27.6% | 1.3388 | 0.1806 |

[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] Z Statistic and P Value could not be calculated due insufficient data or no resistance observed.
[6] Z Statistic and P Value based on 3 years of data.
[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, 2002-2006




*Data presented for all species except *E. faecalis* , which is considered intrinsically resistant to Quinupristin-Dalfopristin

## Table 17d. Trends in Resistance among *Enterococcus* in Pork Chop Isolates, 2002 - 2006

| Class | Antimicrobial Agent[1] | 2002 (N=369) | | 2003 (N=426 | | 2004 (N=404) | | 2005 (N=409) | | 2006 (N=389) | | Cochran-Armitage Trend | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[2] | n | %R | n | %R | n | %R | n | %R | Z Statistic | P Value[3] |
| Aminoglycosides | Gentamicin | 8 | 2.2% | 1 | 0.2% | 6 | 1.5% | 5 | 1.2% | 3 | 0.8% | -0.9442 | 0.3450 |
| | Kanamycin | 15 | 4.1% | 17 | 4.0% | 11 | 2.7% | 16 | 3.9% | 9 | 2.3% | -1.2222 | 0.2216 |
| | Streptomycin | 33 | 8.9% | 26 | 6.1% | 34 | 8.4% | 31 | 7.6% | 25 | 6.4% | -0.7782 | 0.4364 |
| Glycopeptides | Vancomycin | 0 | -[4] | 0 | - | 0 | - | 0 | - | 0 | - | N/A | N/A[5] |
| Glycylcycline | Tigecycline | Not Tested | | Not Tested | | Not Tested | | 0 | - | 0 | - | N/A | N/A |
| Lincosamides | Lincomycin | 358 | 97.0% | 408 | 95.8% | 372 | 92.1% | 384 | 93.9% | 355 | 91.3% | -3.4929 | 0.0005 |
| Lipopeptides | Daptomycin | Not Tested | | Not Tested | | 0 | - | 0 | - | 1 | 0.3% | 1.2472 | 0.2123[6] |
| Macrolides | Erythromycin | 42 | 11.4% | 29 | 6.8% | 35 | 8.7% | 27 | 6.6% | 27 | 6.9% | -2.0047 | 0.0450 |
| | Tylosin | 32 | 8.7% | 25 | 5.9% | 31 | 7.7% | 25 | 6.1% | 29 | 7.5% | -0.4778 | 0.6328 |
| Nitrofurans | Nitrofurantoin | 5 | 1.4% | 18 | 4.2% | 32 | 7.9% | 13 | 3.2% | 3 | 0.8% | -0.8526 | 0.3939 |
| Oxazolidinones | Linezolid | 0 | - | 0 | - | 0 | - | 0 | - | 0 | - | N/A | N/A |
| Penicillins | Penicillin | 3 | 0.8% | 1 | 0.2% | 7 | 1.7% | 5 | 1.2% | 1 | 0.3% | -0.0343 | 0.9727 |
| Phenicols | Chloramphenicol | 1 | 0.3% | 4 | 0.9% | 2 | 0.5% | 4 | 1.0% | 3 | 0.8% | 0.7399 | 0.4594 |
| Phosphoglycolipids | Flavomycin | 115 | 31.2% | 100 | 23.5% | 87 | 21.5% | 78 | 19.1% | 70 | 18.0% | -4.5104 | <0.0001 |
| Quinolones | Ciprofloxacin | 7 | 1.9% | 7 | 1.6% | 33 | 8.2% | 15 | 3.7% | 6 | 1.5% | 0.4625 | 0.6437 |
| Streptogramins | Quinupristin-Dalfopristin[7] | 31 | 27.2% | 68 | 60.2% | 5 | 5.5% | 12 | 13.5% | 7 | 8.0% | -6.2338 | <0.0001 |
| Tetracyclines | Tetracycline | 281 | 76.2% | 314 | 73.7% | 297 | 73.5% | 327 | 80.0% | 289 | 74.3% | 0.4350 | 0.6636 |

[1] Blank gray areas indicate antibiotic not tested in that year.
[2] %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] Z Statistic and P Value could not be calculated due to insufficient data or no resistance observed.
[6] Z Statistic and P Value calculated based on 3 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 *E. faecium* from Chicken Breast, 2006**

| 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 | **23.0%** | (16.0 - 31.4) | | | | | | | | | | | | | | 73.8 | 3.2 | **2.4** | **1.6** | **19.0** | |
| | faecium | N/A | **6.0%** | (3.7 - 9.3) | | | | | | | | | | | | | | 93.7 | 0.3 | **1.6** | **1.3** | **3.2** | |
| Kanamycin | faecalis | N/A | **30.2%** | (22.3 - 39.0) | | | | | | | | | | | | | | 69.0 | 0.8 | | **0.8** | **29.4** | |
| | faecium | N/A | **6.3%** | (3.9 - 9.6) | | | | | | | | | | | | | | 78.1 | 13.0 | 2.5 | | **6.3** | |
| Streptomycin | faecalis | N/A | **10.3%** | (5.6 - 17.0) | | | | | | | | | | | | | | | | 89.7 | **2.4** | **3.2** | **4.8** |
| | faecium | N/A | **3.8%** | (2.0 - 6.6) | | | | | | | | | | | | | | | | 96.2 | **1.6** | **0.6** | **1.6** |
| **Glycopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Vancomycin | faecalis | 0.0% | **0.0%** | (0.0 - 2.9) | | | | | | | 61.9 | 33.3 | 4.8 | | | | | | | | | | |
| | faecium | 0.0% | **0.0%** | (0.0 - 1.2) | | | | | | 77.1 | 15.6 | 7.0 | 0.3 | | | | | | | | | | |
| **Glycylcycline** | | | | | | | | | | | | | | | | | | | | | | | |
| Tigecycline[5] | faecalis | N/A | **0.0%** | (0.0 - 2.9) | | 23 | 28.6 | 44.4 | 4.0 | | | | | | | | | | | | | | |
| | faecium | N/A | **0.0%** | (0.0 - 1.2) | 0.3 | 26.0 | 46.0 | 24.4 | 3.2 | | | | | | | | | | | | | | |
| **Lincosamides** | | | | | | | | | | | | | | | | | | | | | | | |
| Lincomycin | faecalis | 0.0% | **100.0%** | (97.1 - 100.0) | | | | | | | | | | **1.6** | **26.2** | **31.0** | **41.3** | | | | | | |
| | faecium | 1.0% | **74.9%** | (69.8 - 79.6) | | | | | | | 22.9 | 1.3 | 1.0 | **9.5** | **16.5** | **0.3** | **48.6** | | | | | | |
| **Lipopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Daptomycin[5] | faecalis | N/A | **0.0%** | (0.0 - 2.9) | | | | | | 22.2 | 75.4 | 2.4 | | | | | | | | | | | |
| | faecium | N/A | **1.6%** | (0.0 - 1.2) | | | | | | 1.3 | 9.2 | 54.0 | 34.0 | 1.6 | | | | | | | | | |
| **Macrolides** | | | | | | | | | | | | | | | | | | | | | | | |
| Erythromicin | faecalis | 34.9% | **34.9%** | (26.6 - 43.9) | | | | | | 30.2 | 27.8 | 6.3 | 0.8 | **0.8** | **34.1** | | | | | | | | |
| | faecium | 58.1% | **9.5%** | (6.5 - 13.3) | | | | | | 32.4 | 12.7 | 32.4 | 13.0 | **1.3** | **8.3** | | | | | | | | |
| Tylosin | faecalis | 0.0% | **36.5%** | (28.1 - 45.6) | | | | | | | 4.0 | 56.3 | 3.2 | | | | **36.5** | | | | | | |
| | faecium | 0.0% | **7.9%** | (5.2 - 11.5) | | | | | | | 14.6 | 30.2 | 37.8 | 9.5 | | | **7.9** | | | | | | |
| **Nitrofurans** | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrofurantoin | faecalis | 3.2% | **0.0%** | (0.0 - 2.9) | | | | | | | | | | 55.6 | 36.5 | 4.8 | 3.2 | | | | | | |
| | faecium | 54.3% | **38.4%** | (33.0 - 44.0) | | | | | | | | | | 0.3 | 0.3 | 6.7 | 54.3 | **38.4** | | | | | |
| **Oxazolidinones** | | | | | | | | | | | | | | | | | | | | | | | |
| Linezolid | faecalis | 0.0% | **0.0%** | (0.0 - 2.9) | | | | | | 3.2 | 65.1 | 31.7 | | | | | | | | | | | |
| | faecium | 1.6% | **0.0%** | (0.0 - 1.2) | | | | | | | 15.9 | 82.5 | 1.6 | | | | | | | | | | |
| **Penicillins** | | | | | | | | | | | | | | | | | | | | | | | |
| Penicillin | faecalis | N/A | **0.0%** | (0.0 - 2.9) | | | | | | | | 34.9 | 62.7 | 2.4 | | | | | | | | | |
| | faecium | N/A | **22.2%** | (17.8 - 27.2) | | | | | | 5.4 | 2.5 | 10.5 | 47.0 | 12.4 | **10.8** | **11.4** | | | | | | | |
| **Phenicols** | | | | | | | | | | | | | | | | | | | | | | | |
| Chloramphenicol | faecalis | 0.0% | **0.0%** | (0.0 - 2.9) | | | | | | | | | 54.0 | 46.0 | | | | | | | | | |
| | faecium | 0.3% | **0.0%** | (0.0 - 1.2) | | | | | | | | 0.6 | 51.1 | 47.9 | 0.3 | | | | | | | | |
| **Phosphoglcolipids** | | | | | | | | | | | | | | | | | | | | | | | |
| Flavomycin | faecalis | 0.0% | **0.0%** | (0.0 - 2.9) | | | | | | | 27.8 | 72.2 | | | | | | | | | | | |
| | faecium | 10.8% | **75.6%** | (70.4 - 80.2) | | | | | | | | 1.0 | 4.1 | 8.6 | 10.8 | **75.6** | | | | | | | |
| **Quinolones** | | | | | | | | | | | | | | | | | | | | | | | |
| Ciprofloxacin | faecalis | 10.3% | **0.8%** | (0.0 - 4.3) | | | | | | 9.5 | 79.4 | 10.3 | **0.8** | | | | | | | | | | |
| | faecium | 36.5% | **37.5%** | (32.1 - 43.1) | | | | | | 4.4 | 21.6 | 36.5 | **33.3** | **4.1** | | | | | | | | | |
| **Streptogramins** | | | | | | | | | | | | | | | | | | | | | | | |
| Quinupristin-Dalfopristin | faecalis | | | | | | | | | | | | | | | | | | | | | | |
| | faecium | 24.1% | **36.5%** | (32.2 - 42.1) | | | | | | | 39.4 | 24.1 | **11.7** | **21.3** | **3.2** | **0.3** | | | | | | | |
| **Tetracyclines** | | | | | | | | | | | | | | | | | | | | | | | |
| Tetracycline | faecalis | 0.0% | **70.6%** | (61.9 - 78.4) | | | | | | | | | 29.4 | | **2.4** | **11.1** | **57.1** | | | | | | |
| | faecium | 2.9% | **53.0%** | (47.3 - 58.6) | | | | | | | | | 44.1 | 2.9 | **1.6** | **7.3** | **44.1** | | | | | | |

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible. 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 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 *E. faecium* from Ground Turkey, 2006**

| 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 | **22.0%** | (17.4 - 27.2) | | | | | | | | | | | | | | 78.0 | | **0.3** | **0.7** | **21.0** | |
| | faecium | N/A | **15.1%** | (9.6 - 22.2) | | | | | | | | | | | | | | 82.0 | 2.9 | **2.9** | **4.3** | **7.9** | |
| Kanamycin | faecalis | N/A | **32.0%** | (26.6 - 37.7) | | | | | | | | | | | | | | 67.4 | 0.7 | | **0.7** | **31.3** | |
| | faecium | N/A | **33.8%** | (26.0 - 42.3) | | | | | | | | | | | | | | 49.6 | 13.7 | 2.9 | | **33.8** | |
| Streptomycin | faecalis | N/A | **20.3%** | (15.8 - 25.4) | | | | | | | | | | | | | | | | 79.7 | **1.7** | **2.4** | **16.2** |
| | faecium | N/A | **22.3%** | (15.7 - 30.1) | | | | | | | | | | | | | | | | 77.7 | **14.4** | **2.9** | **5.0** |
| **Glycopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Vancomycin | faecalis | 0.0% | **0.0%** | (0.0 - 1.3) | | | | | | 1.0 | 66.3 | 32.3 | 0.3 | | | | | | | | | | |
| | faecium | 0.0% | **0.0%** | (0.0 - 2.6) | | | | | | 63.3 | 21.6 | 15.1 | | | | | | | | | | | |
| **Glycylcycline** | | | | | | | | | | | | | | | | | | | | | | | |
| Tigecycline[5] | faecalis | N/A | **0.0%** | (0.0 - 1.3) | 0.7 | 17.5 | 31.3 | 44.7 | 5.8 | | | | | | | | | | | | | | |
| | faecium | N/A | **0.0%** | (0.0 - 2.6) | | 12.9 | 55.4 | 30.2 | 1.4 | | | | | | | | | | | | | | |
| **Lincosamides** | | | | | | | | | | | | | | | | | | | | | | | |
| Lincomycin | faecalis | 0.0% | **98.6%** | (96.5 - 99.6) | | | | | | | 0.7 | 0.7 | | | **23.4** | **24.1** | **51.2** | | | | | | |
| | faecium | 0.7% | **97.8%** | (93.8 - 99.6) | | | | | | | 0.7 | 0.7 | 0.7 | **2.2** | **15.8** | **0.7** | **79.1** | | | | | | |
| **Lipopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Daptomycin[5] | faecalis | N/A | **0.0%** | (0.0 - 1.3) | | | | | | 33.3 | 63.6 | 1.7 | 1.4 | | | | | | | | | | |
| | faecium | N/A | **3.6%** | (0.0 - 2.6) | | | | | | 1.4 | 8.6 | 43.9 | 42.4 | 3.6 | | | | | | | | | |
| **Macrolides** | | | | | | | | | | | | | | | | | | | | | | | |
| Erythromicin | faecalis | 28.2% | **47.1%** | (41.2 - 53.0) | | | | | | 24.7 | 19.9 | 8.2 | | **1.0** | **46.0** | | | | | | | | |
| | faecium | 30.2% | **44.6%** | (36.2 - 53.3) | | | | | | 25.2 | 14.4 | 10.1 | 5.8 | **11.5** | **33.1** | | | | | | | | |
| Tylosin | faecalis | 0.0% | **47.1%** | (41.2 - 53.0) | | | | | | | 11.7 | 36.8 | 4.5 | | | **0.3** | **46.7** | | | | | | |
| | faecium | 0.0% | **36.0%** | (28.0 - 44.5) | | | | | | | 3.6 | 16.5 | 31.7 | 12.2 | | **1.4** | **34.5** | | | | | | |
| **Nitrofurans** | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrofurantoin | faecalis | 2.4% | **0.0%** | (0.0 - 1.3) | | | | | | | | | | 73.2 | 21.0 | 3.4 | 2.4 | | | | | | |
| | faecium | 41.0% | **22.3%** | (15.7 - 30.1) | | | | | | | | | | 0.7 | 5.0 | 30.9 | 41.0 | **22.3** | | | | | |
| **Oxazolidinones** | | | | | | | | | | | | | | | | | | | | | | | |
| Linezolid | faecalis | 0.0% | **0.0%** | (0.0 - 1.3) | | | | | | 2.7 | 70.4 | 26.8 | | | | | | | | | | | |
| | faecium | 0.0% | **0.0%** | (0.0 - 2.6) | | | | | | | 33.8 | 66.2 | | | | | | | | | | | |
| **Penicillins** | | | | | | | | | | | | | | | | | | | | | | | |
| Penicillin | faecalis | N/A | **0.3%** | (0.0 - 1.9) | | | | | | 0.3 | 0.7 | 37.1 | 58.1 | 3.4 | | **0.3** | | | | | | | |
| | faecium | N/A | **67.6%** | (59.2 - 75.3) | | | | | | 2.2 | 2.9 | 4.3 | 11.5 | 11.5 | **33.8** | **33.8** | | | | | | | |
| **Phenicols** | | | | | | | | | | | | | | | | | | | | | | | |
| Chloramphenicol | faecalis | 0.0% | **0.0%** | (0.0 - 1.3) | | | | | | | | | 47.4 | 52.6 | | | | | | | | | |
| | faecium | 0.7% | **0.0%** | (0.0 - 2.6) | | | | | | | | 0.7 | 45.3 | 53.2 | 0.7 | | | | | | | | |
| **Phosphoglcolipids** | | | | | | | | | | | | | | | | | | | | | | | |
| Flavomycin | faecalis | 0.3% | **0.7%** | (0.1 - 2.5) | | | | | | | 31.3 | 67.7 | | | 0.3 | **0.7** | | | | | | | |
| | faecium | 7.2% | **82.0%** | (74.6 - 88.0) | | | | | | | 1.4 | 2.2 | 1.4 | 5.8 | 7.2 | **82.0** | | | | | | | |
| **Quinolones** | | | | | | | | | | | | | | | | | | | | | | | |
| Ciprofloxacin | faecalis | 9.6% | **0.7%** | (0.1 - 2.5) | | | | | 0.7 | 6.2 | 82.8 | 9.6 | **0.7** | | | | | | | | | | |
| | faecium | 43.2% | **37.4%** | (29.4 - 46.0) | | | | | 1.4 | 3.6 | 14.4 | 43.2 | **30.2** | **7.2** | | | | | | | | | |
| **Streptogramins** | | | | | | | | | | | | | | | | | | | | | | | |
| Quinupristin-Dalfopristin | faecalis | | | | | | | | | | | | | | | | | | | | | | |
| | faecium | 18.7% | **75.5%** | (67.5 - 82.4) | | | | | | | 5.8 | 18.7 | **12.9** | **30.2** | **29.5** | **2.9** | | | | | | | |
| **Tetracyclines** | | | | | | | | | | | | | | | | | | | | | | | |
| Tetracycline | faecalis | 0.7% | **85.9%** | (81.4 - 89.7) | | | | | | | | | 13.4 | 0.7 | **1.7** | **10.0** | **74.2** | | | | | | |
| | faecium | 1.4% | **92.8%** | (87.2 - 96.5) | | | | | | | | | 5.8 | 1.4 | **2.9** | **6.5** | **83.5** | | | | | | |

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible. 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 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 *E. faecium* from Ground Beef, 2006**

| 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 | **0.9%** | (0.1 - 3.1) | | | | | | | | | | | | | | 98.7 | 0.4 | | **0.4** | **0.4** | |
| | faecium | N/A | **0.0%** | (0.0 - 2.9) | | | | | | | | | | | | | | 100.0 | | | | | |
| Kanamycin | faecalis | N/A | **2.6%** | (1.0 - 5.7 | | | | | | | | | | | | | | 97.4 | | | | **2.6** | |
| | faecium | N/A | **1.6%** | (0.2 - 5.7) | | | | | | | | | | | | | | 81.6 | 16.0 | 0.8 | | **1.6** | |
| Streptomycin | faecalis | N/A | **5.7%** | (3.1 - 9.6) | | | | | | | | | | | | | | | | 94.3 | **4.0** | **0.4** | **1.3** |
| | faecium | N/A | **0.8%** | (0.0 - 4.4) | | | | | | | | | | | | | | | | 99.2 | | | **0.8** |
| **Glycopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Vancomycin | faecalis | 0.0% | **0.0%** | (0.0 - 1.6) | | | | | | | 56.8 | 42.3 | 0.9 | | | | | | | | | | |
| | faecium | 0.0% | **0.0%** | (0.0 - 2.9) | | | | | | 76.0 | 12.8 | 11.2 | | | | | | | | | | | |
| **Glycylcycline** | | | | | | | | | | | | | | | | | | | | | | | |
| Tigecycline[5] | faecalis | N/A | **0.0%** | (0.0 - 1.6) | 1.3 | 21.1 | 37.9 | 34.8 | 4.8 | | | | | | | | | | | | | | |
| | faecium | N/A | **0.0%** | (0.0 - 2.9) | 0.8 | 32.0 | 46.4 | 20.8 | | | | | | | | | | | | | | | |
| **Lincosamides** | | | | | | | | | | | | | | | | | | | | | | | |
| Lincomycin | faecalis | 0.0% | **97.8%** | (94.9 - 99.3) | | | | | | | 2.2 | | | **1.8** | **46.7** | **44.5** | **4.8** | | | | | | |
| | faecium | 12.8% | **41.6%** | (32.9 - 50.8) | | | | | | | 32.0 | 13.6 | 12.8 | **7.2** | **28.0** | **2.4** | **4.0** | | | | | | |
| **Lipopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Daptomycin[5] | faecalis | N/A | **0.0%** | (0.0 - 1.6) | | | | | | 25.1 | 70.0 | 4.8 | | | | | | | | | | | |
| | faecium | N/A | **0.8%** | (0.0 - 2.9) | | | | | | 0.8 | 19.2 | 60.0 | 19.2 | 0.8 | | | | | | | | | |
| **Macrolides** | | | | | | | | | | | | | | | | | | | | | | | |
| Erythromicin | faecalis | 63.4% | **4.0%** | (1.8 - 7.4) | | | | | | 32.6 | 52.0 | 11.5 | | | **4.0** | | | | | | | | |
| | faecium | 72.0% | **7.2%** | (3.3 - 13.2) | | | | | | 20.8 | 18.4 | 30.4 | 23.2 | **2.4** | **4.8** | | | | | | | | |
| Tylosin | faecalis | 0.0% | **4.0%** | (1.8 - 7.4) | | | | | | | 15.4 | 76.7 | 3.5 | 0.4 | | | **4.0** | | | | | | |
| | faecium | 0.0% | **4.8%** | (1.8 - 10.2) | | | | | | | 7.2 | 36.0 | 32.0 | 20.0 | | | **4.8** | | | | | | |
| **Nitrofurans** | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrofurantoin | faecalis | 0.0% | **0.0%** | (0.0 - 1.6) | | | | | | | | | 0.4 | 65.2 | 33.0 | 1.3 | | | | | | | |
| | faecium | 65.6% | **12.8%** | (7.5 - 20.0) | | | | | | | | | | 4.0 | 0.8 | 16.8 | 65.6 | **12.8** | | | | | |
| **Oxazolidinones** | | | | | | | | | | | | | | | | | | | | | | | |
| Linezolid | faecalis | 0.0% | **0.0%** | (0.0 - 1.6) | | | | | | 0.4 | 51.1 | 48.5 | | | | | | | | | | | |
| | faecium | 1.6% | **0.0%** | (0.0 - 2.9) | | | | | | | 18.4 | 80.0 | 1.6 | | | | | | | | | | |
| **Penicillins** | | | | | | | | | | | | | | | | | | | | | | | |
| Penicillin | faecalis | N/A | **0.0%** | (0.0 - 1.6) | | | | | | | | 32.6 | 66.5 | 0.9 | | | | | | | | | |
| | faecium | N/A | **4.8%** | (1.8 - 10.2) | | | | | | 27.2 | 8.0 | 10.4 | 36.8 | 12.8 | **4.8** | | | | | | | | |
| **Phenicols** | | | | | | | | | | | | | | | | | | | | | | | |
| Chloramphenicol | faecalis | 0.0% | **1.3%** | (0.3 - 3.8) | | | | | | | | | 61.2 | 37.4 | | | **1.3** | | | | | | |
| | faecium | 0.0% | **0.0%** | (0.0 - 2.9) | | | | | | | | | 65.6 | 34.4 | | | | | | | | | |
| **Phosphoglcolipids** | | | | | | | | | | | | | | | | | | | | | | | |
| Flavomycin | faecalis | 0.0% | **0.4%** | (0.0 - 2.4) | | | | | | | 24.7 | 74.4 | 0.4 | | | | **0.4** | | | | | | |
| | faecium | 2.4% | **91.2%** | (84.8 - 95.5) | | | | | | | | 4.8 | | 1.6 | 2.4 | **91.2** | | | | | | | |
| **Quinolones** | | | | | | | | | | | | | | | | | | | | | | | |
| Ciprofloxacin | faecalis | 24.2% | **0.0%** | (0.0 - 1.6) | | | | | | 9.7 | 66.1 | 24.2 | | | | | | | | | | | |
| | faecium | 19.2% | **21.6%** | (14.7 - 29.8) | | | | | | 17.6 | 41.6 | 19.2 | **12.8** | **8.8** | | | | | | | | | |
| **Streptogramins** | | | | | | | | | | | | | | | | | | | | | | | |
| Quinupristin-Dalfopristin | faecalis | | | | | | | | | | | | | | | | | | | | | | |
| | faecium | 40.8% | **6.4%** | (2.8 - 12.2) | | | | | | | 52.8 | 40.8 | **3.2** | **1.6** | **1.6** | | | | | | | | |
| **Tetracyclines** | | | | | | | | | | | | | | | | | | | | | | | |
| Tetracycline | faecalis | 0.9% | **22.5%** | (17.2 - 28.5) | | | | | | | | | 76.7 | 0.9 | **0.9** | **11.5** | **10.1** | | | | | | |
| | faecium | 1.6% | **20.0%** | (13.4 - 28.1) | | | | | | | | | 78.4 | 1.6 | **2.4** | **4.8** | **12.8** | | | | | | |

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible. 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 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 *E. faecium* from Pork Chop, 2006**

| 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 | **0.7%** | (0.1 - 2.4) | | | | | | | | | | | | | | 99.0 | 0.3 | **0.3** | **0.3** | | |
| | faecium | N/A | **1.4%** | (0.0 - 7.7) | | | | | | | | | | | | | | 98.6 | | **1.4** | | | |
| Kanamycin | faecalis | N/A | **2.3%** | (0.9 - 4.7) | | | | | | | | | | | | | | 97.7 | | | | **2.3** | |
| | faecium | N/A | **2.9%** | (0.3 - 9.9) | | | | | | | | | | | | | | 80.0 | 14.3 | 2.9 | | **2.9** | |
| Streptomycin | faecalis | N/A | **7.6%** | (4.9 - 11.2) | | | | | | | | | | | | | | | | 92.4 | **1.3** | **4.0** | **2.3** |
| | faecium | N/A | **2.9%** | (0.3 - 9.9) | | | | | | | | | | | | | | | | 97.1 | **1.4** | **1.4** | |
| **Glycopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Vancomycin | faecalis | 0.0% | **0.0%** | (0.0 - 1.2) | | | | | | 0.7 | 57.5 | 39.2 | 2.7 | | | | | | | | | | |
| | faecium | 0.0% | **0.0%** | (0.0 - 5.1) | | | | | | 85.7 | 12.9 | 1.4 | | | | | | | | | | | |
| **Glycylcycline** | | | | | | | | | | | | | | | | | | | | | | | |
| Tigecycline[5] | faecalis | N/A | **0.0%** | (0.0 - 1.2) | 0.3 | 17.6 | 34.9 | 45.2 | 2.0 | | | | | | | | | | | | | | |
| | faecium | N/A | **0.0%** | (0.0 - 5.1) | 2.9 | 21.4 | 35.7 | 38.6 | 1.4 | | | | | | | | | | | | | | |
| **Lincosamides** | | | | | | | | | | | | | | | | | | | | | | | |
| Lincomycin | faecalis | 0.0% | **97.3%** | (94.8 - 98.8) | | | | | | | 2.7 | | | **2.3** | **48.8** | **36.5** | **9.6** | | | | | | |
| | faecium | 11.4% | **64.3%** | (51.9 - 75.4) | | | | | | | 21.4 | 2.9 | 11.4 | **24.3** | **31.4** | **1.4** | **7.1** | | | | | | |
| **Lipopeptides** | | | | | | | | | | | | | | | | | | | | | | | |
| Daptomycin[5] | faecalis | N/A | **0.3%** | (0.0 - 1.8) | | | | | | 34.6 | 60.5 | 4.0 | 0.7 | | 0.3 | | | | | | | | |
| | faecium | N/A | **0.0%** | (0.0 - 5.1) | | | | | | 2.9 | 22.9 | 64.3 | 10.0 | | | | | | | | | | |
| **Macrolides** | | | | | | | | | | | | | | | | | | | | | | | |
| Erythromicin | faecalis | 49.5% | **6.6%** | (4.1 - 10.1) | | | | | | 43.9 | 39.5 | 9.3 | 0.7 | | **6.6** | | | | | | | | |
| | faecium | 82.9% | **7.1%** | (2.4 - 15.9) | | | | | | 10.0 | 28.6 | 25.7 | 28.6 | **1.4** | **5.7** | | | | | | | | |
| Tylosin | faecalis | 0.0% | **7.3%** | (4.6 - 10.9) | | | | | | 0.3 | 15.9 | 68.1 | 8.0 | 0.3 | | | **7.3** | | | | | | |
| | faecium | 0.0% | **5.7%** | (1.6 - 14.0) | | | | | | | 7.1 | 20.0 | 34.3 | 32.9 | | | **5.7** | | | | | | |
| **Nitrofurans** | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrofurantoin | faecalis | 0.0% | **0.0%** | (0.0 - 1.2) | | | | | | | | | 0.3 | 61.5 | 36.9 | 1.3 | | | | | | | |
| | faecium | 61.4% | **4.3%** | (0.9 - 12.0) | | | | | | | | | | 4.3 | 2.9 | 27.1 | 61.4 | **4.3** | | | | | |
| **Oxazolidinones** | | | | | | | | | | | | | | | | | | | | | | | |
| Linezolid | faecalis | 0.0% | **0.0%** | (0.0 - 1.2) | | | | | | 0.3 | 60.1 | 39.5 | | | | | | | | | | | |
| | faecium | 1.4% | **0.0%** | (0.0 - 5.1) | | | | | | 1.4 | 18.6 | 78.6 | 1.4 | | | | | | | | | | |
| **Penicillins** | | | | | | | | | | | | | | | | | | | | | | | |
| Penicillin | faecalis | N/A | **0.0%** | (0.0 - 1.2) | | | | | | | 0.3 | 30.2 | 65.8 | 3.7 | | | | | | | | | |
| | faecium | N/A | **1.4%** | (0.0 - 7.7) | | | | | | 17.1 | 18.6 | 7.1 | 48.6 | 7.1 | | **1.4** | | | | | | | |
| **Phenicols** | | | | | | | | | | | | | | | | | | | | | | | |
| Chloramphenicol | faecalis | 0.0% | **1.0%** | (0.2 - 2.9) | | | | | | | | 0.3 | 66.8 | 31.9 | | **0.7** | **0.3** | | | | | | |
| | faecium | 0.0% | **0.0%** | (0.0 - 5.1) | | | | | | | | 2.9 | 61.4 | 35.7 | | | | | | | | | |
| **Phosphoglcolipids** | | | | | | | | | | | | | | | | | | | | | | | |
| Flavomycin | faecalis | 0.0% | **0.0%** | (0.0 - 1.2) | | | | | | | 21.3 | 77.7 | 1.0 | | | | | | | | | | |
| | faecium | 14.3% | **78.6%** | (67.1 - 87.5) | | | | | | | 1.4 | 5.7 | | | 14.3 | **78.6** | | | | | | | |
| **Quinolones** | | | | | | | | | | | | | | | | | | | | | | | |
| Ciprofloxacin | faecalis | 13.3% | **0.3%** | (0.0 - 1.8) | | | | | | 15.6 | 70.8 | 13.3 | | **0.3** | | | | | | | | | |
| | faecium | 25.7% | **4.3%** | (0.9 - 12.0) | | | | | 1.4 | 15.7 | 52.9 | 25.7 | **2.9** | **1.4** | | | | | | | | | |
| **Streptogramins** | | | | | | | | | | | | | | | | | | | | | | | |
| Quinupristin-Dalfopristin | faecalis | | | | | | | | | | | | | | | | | | | | | | |
| | faecium | 61.4% | **10.0%** | (4.1 - 19.5) | | | | | | | 28.6 | 61.4 | **7.1** | **1.4** | **1.4** | | | | | | | | |
| **Tetracyclines** | | | | | | | | | | | | | | | | | | | | | | | |
| Tetracycline | faecalis | 0.3% | **81.4%** | (76.5 - 85.6) | | | | | | | | | 18.3 | 0.3 | **2.0** | **25.9** | **53.5** | | | | | | |
| | faecium | 0.0% | **54.3%** | (41.9 - 66.3) | | | | | | | | | 45.7 | | | **10.0** | **44.3** | | | | | | |

[1] Percent of isolates with intermediate susceptibility.

[2] Percent resistant; for daptomycin and tigecycline, the percent non-susceptible. 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 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, 2006

| | 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*** | 10.3%[1] | 15.2% | 11.4% | - | - | 98.2% | 0.1% | 22.2% | 22.6% | - | - | 0.1% | 0.6% | 0.3% | 0.4% | -[2] | 67.2% |
| ***faecium*** | 6.3% | 10.9% | 7.1% | - | - | 72.3% | - | 16.3% | 13.1% | 26.3% | - | 26.3% | - | 80.3% | 30.8% | 36.2% | 55.3% |
| ***hirae*** | 2.6% | 2.6% | 7.0% | - | - | 81.7% | - | 16.5% | 18.3% | 3.5% | - | 3.5% | - | 91.3% | 5.2% | 8.7% | 48.7% |
| ***durans*** | -[3] | - | - | - | - | 93.8% | - | 12.5% | 12.5% | 6.3% | - | 6.3% | - | 68.8% | 6.3% | 12.5% | 37.5% |
| ***gallinarum*** | - | - | - | - | - | 100.0% | - | - | 25.0% | - | - | - | - | 25.0% | - | - | 50.0% |
| ***casseliflavus*** | - | - | - | - | - | 100.0% | - | - | - | - | - | - | - | 100.0% | 50.0% | - | - |
| **Total** | **8.1%** | **12.6%** | **9.4%** | **-** | **-** | **87.3%** | **0.1%** | **19.5%** | **18.7%** | **10.2%** | **-** | **10.2%** | **0.3%** | **37.1%** | **12.2%** | **66.8%** | **61.1%** |

[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, 2002-2006

| 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% |
| | **Z Statistic[4]** | **-0.0527** | **-0.3232** | **-3.8309** | **N/A** | **N/A** | **0.5123** | **N/A** | **-2.0652** | **-2.1974** | **0.5201** | **N/A** | **N/A** | **N/A** | **0.7946** | **0.9897** | **N/A** | **1.0010** |
| | **P Value[5]** | **0.9580** | **0.7465** | **0.0001** | **N/A** | **N/A** | **0.6084** | **N/A** | **0.0389** | **0.0280** | **0.6030** | **N/A** | **N/A** | **N/A** | **0.4268** | **0.3223** | **N/A** | **0.3168** |
| 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% |
| | **Z Statistic** | **-1.0528** | **0.3096** | **-2.1249** | **N/A** | **N/A** | **0.3841** | **N/A** | **2.9728** | **2.6972** | **-1.3361** | **N/A** | **1.9661** | **-1.4308** | **2.5283** | **1.286** | **N/A** | **-0.3139** |
| | **P Value** | **0.2924** | **0.7569** | **0.0336** | **N/A** | **N/A** | **0.7009** | **N/A** | **0.0030** | **0.0070** | **0.1815** | **N/A** | **0.0493** | **0.1525** | **0.0115** | **0.1984** | **N/A** | **0.7536** |
| 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% |
| | **Z Statistic** | **-1.126** | **0.6211** | **0.9341** | **N/A** | **N/A** | **-0.0187** | **N/A** | **1.0927** | **1.1375** | **0.9599** | **N/A** | **N/A** | **2.4129** | **0.891** | **0.0091** | **N/A** | **-1.126** |
| | **P Value** | **0.2602** | **0.5345** | **0.3503** | **N/A** | **N/A** | **0.9851** | **N/A** | **0.2745** | **0.2553** | **0.3371** | **N/A** | **N/A** | **0.0158** | **0.3729** | **0.9928** | **N/A** | **0.0212** |
| 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% |
| | **Z Statistic** | **-1.1779** | **-1.8879** | **-0.9675** | **N/A** | **N/A** | **-1.9259** | **1.2500** | **-1.1679** | **-0.8199** | **0.4459** | **N/A** | **1.3579** | **0.8378** | **-2.3269** | **0.2578** | **N/A** | **1.5296** |
| | **P Value** | **0.2388** | **0.0590** | **0.3333** | **N/A** | **N/A** | **0.0541** | **0.2113** | **0.2428** | **0.4123** | **0.6557** | **N/A** | **0.1745** | **0.4022** | **0.0200** | **0.7966** | **N/A** | **0.1261** |

[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, 2002-2006

| 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% |
| | **Z Statistic[3]** | **1.5208** | **-0.1970** | **-4.7740** | **N/A** | **N/A** | **-4.4732** | **-4.4074** | **-5.0112** | **-4.0355** | **-5.4457** | **0.6176** | **-7.0395** | **N/A** | **-8.9576** | **6.0859** | **-5.8796** | **-0.2500** |
| | **P Value[4]** | **0.1283** | **0.8439** | **<0.0001** | **N/A** | **N/A** | **<0.0001** | **<0.0001** | **<0.0001** | **<0.0001** | **<0.0001** | **0.5368** | **<0.0001** | **N/A** | **<0.0001** | **<0.0001** | **<0.0001** | **0.8026** |
| 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% |
| | **Z Statistic** | **-0.0213** | **-0.4189** | **-2.3962** | **N/A** | **N/A** | **1.7727** | **-3.9278** | **-0.8072** | **0.4134** | **-5.1689** | **N/A** | **0.0025** | **N/A** | **-3.6086** | **1.7215** | **-1.7448** | **0.9806** |
| | **P Value** | **0.9830** | **0.6753** | **0.0166** | **N/A** | **N/A** | **0.0763** | **<0.0001** | **0.4196** | **0.6793** | **<0.0001** | **N/A** | **0.9980** | **N/A** | **0.0003** | **0.0852** | **0.0810** | **0.3268** |
| 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% |
| | **Z Statistic** | **0.6702** | **-1.6462** | **-1.3191** | **N/A** | **N/A** | **-3.7260** | **N/A** | **-1.6073** | **-0.1932** | **-2.8280** | **N/A** | **0.4784** | **-1.0387** | **-1.7750** | **0.0585** | **-10.0286** | **-0.5023** |
| | **P Value** | **0.5027** | **0.0997** | **0.1871** | **N/A** | **N/A** | **0.0002** | **N/A** | **0.1080** | **0.8468** | **0.0047** | **N/A** | **0.6323** | **0.2989** | **0.0759** | **0.9533** | **<0.0001** | **0.6155** |
| 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% |
| | **Z Statistic** | **0.1670** | **0.8385** | **-0.1112** | **N/A** | **N/A** | **-4.0125** | **N/A** | **-2.3619** | **-0.8091** | **-0.2033** | **N/A** | **-0.4182** | **N/A** | **-3.3674** | **0.5768** | **-5.3425** | **-2.4247** |
| | **P Value** | **0.8674** | **0.4018** | **0.9115** | **N/A** | **N/A** | **<0.0001** | **N/A** | **0.0182** | **0.4185** | **0.8389** | **N/A** | **0.6758** | **N/A** | **0.0008** | **0.5641** | **<0.0001** | **0.0153** |

[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, 2002-2006

| | | Aminoglycosides | | | Glyco-peptides | Glycyl-cycline | Lincos-amides | Lipo-peptides | Macrolides | | Nitro-furans | Oxazolidi-nones | Penicillins | Phenicols | Phospho-glycolipids | Quino-lones | Strepto-gramins | Tetra-cyclines |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Meat Type** | **Year** | **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% |
| | **Z Statistic[3]** | **0.6059** | **-1.3574** | **-1.1564** | **N/A** | **N/A** | **-2.8195** | **N/A** | **-1.1682** | **-0.8473** | **-0.4944** | **N/A** | **-0.7302** | **0.5783** | **-0.4716** | **1.4463** | **-4.2499** | **-3.1792** |
| | **P Value[4]** | **0.5446** | **0.1746** | **0.2475** | **N/A** | **N/A** | **0.0048** | **N/A** | **0.2427** | **0.3968** | **0.6210** | **N/A** | **0.4652** | **0.5630** | **0.6372** | **0.1481** | **<0.0001** | **0.0015** |
| **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% |
| | **Z Statistic** | **1.2990** | **0.0000** | **0.0000** | **N/A** | **N/A** | **N/A** | **N/A** | **0.8216** | **0.8216** | **0.8660** | **N/A** | **1.9640** | **N/A** | **-1.2990** | **1.2990** | **-0.8216** | **0.0000** |
| | **P Value** | **0.1939** | **1.0000** | **1.0000** | **N/A** | **N/A** | **N/A** | **N/A** | **0.4113** | **0.4113** | **0.3865** | **N/A** | **0.0495** | **N/A** | **0.1939** | **0.1939** | **0.4113** | **1.0000** |
| **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% |
| | **Z Statistic** | **1.5381** | **0.0000** | **0.2211** | **N/A** | **N/A** | **-1.4452** | **-5.4616** | **-0.7079** | **-0.5022** | **0.9263** | **N/A** | **0.0000** | **-1.4483** | **-1.2207** | **0.0000** | **-8.3072** | **0.3609** |
| | **P Value** | **0.1240** | **1.0000** | **0.8250** | **N/A** | **N/A** | **0.1484** | **<0.0001** | **0.4790** | **0.6155** | **0.3543** | **N/A** | **1.0000** | **0.1475** | **0.2222** | **1.0000** | **<0.0001** | **0.7182** |
| **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% |
| | **Z Statistic** | **N/A** | **0.2631** | **1.0232** | **N/A** | **N/A** | **-1.3210** | **N/A** | **2.1094** | **2.1094** | **0.6129** | **N/A** | **0.2631** | **N/A** | **1.2527** | **1.4614** | **-1.8997** | **-0.1555** |
| | **P Value** | **N/A** | **0.7925** | **0.3062** | **N/A** | **N/A** | **0.1865** | **N/A** | **0.0349** | **0.0349** | **0.5400** | **N/A** | **0.7925** | **N/A** | **0.2103** | **0.1439** | **0.0575** | **0.8765** |

[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], 2002-2006

| | | Year | | | | | |
|---|---|---|---|---|---|---|---|
| ***Meat Type*** | ***Number of Antimicrobials*** | **2002 (N=893)** | **2003 (N=1014)** | **2004 (N=855)** | **2005 (N=1001)** | **2006 (N=945)** | **Total** |
| **Chicken Breast** | **0** | 1 | 0 | 0 | 1 | 0 | **2** |
| | **1** | 4 | 4 | 1 | 25 | 29 | **63** |
| | **2-4** | 66 | 89 | 53 | 63 | 70 | **341** |
| | **5-7** | 52 | 90 | 31 | 26 | 27 | **226** |
| | **≥8** | 11 | 5 | 3 | 1 | 0 | **20** |
| | **Total** | **134** | **188** | **88** | **116** | **126** | **652** |
| **Ground Turkey** | **0** | 3 | 4 | 1 | 2 | 1 | **11** |
| | **1** | 3 | 5 | 4 | 48 | 31 | **91** |
| | **2-4** | 152 | 133 | 150 | 200 | 189 | **824** |
| | **5-7** | 105 | 103 | 73 | 84 | 70 | **435** |
| | **≥8** | 31 | 44 | 32 | 5 | 0 | **112** |
| | **Total** | **294** | **289** | **260** | **339** | **291** | **1473** |
| **Ground Beef** | **0** | 1 | 5 | 2 | 3 | 4 | **15** |
| | **1** | 23 | 9 | 21 | 143 | 168 | **364** |
| | **2-4** | 179 | 200 | 163 | 70 | 50 | **662** |
| | **5-7** | 3 | 6 | 8 | 9 | 5 | **31** |
| | **≥8** | 3 | 4 | 0 | 1 | 0 | **8** |
| | **Total** | **209** | **224** | **194** | **226** | **227** | **1080** |
| **Pork Chop** | **0** | 0 | 0 | 2 | 4 | 0 | **6** |
| | **1** | 7 | 10 | 30 | 51 | 61 | **159** |
| | **2-4** | 223 | 281 | 252 | 251 | 230 | **1237** |
| | **5-7** | 22 | 20 | 23 | 12 | 9 | **86** |
| | **≥8** | 4 | 2 | 6 | 2 | 1 | **15** |
| | **Total** | **256** | **313** | **313** | **320** | **301** | **1503** |

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

# Table 21b. Number of *Enterococcus faecium* Resistant to Multiple Antimicrobial Agents, 2002-2006

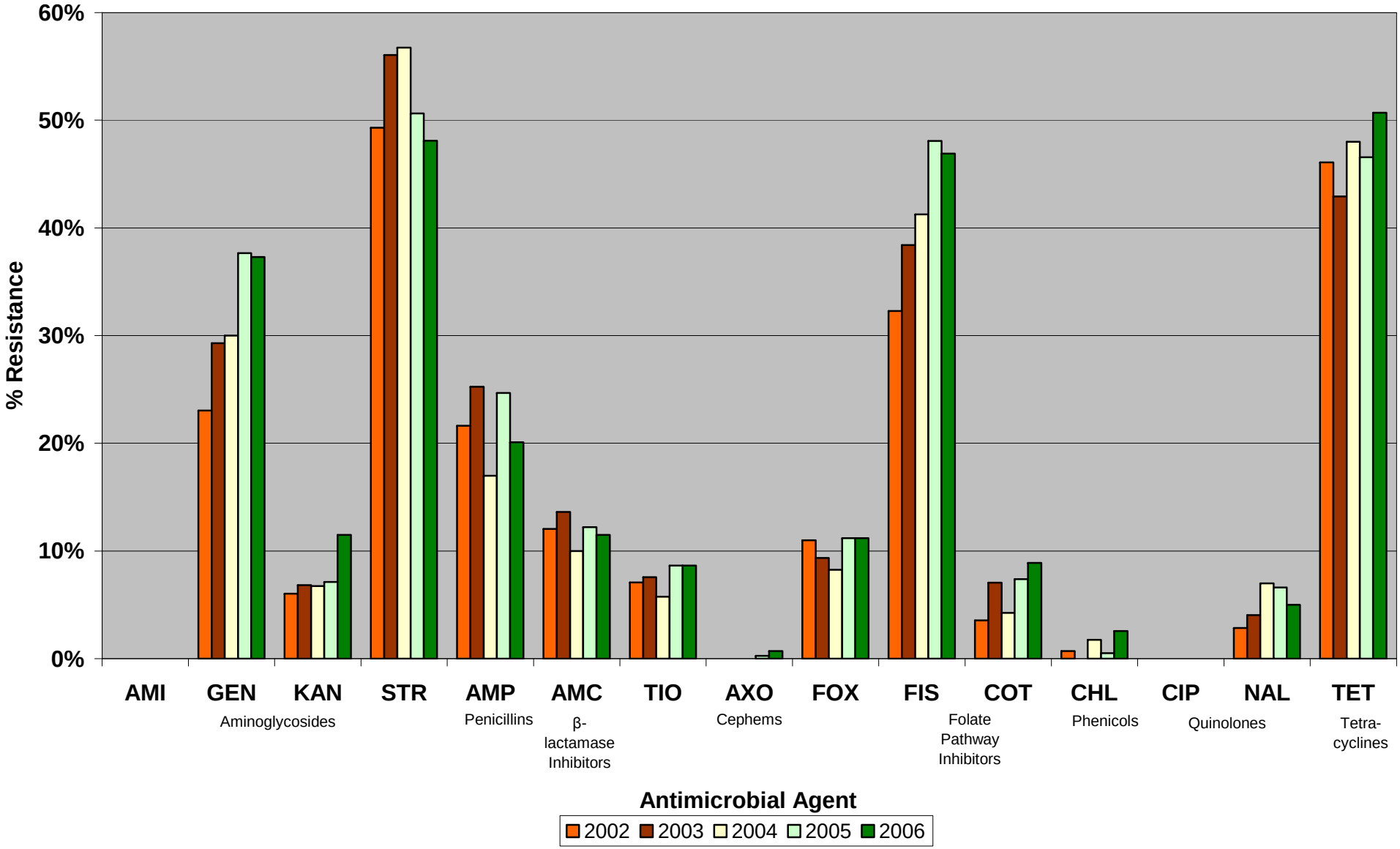
| | | Year | | | | | |
|---|---|---|---|---|---|---|---|
| ***Meat Type*** | ***Number of Antimicrobials*** | **2002 (N=506)** | **2003 (N=575)** | **2004 (N=757)** | **2005 (N=618)** | **2006 (N=649)** | **Total** |
| **Chicken Breast** | **0** | 0 | 0 | 0 | 5 | 3 | **8** |
| | **1** | 0 | 0 | 4 | 28 | 32 | **64** |
| | **2-4** | 80 | 52 | 155 | 141 | 177 | **605** |
| | **5-7** | 118 | 155 | 168 | 109 | 84 | **634** |
| | **≥8** | 33 | 41 | 21 | 24 | 19 | **138** |
| | **Total** | **231** | **248** | **348** | **307** | **315** | **1449** |
| **Ground Turkey** | **0** | 0 | 1 | 0 | 0 | 0 | **1** |
| | **1** | 0 | 0 | 1 | 1 | 0 | **2** |
| | **2-4** | 12 | 16 | 27 | 29 | 28 | **112** |
| | **5-7** | 32 | 48 | 78 | 45 | 72 | **275** |
| | **≥8** | 45 | 53 | 66 | 32 | 39 | **235** |
| | **Total** | **89** | **118** | **172** | **107** | **139** | **625** |
| **Ground Beef** | **0** | 0 | 0 | 0 | 2 | 0 | **2** |
| | **1** | 2 | 2 | 22 | 14 | 51 | **91** |
| | **2-4** | 77 | 67 | 123 | 105 | 67 | **439** |
| | **5-7** | 15 | 37 | 8 | 6 | 4 | **70** |
| | **≥8** | 0 | 6 | 9 | 2 | 3 | **20** |
| | **Total** | **94** | **112** | **162** | **129** | **125** | **622** |
| **Pork Chop** | **0** | 0 | 0 | 0 | 1 | 0 | **1** |
| | **1** | 1 | 2 | 5 | 5 | 15 | **28** |
| | **2-4** | 70 | 50 | 55 | 62 | 50 | **287** |
| | **5-7** | 18 | 42 | 15 | 5 | 3 | **83** |
| | **≥8** | 3 | 3 | 0 | 2 | 2 | **10** |
| | **Total** | **92** | **97** | **75** | **75** | **70** | **409** |

## Table 22. *E. coli* by Meat Type, 2002-2006

| | 2002 | | | 2003 | | | 2004 | | | 2005 | | | 2006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Meat Type** | **N** | **n** | **%[1]** | **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% |
| **Ground Turkey** | 395 | 304 | 77.0% | 447 | 333 | 74.5% | 466 | 376 | 80.7% | 470 | 396 | 84.3% | 466 | 388 | 83.3% |
| **Ground Beef** | 399 | 295 | 73.9% | 470 | 311 | 66.2% | 480 | 338 | 70.4% | 468 | 316 | 67.5% | 471 | 295 | 62.6% |
| **Pork Chop** | 390 | 184 | 47.2% | 479 | 218 | 45.5% | 478 | 232 | 48.5% | 465 | 205 | 44.1% | 472 | 182 | 38.6% |
| **Total** | **1574** | **1065** | **67.7%** | **1873** | **1258** | **67.2%** | **1900** | **1346** | **70.8%** | **1871** | **1310** | **70.0%** | **1884** | **1283** | **68.1%** |

[1] Where % = Number of retail meat samples (N) / Number of positive isolates (n)

**Figure 6a. Antimicrobial Resistance among *E. coli* from Chicken Breast, 2002-2006**

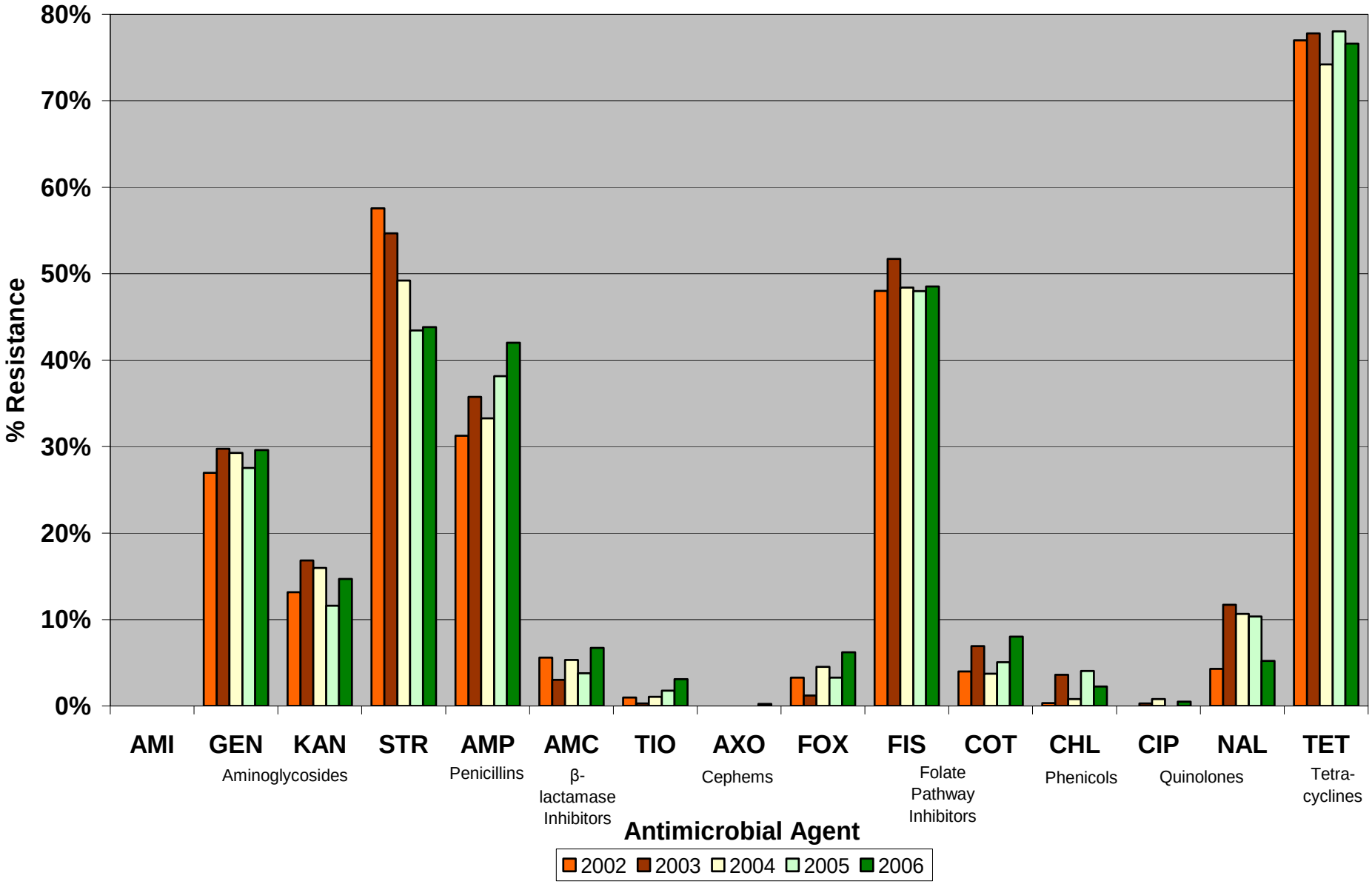


## Table 23a. Trends in Resistance among *E. coli* in Chicken Breast Isolates, 2002-2006

| Class/Subclass | Antimicrobial Agent (µg/ml) | 2002 (N=282) | | 2003 (N=396) | | 2004 (N=400) | | 2005 (N=393) | | 2006 (N=418) | | Cochran Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P Value[3] |
| Aminoglycosides | Amikacin (MIC ≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Gentamicin (MIC ≥ 16) | 65 | 23.1% | 116 | 29.3% | 120 | 30.0% | 148 | 37.7% | 156 | 37.3% | 4.5984 | <0.0001 |
| | Kanamycin (MIC ≥ 64) | 17 | 6.0% | 27 | 6.8% | 27 | 6.8% | 28 | 7.1% | 48 | 11.5% | 2.6353 | 0.0084 |
| | Streptomycin (MIC ≥ 64) | 139 | 49.3% | 222 | 56.1% | 227 | 56.8% | 199 | 50.6% | 201 | 48.1% | -1.3337 | 0.1823 |
| Aminopenicillins | Ampicillin (MIC ≥ 32) | 61 | 21.6% | 100 | 25.3% | 68 | 17.0% | 97 | 24.7% | 84 | 20.1% | -0.6263 | 0.5311 |
| Beta-Lactamase Inhibitor Combinations | Amoxicillin-Clavulanic Acid (MIC ≥ 32) | 34 | 12.1% | 54 | 13.6% | 40 | 10.0% | 48 | 12.2% | 48 | 11.5% | -0.5138 | 0.6074 |
| Cephalosporins (3rd Gen) | Ceftiofur (MIC ≥ 32) | 20 | 7.1% | 30 | 7.6% | 23 | 5.8% | 34 | 8.7% | 36 | 8.6% | 0.9920 | 0.3212 |
| | Ceftriaxone (MIC ≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 1 | 0.3% | 3 | 0.7% | 2.3476 | 0.0189 |
| Cephamycins | Cefoxitin (MIC ≥ 32) | 31 | 11.0% | 37 | 9.3% | 33 | 8.3% | 44 | 11.2% | 47 | 11.2% | 0.6475 | 0.5173 |
| Folate Pathway Inhibitors | Sulfisoxazole (MIC ≥ 512)[4] | 91 | 32.3% | 152 | 38.4% | 165 | 41.3% | 189 | 48.1% | 196 | 46.9% | 4.5591 | <0.0001 |
| | Trimethoprim-Sulfamethoxazole (MIC ≥ 4) | 10 | 3.6% | 28 | 7.1% | 17 | 4.3% | 29 | 7.4% | 37 | 8.9% | 2.5887 | 0.0096 |
| Phenicols | Chloramphenicol (MIC ≥ 512) | 2 | 0.7% | 0 | 0.0% | 7 | 1.8% | 2 | 0.5% | 11 | 2.6% | 2.6384 | 0.0083 |
| Quinolones | Ciprofloxacin (MIC ≥ 4) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Nalidixic Acid (MIC ≥ 32) | 8 | 2.8% | 16 | 4.0% | 28 | 7.0% | 26 | 6.6% | 21 | 5.0% | 1.6494 | 0.0991 |
| Tetracyclines | Tetracycline (MIC ≥ 16) | 130 | 46.1% | 170 | 42.9% | 192 | 48.0% | 183 | 46.6% | 212 | 50.7% | 1.7045 | 0.0883 |

[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, 2002-2006**



## Table 23b. Tends in Resistance among *E. coli* in Ground Turkey Isolates, 2002-2006

| Class/Subclass | Antimicrobial Agent (µg/ml) | 2002 (N=304) | | 2003 (N=333) | | 2004 (N=376) | | 2005 (N=396) | | 2006 (N=388) | | Cochran Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P Value[3] |
| Aminoglycosides | Amikacin (MIC ≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Gentamicin (MIC ≥ 16) | 82 | 27.0% | 99 | 29.7% | 110 | 29.3% | 109 | 27.5% | 115 | 29.6% | 0.3680 | 0.7129 |
| | Kanamycin (MIC ≥ 64) | 40 | 13.2% | 56 | 16.8% | 60 | 16.0% | 46 | 11.6% | 57 | 14.7% | -0.4555 | 0.6487 |
| | Streptomycin (MIC ≥ 64) | 175 | 57.6% | 182 | 54.7% | 185 | 49.2% | 172 | 43.4% | 170 | 43.8% | -4.5396 | <0.0001 |
| Aminopenicillins | Ampicillin (MIC ≥ 32) | 95 | 31.3% | 119 | 35.7% | 125 | 33.2% | 151 | 38.1% | 163 | 42.0% | 2.9680 | 0.0030 |
| Beta-Lactamase Inhibitor Combinations | Amoxicillin-Clavulanic Acid (MIC ≥ 32) | 17 | 5.6% | 10 | 3.0% | 20 | 5.3% | 15 | 3.8% | 26 | 6.7% | 0.9198 | 0.3577 |
| Cephalosporins (3rd Gen) | Ceftiofur (MIC ≥ 32) | 3 | 1.0% | 1 | 0.3% | 4 | 1.1% | 7 | 1.8% | 12 | 3.1% | 2.8659 | 0.0042 |
| | Ceftriaxone (MIC ≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 1 | 0.3% | 1.3477 | 0.1778 |
| Cephamycins | Cefoxitin (MIC ≥ 32) | 10 | 3.3% | 4 | 1.2% | 17 | 4.5% | 13 | 3.3% | 24 | 6.2% | 2.5151 | 0.0119 |
| Folate Pathway Inhibitors | Sulfisoxazole (MIC ≥ 512)[4] | 146 | 48.0% | 172 | 51.7% | 182 | 48.4% | 190 | 48.0% | 188 | 48.5% | -0.3691 | 0.7120 |
| | Trimethoprim-Sulfamethoxazole (MIC ≥ 4) | 12 | 4.0% | 23 | 6.9% | 14 | 3.7% | 20 | 5.1% | 31 | 8.0% | 1.6406 | 0.1009 |
| Phenicols | Chloramphenicol (MIC ≥ 512) | 1 | 0.3% | 12 | 3.6% | 3 | 0.8% | 16 | 4.0% | 9 | 2.3% | 1.6753 | 0.0939 |
| Quinolones | Ciprofloxacin (MIC ≥ 4) | 0 | 0.0% | 1 | 0.3% | 3 | 0.8% | 0 | 0.0% | 2 | 0.5% | 0.6561 | 0.5117 |
| | Nalidixic Acid (MIC ≥ 32) | 13 | 4.3% | 39 | 11.7% | 40 | 10.6% | 41 | 10.4% | 20 | 5.2% | -0.2232 | 0.8234 |
| Tetracyclines | Tetracycline (MIC ≥ 16) | 234 | 77.0% | 259 | 77.8% | 279 | 74.2% | 309 | 78.0% | 297 | 76.6% | -0.0457 | 0.9635 |

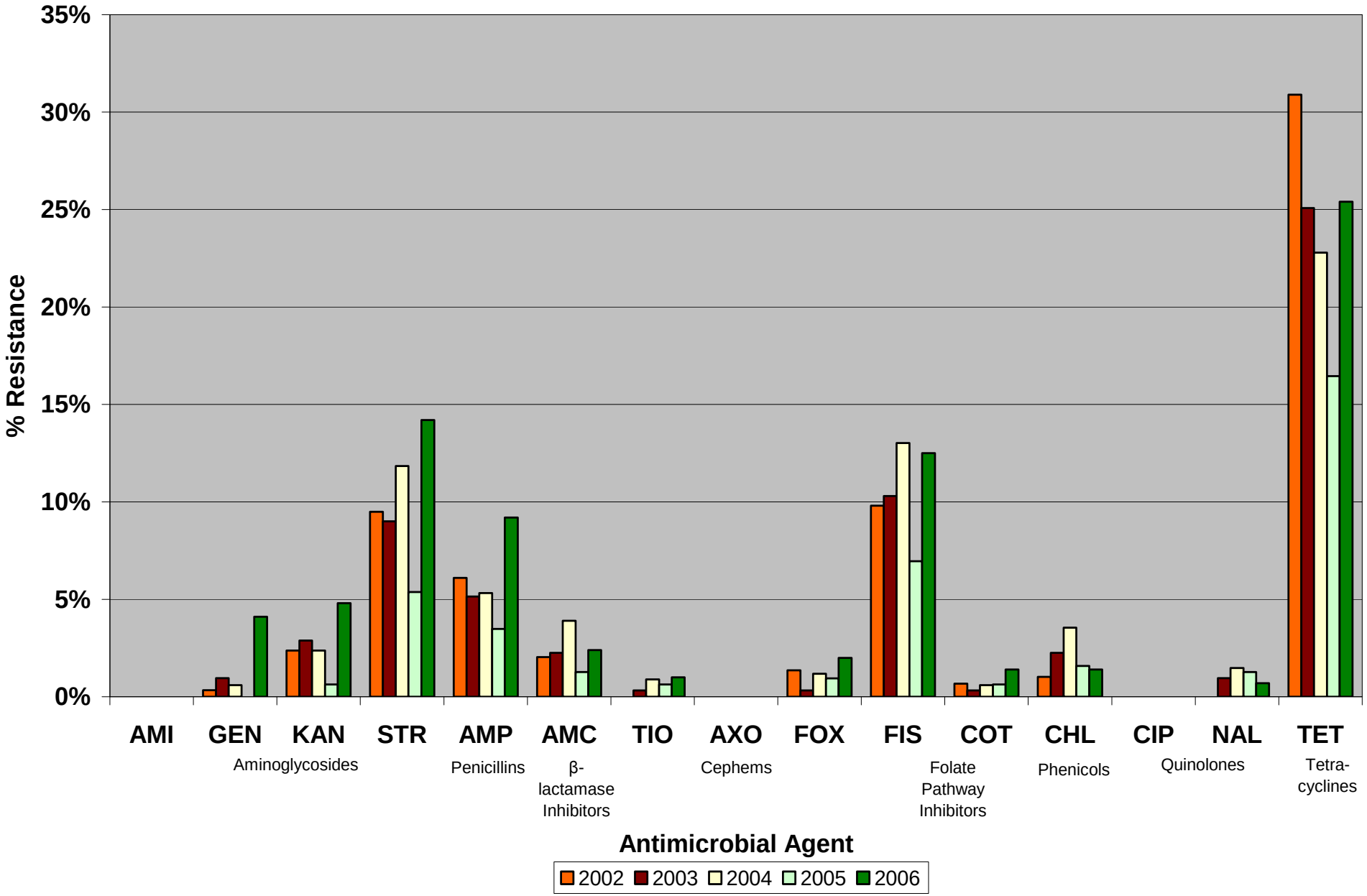
[1] Where % R = the number of resistance isolates (n) / by the number of positive isolates (N).

[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, 2002-2006**

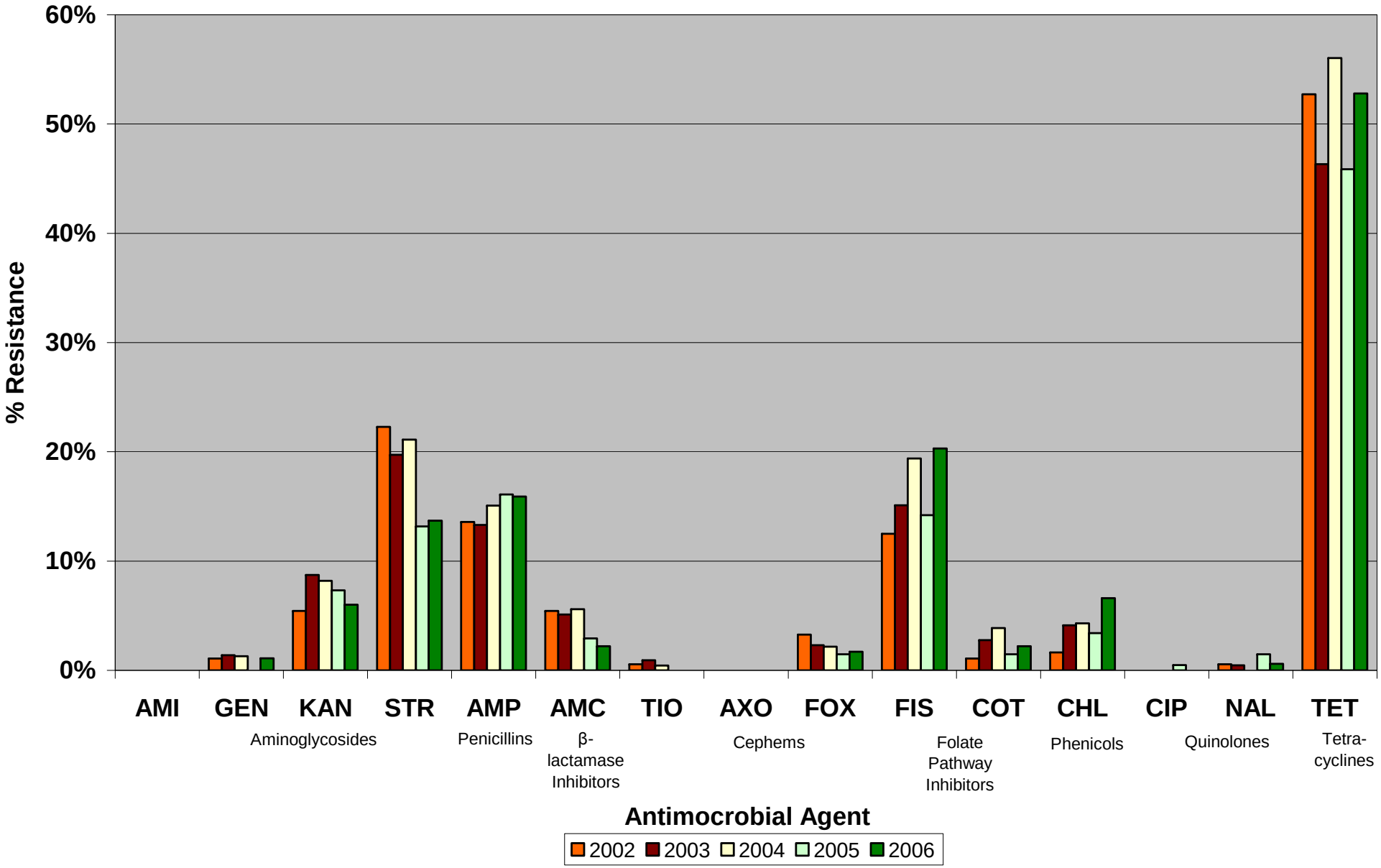


## Table 23c. Trends in Resistance among *E. coli* in Ground Beef Isolates, 2002-2006

| Class/Subclass | Antimicrobial Agent (µg/ml) | 2002 (N=295) | | 2003 (N=311) | | 2004 (N=338) | | 2005 (N=316) | | 2006 (N=295) | | Cochran Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P Value[3] |
| Aminoglycosides | Amikacin (MIC ≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Gentamicin (MIC ≥ 16) | 1 | 0.3% | 3 | 1.0% | 2 | 0.6% | 0 | 0.0% | 12 | 4.1% | 3.2402 | 0.0012 |
| | Kanamycin (MIC ≥ 64) | 7 | 2.4% | 9 | 2.9% | 8 | 2.4% | 2 | 0.6% | 14 | 4.8% | 0.7942 | 0.4271 |
| | Streptomycin (MIC ≥ 64) | 28 | 9.5% | 28 | 9.0% | 40 | 11.8% | 17 | 5.4% | 42 | 14.2% | 1.0079 | 0.3135 |
| Aminopenicillins | Ampicillin (MIC ≥ 32) | 18 | 6.1% | 16 | 5.1% | 18 | 5.3% | 11 | 3.5% | 27 | 9.2% | 0.9960 | 0.3193 |
| Beta-Lactamase Inhibitor Combinations | Amoxicillin-Clavulanic Acid (MIC ≥ 32) | 6 | 2.0% | 7 | 2.3% | 13 | 3.9% | 4 | 1.3% | 7 | 2.4% | -0.1343 | 0.8931 |
| Cephalosporins (3rd Gen) | Ceftiofur (MIC ≥ 32) | 0 | 0.0% | 1 | 0.3% | 3 | 0.9% | 2 | 0.6% | 3 | 1.0% | 1.6815 | 0.0927 |
| | Ceftriaxone (MIC ≥ 64) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| Cephamycins | Cefoxitin (MIC ≥ 32) | 4 | 1.4% | 1 | 0.3% | 4 | 1.2% | 3 | 1.0% | 6 | 2.0% | 1.0164 | 0.3094 |
| Folate Pathway Inhibitors | Sulfisoxazole (MIC ≥ 512)[4] | 29 | 9.8% | 32 | 10.3% | 44 | 13.0% | 22 | 7.0% | 37 | 12.5% | 0.3260 | 0.7444 |
| | Trimethoprim-Sulfamethoxazole (MIC ≥ 4) | 2 | 0.7% | 1 | 0.3% | 2 | 0.6% | 2 | 0.6% | 4 | 1.4% | 1.0839 | 0.2784 |
| Phenicols | Chloramphenicol (MIC ≥ 512) | 3 | 1.0% | 7 | 2.3% | 12 | 3.6% | 5 | 1.6% | 4 | 1.4% | -0.0130 | 0.9896 |
| Quinolones | Ciprofloxacin (MIC ≥ 4) | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | Nalidixic Acid (MIC ≥ 32) | 0 | 0.0% | 3 | 1.0% | 5 | 1.5% | 4 | 1.3% | 2 | 0.7% | 0.9598 | 0.3371 |
| Tetracyclines | Tetracycline (MIC ≥ 16) | 91 | 30.9% | 78 | 25.1% | 77 | 22.8% | 52 | 16.5% | 75 | 25.4% | -2.5367 | 0.0112 |

[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, 2002-2006**



## Table 23d. Trends in Resistance among *E. coli* in Pork Chop Isolates, 2002-2006

| Class/Subclass | Antimicrobial Agent (µg/ml) | 2002 (N=184) | | 2003 (N=218) | | 2004 (N=232) | | 2005 (N=205) | | 2006 (N=182) | | Cochran Armitage Trend Test | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | %R[1] | n | %R | n | %R | n | %R | n | %R | Z Statistic[2] | P Value[3] |
| **Aminoglycosides** | **Amikacin (MIC ≥ 64)** | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| | **Gentamicin (MIC ≥ 16)** | 2 | 1.1% | 3 | 1.4% | 3 | 1.3% | 0 | 0.0% | 2 | 1.1% | -0.6624 | 0.5077 |
| | **Kanamycin (MIC ≥ 64)** | 10 | 5.4% | 19 | 8.7% | 19 | 8.2% | 15 | 7.3% | 11 | 6.0% | -0.0682 | 0.9456 |
| | **Streptomycin (MIC ≥ 64)** | 41 | 22.3% | 43 | 19.7% | 49 | 21.1% | 27 | 13.2% | 25 | 13.7% | -2.6849 | 0.0073 |
| **Aminopenicillins** | **Ampicillin (MIC ≥ 32)** | 25 | 13.6% | 29 | 13.3% | 35 | 15.1% | 33 | 16.1% | 29 | 15.9% | 0.9413 | 0.3466 |
| **Beta-Lactamase Inhibitor Combinations** | **Amoxicillin-Clavulanic Acid (MIC ≥ 32)** | 10 | 5.4% | 11 | 5.1% | 13 | 5.6% | 6 | 2.9% | 4 | 2.2% | -1.8442 | 0.0651 |
| **Cephalosporins (3rd Gen)** | **Ceftiofur (MIC ≥ 32)** | 1 | 0.5% | 2 | 0.9% | 1 | 0.4% | 0 | 0.0% | 0 | 0.0% | -1.4496 | 0.1472 |
| | **Ceftriaxone (MIC ≥ 64)** | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | N/A | N/A |
| **Cephamycins** | **Cefoxitin (MIC ≥ 32)** | 6 | 3.3% | 5 | 2.3% | 5 | 2.2% | 3 | 1.5% | 3 | 1.7% | -1.2104 | 0.2261 |
| **Folate Pathway Inhibitors** | **Sulfisoxazole (MIC ≥ 512)[4]** | 23 | 12.5% | 33 | 15.1% | 45 | 19.4% | 29 | 14.2% | 37 | 20.3% | 1.6669 | 0.0955 |
| | **Trimethoprim-Sulfamethoxazole (MIC ≥ 4)** | 2 | 1.1% | 6 | 2.8% | 9 | 3.9% | 3 | 1.5% | 4 | 2.2% | 0.2127 | 0.8316 |
| **Phenicols** | **Chloramphenicol (MIC ≥ 512)** | 3 | 1.6% | 9 | 4.1% | 10 | 4.3% | 7 | 3.4% | 12 | 6.6% | 1.9563 | 0.0504 |
| **Quinolones** | **Ciprofloxacin (MIC ≥ 4)** | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 1 | 0.5% | 0 | 0.0% | 0.7482 | 0.4543 |
| | **Nalidixic Acid (MIC ≥ 32)** | 1 | 0.5% | 1 | 0.5% | 0 | 0.0% | 3 | 1.5% | 1 | 0.6% | 0.6325 | 0.5271 |
| **Tetracyclines** | **Tetracycline (MIC ≥ 16)** | 97 | 52.7% | 101 | 46.3% | 130 | 56.0% | 94 | 45.9% | 96 | 52.8% | -0.0173 | 0.9862 |

[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, 2002-2006

| Year | | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|
| **Number of Isolates Tested** | **Chicken Breasts** | 282 | 396 | 400 | 393 | 418 |
| | **Ground Turkey** | 304 | 333 | 376 | 397 | 388 |
| | **Ground Beef** | 295 | 311 | 338 | 316 | 295 |
| | **Pork Chops** | 184 | 218 | 232 | 205 | 182 |
| **Resistance Pattern** | **Isolate Source** | | | | | |
| **1. No Resistance Detected** | **Chicken Breasts** | 30.0% 76 | 20.5% 81 | 20.8% 83 | 20.6% 81 | 23.4% 98 |
| | **Ground Turkey** | 16.8% 51 | 14.7% 49 | 19.2% 72 | 16.1% 64 | 16.0% 62 |
| | **Ground Beef** | 63.1% 186 | 66.9% 208 | 73.1% 247 | 81.3% 257 | 71.5% 211 |
| | **Pork Chops** | 41.3% 76 | 44.5% 97 | 37.9% 88 | 48.8% 100 | 42.9% 78 |
| **2. At Least ACSSuT[1] Resistant** | **Chicken Breasts** | 0.35% 1 | 0.0% 0 | 1.25% 5 | 0.25% 1 | 1.44% 6 |
| | **Ground Turkey** | 0.0% 0 | 2.70% 9 | 0.53% 2 | 1.76% 7 | 0.77% 3 |
| | **Ground Beef** | 0.34% 1 | 0.96% 3 | 1.48% 5 | 0.63% 2 | 0.34% 1 |
| | **Pork Chops** | 0.54% 1 | 1.38% 3 | 1.29% 3 | 0.98% 2 | 1.10% 2 |
| **3. At Least ACT/S[2] Resistant** | **Chicken Breasts** | 0.0% 0 | 0.0% 0 | 0.25% 1 | 0.0% 0 | 0.0% 0 |
| | **Ground Turkey** | 0.0% 0 | 0.90% 3 | 0.0% 0 | 0.76% 3 | 0.26% 1 |
| | **Ground Beef** | 0.0% 0 | 0.0% 0 | 0.0% 0 | 0.32% 1 | 0.34% 1 |
| | **Pork Chops** | 0.54% 1 | 0.0% 0 | 0.43% 1 | 0.49% 1 | 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 |
| | **Ground Turkey** | 0.0% 0 | 0.30% 1 | 0.0% 0 | 0.25% 1 | 0.0% 0 |
| | **Ground Beef** | 0.0% 0 | 0.0% 0 | 0.89% 3 | 0.32% 1 | 0.0% 0 |
| | **Pork Chops** | 0.0% 0 | 0.30% 1 | 0.0% 1 | 0.25% 0 | 0.0% 0 |
| **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 |
| | **Ground Turkey** | 0.33% 1 | 0.30% 1 | 0.27% 1 | 0.0% 0 | 0.0% 0 |
| | **Ground Beef** | 0.0% 0 | 0.0% 0 | 0.0% 0 | 0.0% 0 | 0.34% 0 |
| | **Pork Chops** | 0.54% 1 | 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 | | | | | | | |
| 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 | 1.2 | 1.9 | **12.2** | **25.1** | | | | | |
| 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) | 0.9 | **11.5** | (8.6 - 14.9) | | | | | | | | | | 77.5 | 10.0 | 1.0 | **0.5** | **11.0** | | | |
| 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 | | | |
| **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) | 1.2 | **21.8** | (17.9 - 26.0) | | | | | | | 8.1 | 39.7 | 30.1 | 1.4 | 0.5 | | 20.1 | | | | |
| **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) | 0.9 | **12.7** | (9.6 - 16.3) | | | | | | | 1.4 | 23.2 | 50.0 | 13.2 | 0.7 | **8.1** | 3.3 | | | | |
| **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) | 0.5 | **8.9** | (6.3 - 12.0) | | | | 1.2 | 25.6 | 60.3 | 1.9 | 2.2 | 0.2 | **5.5** | **3.1** | | | | | | |
| 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** | | | | |
| **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) | 2.6 | **12.0** | (9.0 - 15.5) | | | | | | | 0.2 | 8.6 | 57.2 | 20.3 | 2.4 | **3.8** | 7.4 | | | | |
| **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 | **47.1** | (42.3 - 52.0) | | | | | | | | | | | 33.0 | 18.2 | 1.9 | | | **46.9** | |
| 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** | | | | | | | |
| **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) | 0.9 | **2.6** | (1.3 - 4.7) | | | | | | | | 1.0 | 39.5 | 56.0 | 1.0 | **0.2** | **2.4** | | | | |
| **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 | | | | | | | | | | | |
| 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** | | | | |
| **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) | 2.1 | **51.0** | (46.1 - 55.8) | | | | | | | | | 47.4 | 2.2 | **1.2** | **4.8** | **44.5** | | | | |

[1] Percent of isolates with intermediate susceptibility

[2] Percent of isolates that were resistant

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

[4] The unshaded areas indicate the 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 | | | | | | | |
| 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** | | | | | |
| 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** | | | |
| 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** | | | |
| **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) | 0.8 | **42.0** | (37.0 - 47.1) | | | | | | | 4.1 | 35.6 | 18.3 | | | **0.3** | **41.8** | | | | |
| **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** | | | | |
| **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** | | | | | | |
| 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** | | | | |
| **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** | | | | |
| **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** | |
| Trimethoprim-Sulfamethoxazole | 2002 (n=304) | N/A | **3.9** | (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** | | | | | | | |
| **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** | | | | |
| **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** | | | | | | | |
| 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** | | | | |
| **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** | | | | |

[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 | | | | | | |
| 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** | | | | | |
| 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) | 0.6 | **4.7** | (2.6 - 7.8) | | | | | | | | | | 92.2 | 2.7 | 0.3 | **0.7** | **4.1** | | | |
| 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 | **14.2** | (10.5 - 18.8) | | | | | | | | | | | | 85.8 | **6.1** | **8.1** | | | |
| **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) | 4.1 | **9.2** | (6.1 - 13.0) | | | | | | | 5.1 | 46.4 | 37.6 | 1.0 | 0.7 | | **9.2** | | | | |
| **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) | 1.6 | **2.4** | (1.0 - 4.8) | | | | | | | 1.4 | 19.0 | 64.1 | 11.9 | 1.4 | **2.0** | **0.3** | | | | |
| **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 - 2.9) | | | | 0.7 | 31.9 | 64.1 | 2.0 | | 0.3 | **0.7** | **0.3** | | | | | | |
| 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 | | | | | |
| **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** | (0.7 - 4.4) | | | | | | | 0.3 | 12.5 | 66.8 | 16.6 | 1.7 | **0.3** | **1.7** | | | | |
| **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 | **12.5** | (9.0 - 16.9) | | | | | | | | | | | 58.6 | 27.1 | 0.7 | 0.3 | 0.7 | **12.5** | |
| 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** | | | | | | | |
| **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) | 0.6 | **1.4** | (0.4 - 3.4) | | | | | | | | 1.0 | 32.5 | 64.4 | 0.7 | **0.3** | **1.0** | | | | |
| **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 | | | | | | | | | | | | |
| 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** | | | | |
| **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) | 6.9 | **25.4** | (20.6 - 30.8) | | | | | | | | | 67.1 | 7.5 | **2.0** | **4.1** | **19.3** | | | | |

[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 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 | | | | | | |
| 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** | | | | | |
| 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** | | | |
| 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** | | | |
| **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) | 3.4 | **15.9** | (10.9 - 22.1) | | | | | | | 3.8 | 47.8 | 30.2 | 0.5 | 1.6 | **1.6** | **14.3** | | | | |
| **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) | 5.6 | **2.2** | (0.6 - 5.5) | | | | | | | | 23.1 | 59.3 | 12.1 | 3.3 | **2.2** | | | | | |
| **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) | 0.9 | **0.0** | (0.0 - 2.0) | | | | 0.5 | 41.2 | 53.8 | 3.8 | | 0.5 | | | | | | | | |
| 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 | | | | | | | |
| **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) | 3.4 | **1.6** | (0.3 - 4.7) | | | | | | | | 12.6 | 68.7 | 14.3 | 2.7 | **1.6** | | | | | |
| **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** | |
| 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** | | | | | | | |
| **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) | 0.9 | **6.6** | (3.5 - 11.2) | | | | | | | | 0.5 | 33.0 | 58.8 | 1.1 | **2.7** | **3.8** | | | | |
| **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 | | | | | | | | | | | | |
| 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** | | | | |
| **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) | 1.7 | **52.7** | (45.2 - 60.2) | | | | | | | | | 46.7 | 0.5 | **1.6** | **4.9** | **46.2** | | | | |

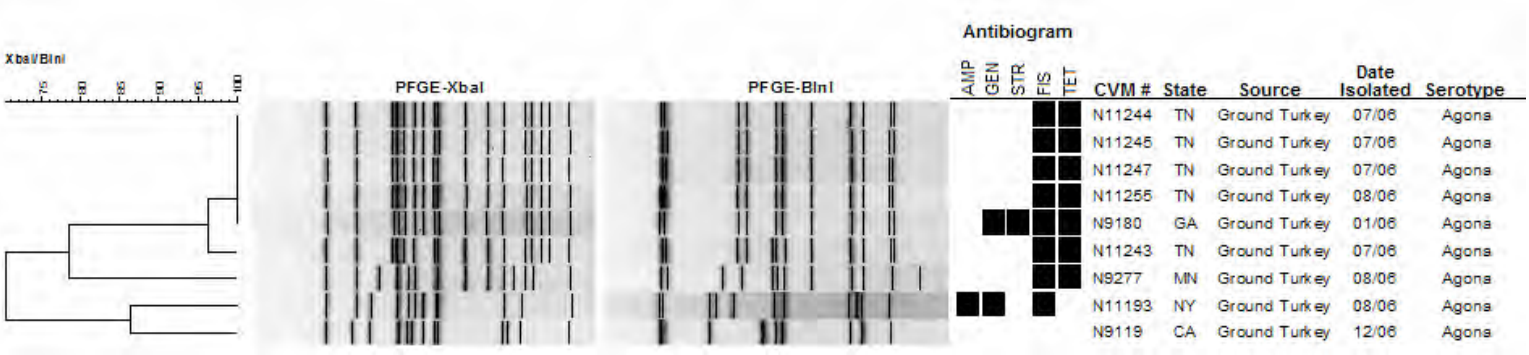
[1] Percent of isolates with intermediate susceptibility

[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

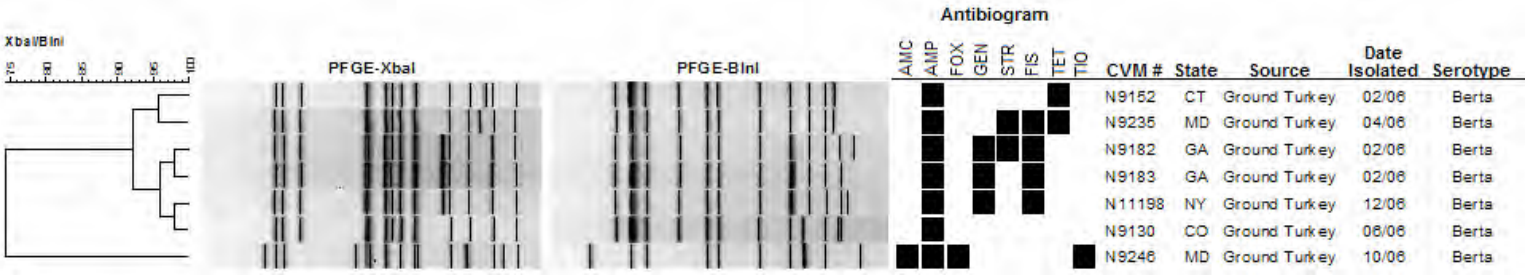
[4] The unshaded areas indicate the dilution range of the Sensititre plates used to test isolates. Vertical black bars indicate the breakpoints for susceptibility, while vertical red bars indicate the breakpoints for resistance. Numbers in the shaded area indicate the percentages of isolates with MICs 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 |
|---|---|---|---|---|
| N11244 | TN | Ground Turkey | 07/06 | Agona |
| N11245 | TN | Ground Turkey | 07/06 | Agona |
| N11247 | TN | Ground Turkey | 07/06 | Agona |
| N11255 | TN | Ground Turkey | 08/06 | Agona |
| N9180 | GA | Ground Turkey | 01/06 | Agona |
| N11243 | TN | Ground Turkey | 07/06 | Agona |
| N9277 | MN | Ground Turkey | 08/06 | Agona |
| N11193 | NY | Ground Turkey | 08/06 | Agona |
| N9119 | CA | Ground Turkey | 12/06 | Agona |

# A-1b. PFGE Profiles for *Salmonella* Berta

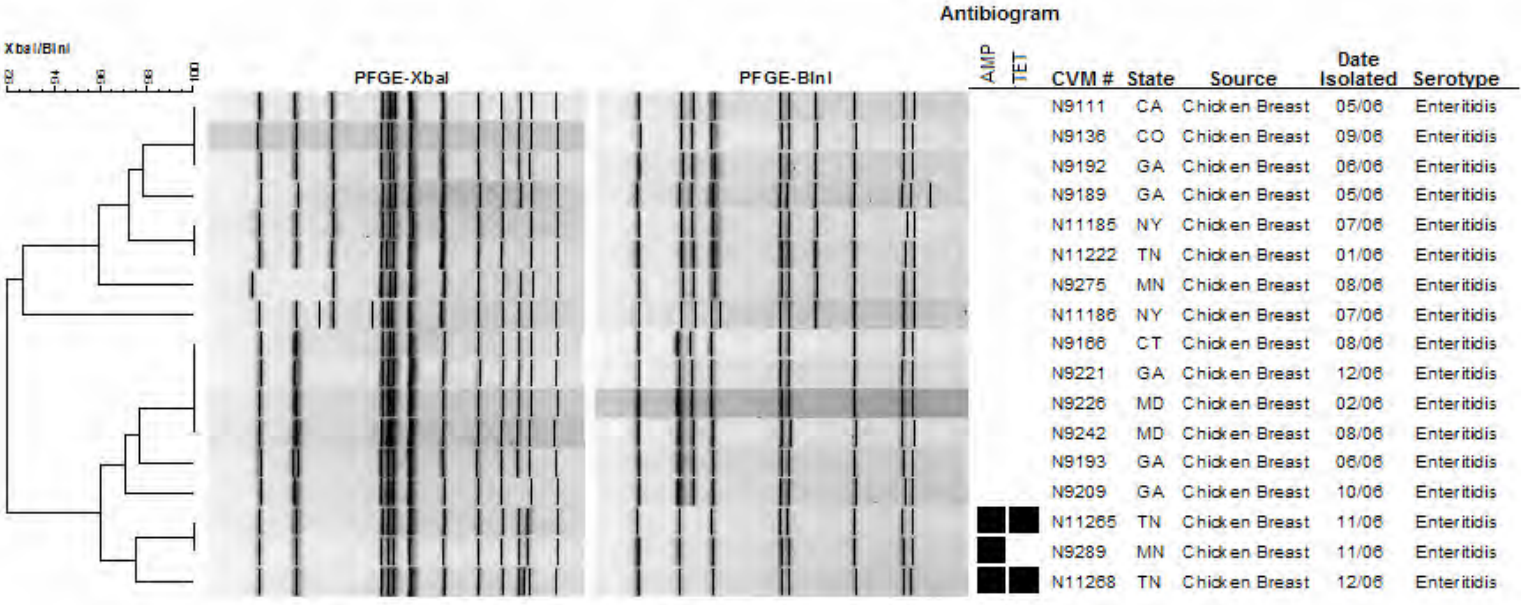



| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N9152 | CT | Ground Turkey | 02/06 | Berta |
| N9235 | MD | Ground Turkey | 04/06 | Berta |
| N9182 | GA | Ground Turkey | 02/06 | Berta |
| N9183 | GA | Ground Turkey | 02/06 | Berta |
| N11198 | NY | Ground Turkey | 12/06 | Berta |
| N9130 | CO | Ground Turkey | 06/06 | Berta |
| N9246 | MD | Ground Turkey | 10/06 | Berta |

# A-1c. PFGE Profiles for *Salmonella* Brandenburg

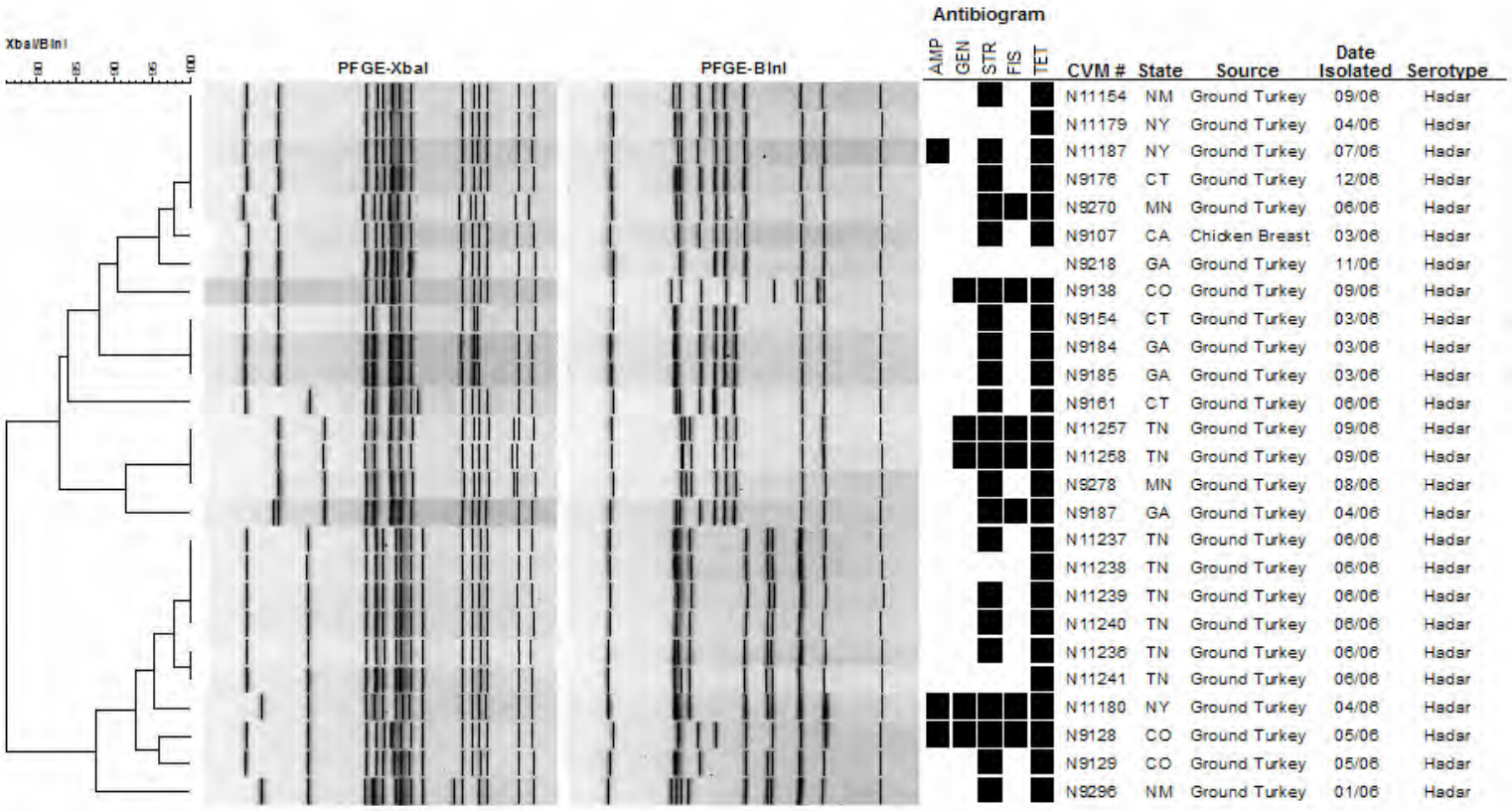

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11125 | NM | Ground Turkey | 01/06 | Brandenburg |
| N11162 | NM | Ground Turkey | 12/06 | Brandenburg |
| N11163 | NM | Ground Turkey | 12/06 | Brandenburg |
| N9297 | NM | Ground Turkey | 01/06 | Brandenburg |

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



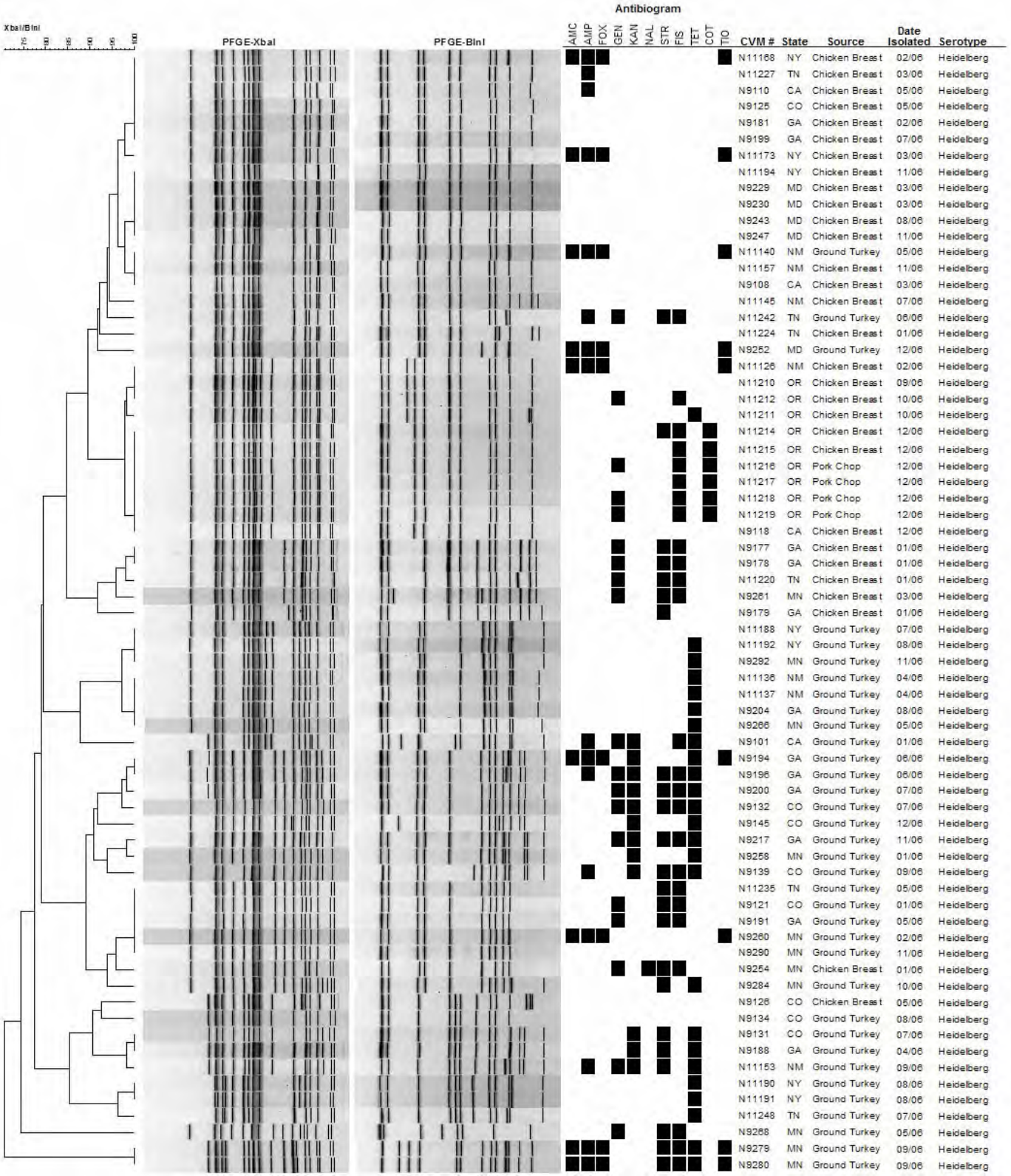

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N9111 | CA | Chicken Breast | 05/06 | Enteritidis |
| N9136 | CO | Chicken Breast | 09/06 | Enteritidis |
| N9192 | GA | Chicken Breast | 06/06 | Enteritidis |
| N9189 | GA | Chicken Breast | 05/06 | Enteritidis |
| N11185 | NY | Chicken Breast | 07/06 | Enteritidis |
| N11222 | TN | Chicken Breast | 01/06 | Enteritidis |
| N9275 | MN | Chicken Breast | 08/06 | Enteritidis |
| N11186 | NY | Chicken Breast | 07/06 | Enteritidis |
| N9166 | CT | Chicken Breast | 08/06 | Enteritidis |
| N9221 | GA | Chicken Breast | 12/06 | Enteritidis |
| N9226 | MD | Chicken Breast | 02/06 | Enteritidis |
| N9242 | MD | Chicken Breast | 08/06 | Enteritidis |
| N9193 | GA | Chicken Breast | 06/06 | Enteritidis |
| N9209 | GA | Chicken Breast | 10/06 | Enteritidis |
| N11265 | TN | Chicken Breast | 11/06 | Enteritidis |
| N9289 | MN | Chicken Breast | 11/06 | Enteritidis |
| N11268 | TN | Chicken Breast | 12/06 | Enteritidis |

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

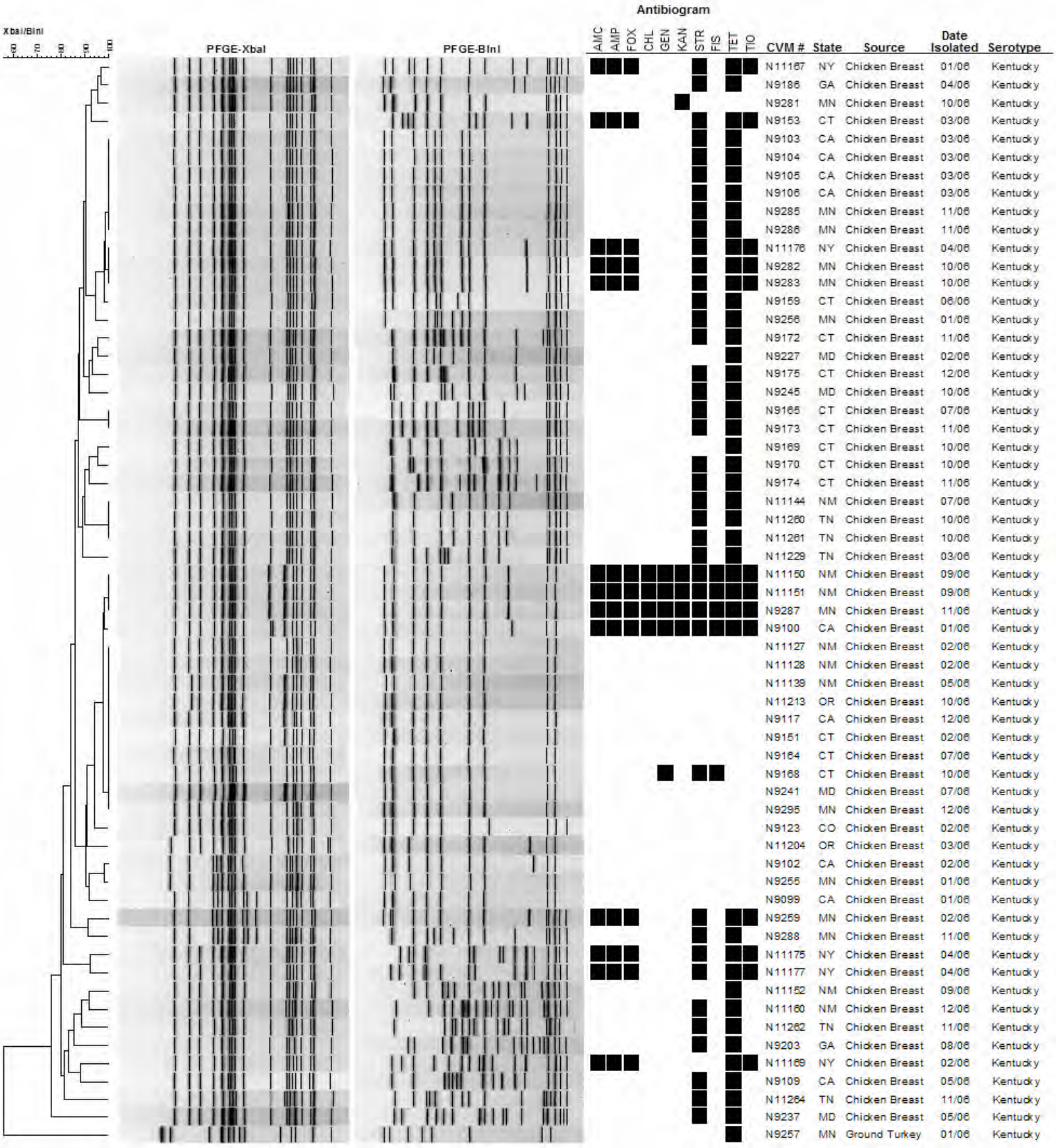



| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11154 | NM | Ground Turkey | 09/06 | Hadar |
| N11179 | NY | Ground Turkey | 04/06 | Hadar |
| N11187 | NY | Ground Turkey | 07/06 | Hadar |
| N9176 | CT | Ground Turkey | 12/06 | Hadar |
| N9270 | MN | Ground Turkey | 06/06 | Hadar |
| N9107 | CA | Chicken Breast | 03/06 | Hadar |
| N9218 | GA | Ground Turkey | 11/06 | Hadar |
| N9138 | CO | Ground Turkey | 09/06 | Hadar |
| N9154 | CT | Ground Turkey | 03/06 | Hadar |
| N9184 | GA | Ground Turkey | 03/06 | Hadar |
| N9185 | GA | Ground Turkey | 03/06 | Hadar |
| N9161 | CT | Ground Turkey | 06/06 | Hadar |
| N11257 | TN | Ground Turkey | 09/06 | Hadar |
| N11258 | TN | Ground Turkey | 09/06 | Hadar |
| N9278 | MN | Ground Turkey | 08/06 | Hadar |
| N9187 | GA | Ground Turkey | 04/06 | Hadar |
| N11237 | TN | Ground Turkey | 06/06 | Hadar |
| N11238 | TN | Ground Turkey | 06/06 | Hadar |
| N11239 | TN | Ground Turkey | 06/06 | Hadar |
| N11240 | TN | Ground Turkey | 06/06 | Hadar |
| N11236 | TN | Ground Turkey | 06/06 | Hadar |
| N11241 | TN | Ground Turkey | 06/06 | Hadar |
| N11180 | NY | Ground Turkey | 04/06 | Hadar |
| N9128 | CO | Ground Turkey | 05/06 | Hadar |
| N9129 | CO | Ground Turkey | 05/06 | Hadar |
| N9296 | NM | Ground Turkey | 01/06 | Hadar |

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

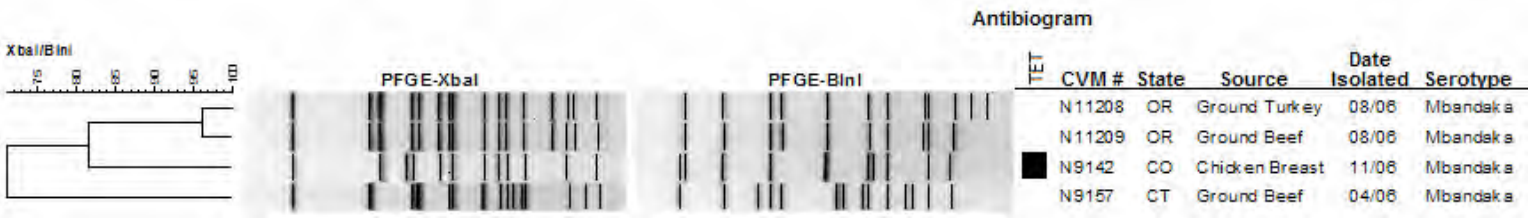


# A-1g. PFGE Profiles for *Salmonella* Kentucky



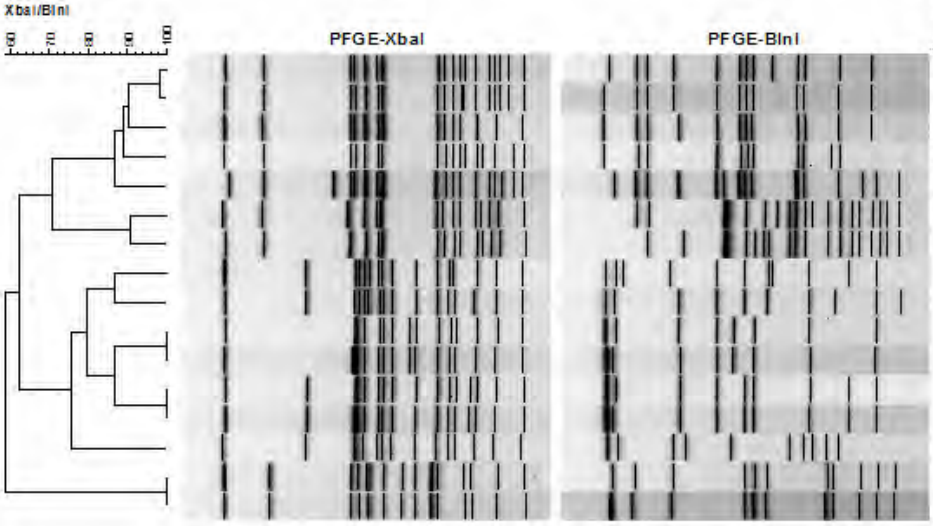

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11167 | NY | Chicken Breast | 01/06 | Kentucky |
| N9186 | GA | Chicken Breast | 04/06 | Kentucky |
| N9281 | MN | Chicken Breast | 10/06 | Kentucky |
| N9153 | CT | Chicken Breast | 03/06 | Kentucky |
| N9103 | CA | Chicken Breast | 03/06 | Kentucky |
| N9104 | CA | Chicken Breast | 03/06 | Kentucky |
| N9105 | CA | Chicken Breast | 03/06 | Kentucky |
| N9106 | CA | Chicken Breast | 03/06 | Kentucky |
| N9285 | MN | Chicken Breast | 11/06 | Kentucky |
| N9286 | MN | Chicken Breast | 11/06 | Kentucky |
| N11176 | NY | Chicken Breast | 04/06 | Kentucky |
| N9282 | MN | Chicken Breast | 10/06 | Kentucky |
| N9283 | MN | Chicken Breast | 10/06 | Kentucky |
| N9159 | CT | Chicken Breast | 06/06 | Kentucky |
| N9256 | MN | Chicken Breast | 01/06 | Kentucky |
| N9172 | CT | Chicken Breast | 11/06 | Kentucky |
| N9227 | MD | Chicken Breast | 02/06 | Kentucky |
| N9175 | CT | Chicken Breast | 12/06 | Kentucky |
| N9245 | MD | Chicken Breast | 10/06 | Kentucky |
| N9165 | CT | Chicken Breast | 07/06 | Kentucky |
| N9173 | CT | Chicken Breast | 11/06 | Kentucky |
| N9169 | CT | Chicken Breast | 10/06 | Kentucky |
| N9170 | CT | Chicken Breast | 10/06 | Kentucky |
| N9174 | CT | Chicken Breast | 11/06 | Kentucky |
| N11144 | NM | Chicken Breast | 07/06 | Kentucky |
| N11260 | TN | Chicken Breast | 10/06 | Kentucky |
| N11261 | TN | Chicken Breast | 10/06 | Kentucky |
| N11229 | TN | Chicken Breast | 03/06 | Kentucky |
| N11150 | NM | Chicken Breast | 09/06 | Kentucky |
| N11151 | NM | Chicken Breast | 09/06 | Kentucky |
| N9287 | MN | Chicken Breast | 11/06 | Kentucky |
| N9100 | CA | Chicken Breast | 01/06 | Kentucky |
| N11127 | NM | Chicken Breast | 02/06 | Kentucky |
| N11128 | NM | Chicken Breast | 02/06 | Kentucky |
| N11139 | NM | Chicken Breast | 05/06 | Kentucky |
| N11213 | OR | Chicken Breast | 10/06 | Kentucky |
| N9117 | CA | Chicken Breast | 12/06 | Kentucky |
| N9151 | CT | Chicken Breast | 02/06 | Kentucky |
| N9164 | CT | Chicken Breast | 07/06 | Kentucky |
| N9168 | CT | Chicken Breast | 10/06 | Kentucky |
| N9241 | MD | Chicken Breast | 07/06 | Kentucky |
| N9295 | MN | Chicken Breast | 12/06 | Kentucky |
| N9123 | CO | Chicken Breast | 02/06 | Kentucky |
| N11204 | OR | Chicken Breast | 03/06 | Kentucky |
| N9102 | CA | Chicken Breast | 02/06 | Kentucky |
| N9255 | MN | Chicken Breast | 01/06 | Kentucky |
| N9099 | CA | Chicken Breast | 01/06 | Kentucky |
| N9259 | MN | Chicken Breast | 02/06 | Kentucky |
| N9288 | MN | Chicken Breast | 11/06 | Kentucky |
| N11175 | NY | Chicken Breast | 04/06 | Kentucky |
| N11177 | NY | Chicken Breast | 04/06 | Kentucky |
| N11152 | NM | Chicken Breast | 09/06 | Kentucky |
| N11160 | NM | Chicken Breast | 12/06 | Kentucky |
| N11262 | TN | Chicken Breast | 11/06 | Kentucky |
| N9203 | GA | Chicken Breast | 08/06 | Kentucky |
| N11169 | NY | Chicken Breast | 02/06 | Kentucky |
| N9109 | CA | Chicken Breast | 05/06 | Kentucky |
| N11264 | TN | Chicken Breast | 11/06 | Kentucky |
| N9237 | MD | Chicken Breast | 05/06 | Kentucky |
| N9257 | MN | Ground Turkey | 01/06 | Kentucky |

# A-1h. PFGE Profiles for *Salmonella* Mbandaka




| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11208 | OR | Ground Turkey | 08/06 | Mbandaka |
| N11209 | OR | Ground Beef | 08/06 | Mbandaka |
| N9142 | CO | Chicken Breast | 11/06 | Mbandaka |
| N9157 | CT | Ground Beef | 04/06 | Mbandaka |

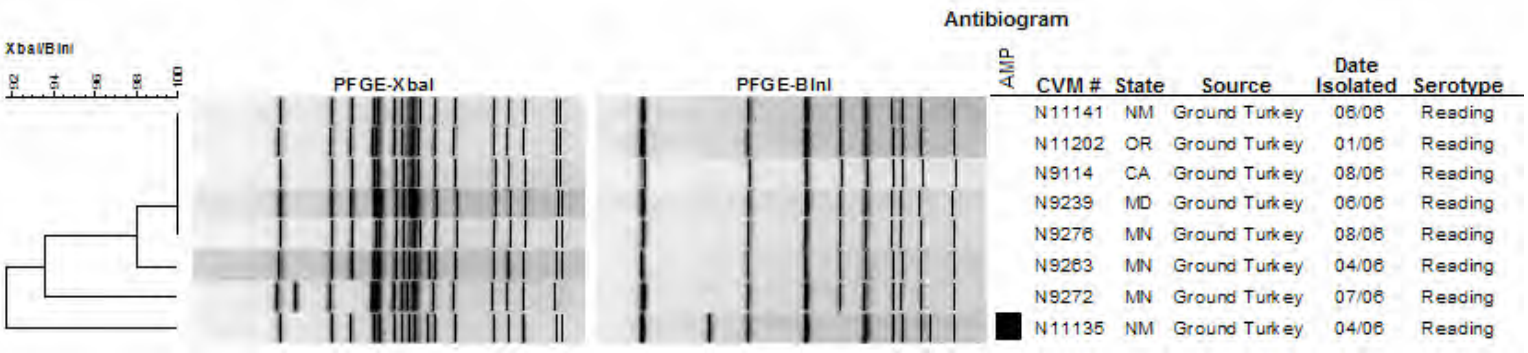
# A-1i. PFGE Profiles for *Salmonella* Montevideo




Antibiogram

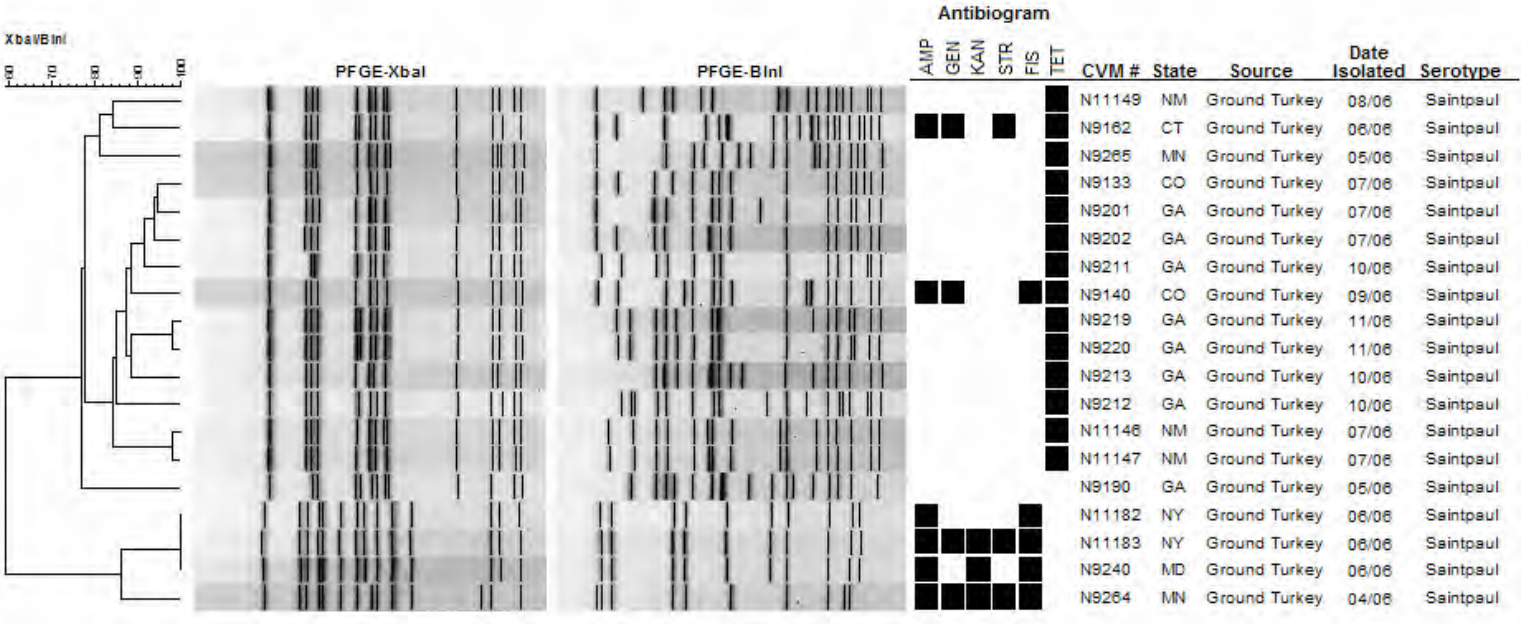
| GEN | KAN | STR | FIS | CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|---|---|---|---|
| ■ | ■ | ■ | | N9222 | GA | Ground Turkey | 12/06 | Montevideo |
| | ■ | ■ | | N9223 | GA | Ground Turkey | 12/06 | Montevideo |
| | | | | N11199 | OR | Ground Turkey | 01/06 | Montevideo |
| ■ | ■ | ■ | | N9253 | MD | Ground Turkey | 12/06 | Montevideo |
| ■ | | ■ | ■ | N9171 | CT | Ground Turkey | 10/06 | Montevideo |
| | | ■ | | N9273 | MN | Ground Turkey | 07/06 | Montevideo |
| | | ■ | ■ | N9274 | MN | Ground Turkey | 07/06 | Montevideo |
| | | | | N9113 | CA | Ground Beef | 07/06 | Montevideo |
| | | | | N9215 | GA | Ground Beef | 10/06 | Montevideo |
| | | | | N9144 | CO | Ground Beef | 11/06 | Montevideo |
| | | | | N9207 | GA | Ground Beef | 09/06 | Montevideo |
| | | | | N11256 | TN | Ground Beef | 08/06 | Montevideo |
| | | | | N9208 | GA | Ground Beef | 09/06 | Montevideo |
| | | | | N9269 | MN | Chicken Breast | 06/06 | Montevideo |
| | | | | N9127 | CO | Chicken Breast | 05/06 | Montevideo |
| | | | | N9225 | MD | Ground Turkey | 01/06 | Montevideo |

# A-1j. PFGE Profiles for *Salmonella* Reading

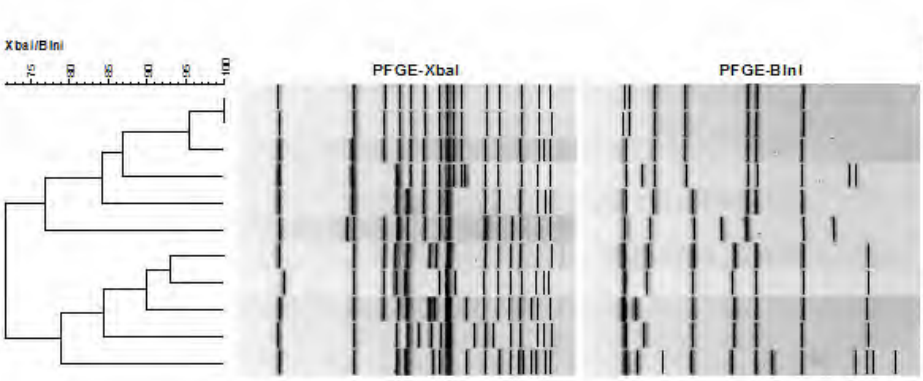



| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11141 | NM | Ground Turkey | 06/06 | Reading |
| N11202 | OR | Ground Turkey | 01/06 | Reading |
| N9114 | CA | Ground Turkey | 08/06 | Reading |
| N9239 | MD | Ground Turkey | 06/06 | Reading |
| N9276 | MN | Ground Turkey | 08/06 | Reading |
| N9263 | MN | Ground Turkey | 04/06 | Reading |
| N9272 | MN | Ground Turkey | 07/06 | Reading |
| N11135 | NM | Ground Turkey | 04/06 | Reading |

# A-1k. PFGE Profiles for *Salmonella* Saintpaul



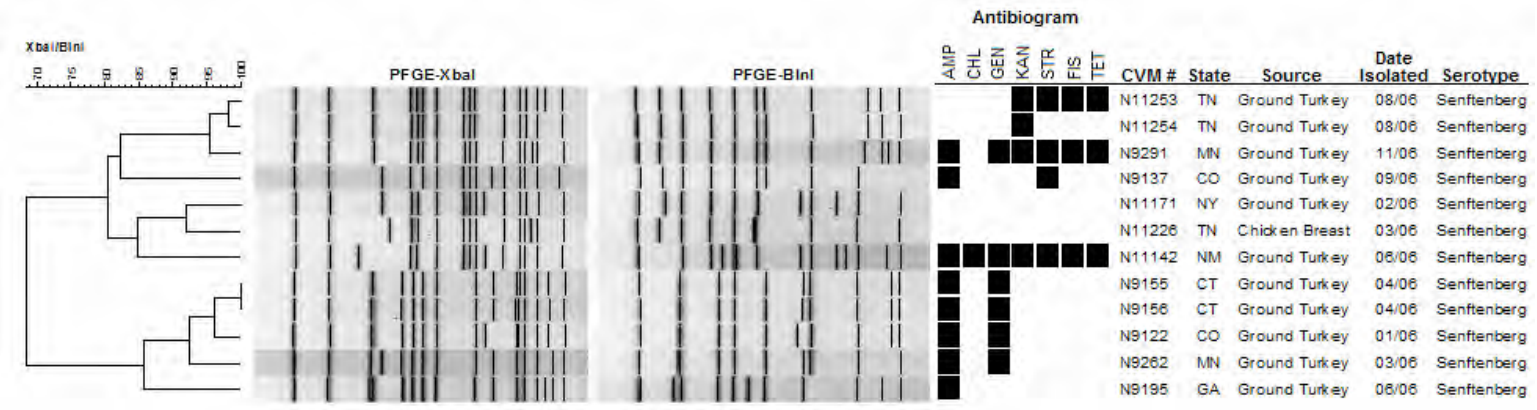
# A-1l. PFGE Profiles for *Salmonella* Schwarzengrund




Antibiogram

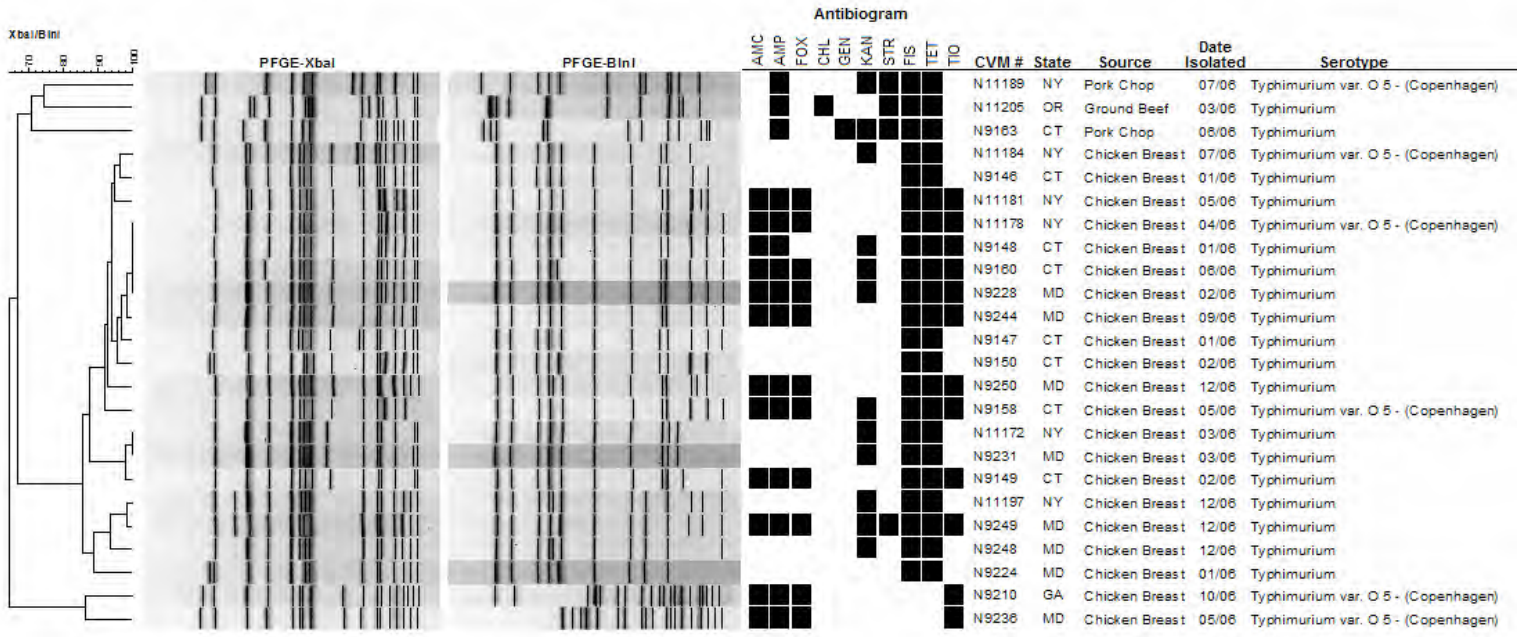
| AMP | GEN | STR | FIS | TET | CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | N11132 | NM | Chicken Breast | 03/06 | Schwarzengrund |
| | | | | | N11133 | NM | Chicken Breast | 03/06 | Schwarzengrund |
| | | | | | N11129 | NM | Chicken Breast | 03/06 | Schwarzengrund |
| | | | | ■ | N9112 | CA | Ground Turkey | 07/06 | Schwarzengrund |
| | | | | | N9216 | GA | Chicken Breast | 11/06 | Schwarzengrund |
| | | | | | N11161 | NM | Ground Turkey | 12/06 | Schwarzengrund |
| | ■ | ■ | ■ | ■ | N11223 | TN | Chicken Breast | 01/06 | Schwarzengrund |
| | | | | | N9267 | MN | Ground Turkey | 05/06 | Schwarzengrund |
| ■ | | ■ | | | N9206 | GA | Ground Turkey | 09/06 | Schwarzengrund |
| | | | | | N9294 | MN | Ground Beef | 11/06 | Schwarzengrund |
| | | | | ■ | N9293 | MN | Ground Turkey | 11/06 | Schwarzengrund |

# A-1m. PFGE Profiles for *Salmonella* Senftenberg



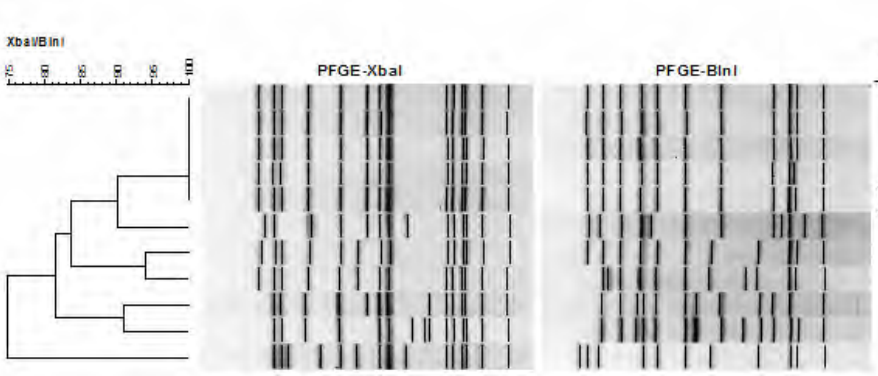

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11253 | TN | Ground Turkey | 08/06 | Senftenberg |
| N11254 | TN | Ground Turkey | 08/06 | Senftenberg |
| N9291 | MN | Ground Turkey | 11/06 | Senftenberg |
| N9137 | CO | Ground Turkey | 09/06 | Senftenberg |
| N11171 | NY | Ground Turkey | 02/06 | Senftenberg |
| N11226 | TN | Chicken Breast | 03/06 | Senftenberg |
| N11142 | NM | Ground Turkey | 06/06 | Senftenberg |
| N9155 | CT | Ground Turkey | 04/06 | Senftenberg |
| N9156 | CT | Ground Turkey | 04/06 | Senftenberg |
| N9122 | CO | Ground Turkey | 01/06 | Senftenberg |
| N9262 | MN | Ground Turkey | 03/06 | Senftenberg |
| N9195 | GA | Ground Turkey | 06/06 | Senftenberg |

# A-1n. PFGE Profiles for *Salmonella* Typhimurium



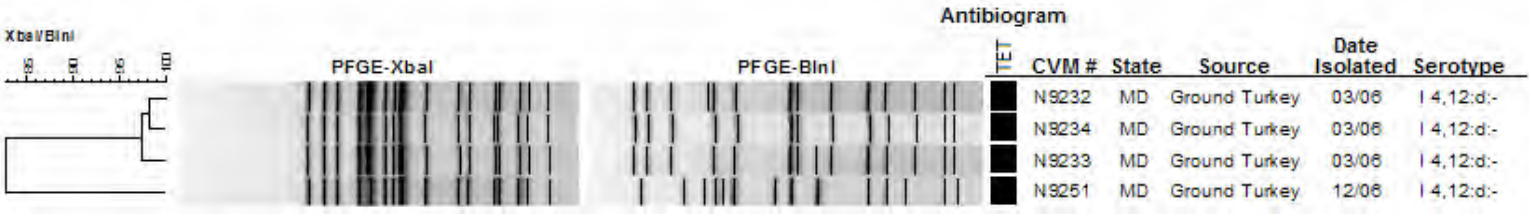

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11189 | NY | Pork Chop | 07/06 | Typhimurium var. O 5 - (Copenhagen) |
| N11205 | OR | Ground Beef | 03/06 | Typhimurium |
| N9163 | CT | Pork Chop | 06/06 | Typhimurium |
| N11184 | NY | Chicken Breast | 07/06 | Typhimurium var. O 5 - (Copenhagen) |
| N9146 | CT | Chicken Breast | 01/06 | Typhimurium |
| N11181 | NY | Chicken Breast | 05/06 | Typhimurium |
| N11178 | NY | Chicken Breast | 04/06 | Typhimurium var. O 5 - (Copenhagen) |
| N9148 | CT | Chicken Breast | 01/06 | Typhimurium |
| N9160 | CT | Chicken Breast | 06/06 | Typhimurium |
| N9228 | MD | Chicken Breast | 02/06 | Typhimurium |
| N9244 | MD | Chicken Breast | 09/06 | Typhimurium |
| N9147 | CT | Chicken Breast | 01/06 | Typhimurium |
| N9150 | CT | Chicken Breast | 02/06 | Typhimurium |
| N9250 | MD | Chicken Breast | 12/06 | Typhimurium |
| N9158 | CT | Chicken Breast | 05/06 | Typhimurium var. O 5 - (Copenhagen) |
| N11172 | NY | Chicken Breast | 03/06 | Typhimurium |
| N9231 | MD | Chicken Breast | 03/06 | Typhimurium |
| N9149 | CT | Chicken Breast | 02/06 | Typhimurium |
| N11197 | NY | Chicken Breast | 12/06 | Typhimurium |
| N9249 | MD | Chicken Breast | 12/06 | Typhimurium |
| N9248 | MD | Chicken Breast | 12/06 | Typhimurium |
| N9224 | MD | Chicken Breast | 01/06 | Typhimurium |
| N9210 | GA | Chicken Breast | 10/06 | Typhimurium var. O 5 - (Copenhagen) |
| N9236 | MD | Chicken Breast | 05/06 | Typhimurium var. O 5 - (Copenhagen) |

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



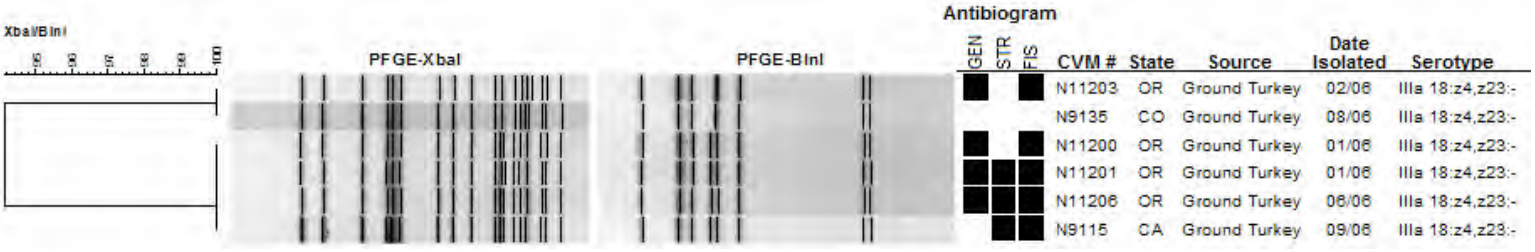

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11263 | TN | Chicken Breast | 11/06 | I 4,12:i:- |
| N11221 | TN | Chicken Breast | 01/06 | I 4,[5],12:i- |
| N11234 | TN | Chicken Breast | 05/06 | I 4,[5],12:i- |
| N11266 | TN | Chicken Breast | 12/06 | I 4,[5],12:i- |
| N11267 | TN | Chicken Breast | 12/06 | I 4,[5],12:i- |
| N11143 | NM | Chicken Breast | 07/06 | I 4,[5],12:i- |
| N11134 | NM | Chicken Breast | 04/06 | I 4,[5],12:i- |
| N9098 | CA | Chicken Breast | 01/06 | I 4,[5],12:i- |
| N11196 | NY | Ground Turkey | 11/06 | I 4,12:i:- |
| N11225 | TN | Ground Turkey | 02/06 | I 4,[5],12:i- |
| N9124 | CO | Chicken Breast | 04/06 | I 4,[5],12:i- |

# A-1p. PFGE Profiles for *Salmonella* I 4,12:d:-



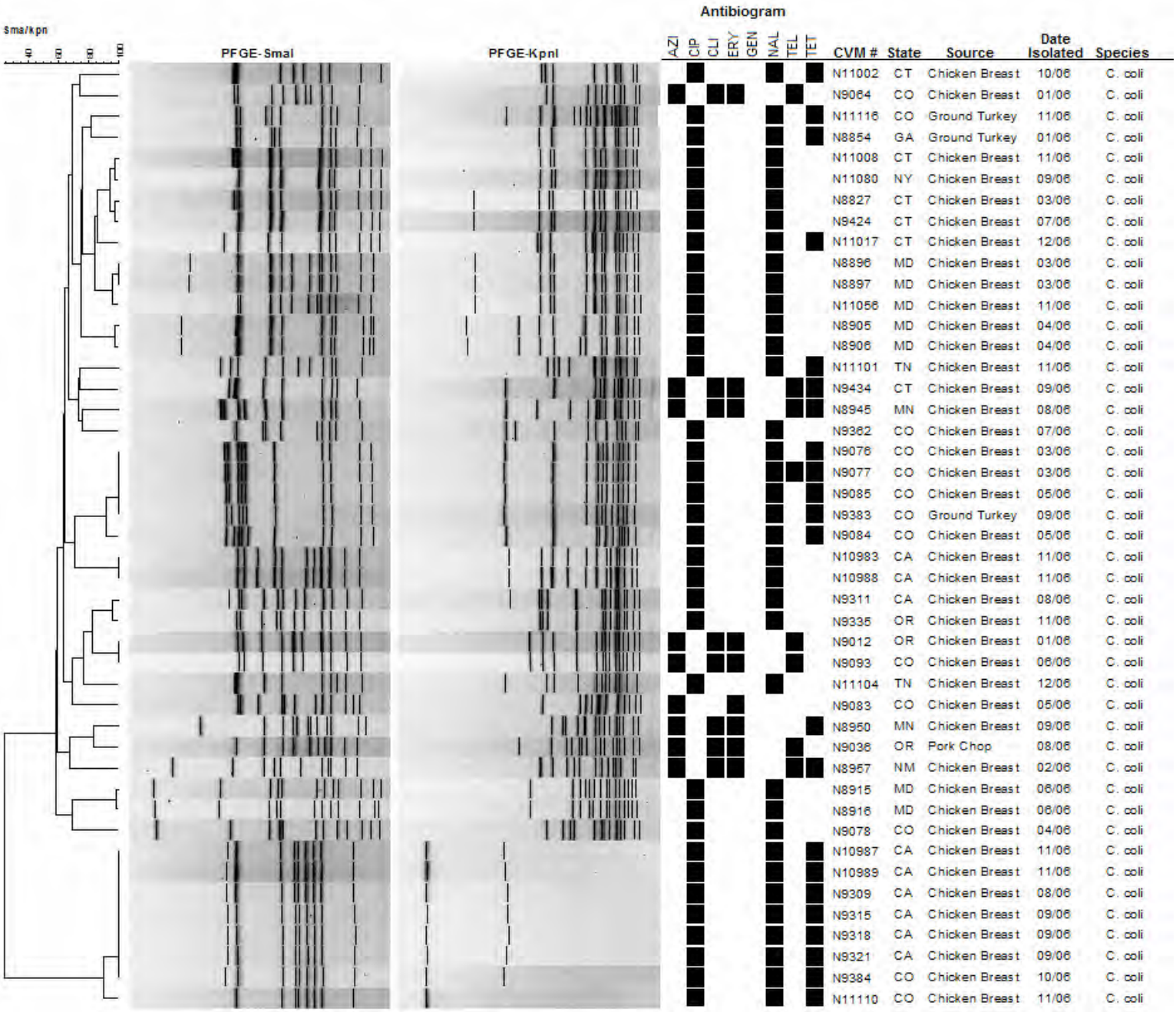

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N9232 | MD | Ground Turkey | 03/06 | I 4,12:d:- |
| N9234 | MD | Ground Turkey | 03/06 | I 4,12:d:- |
| N9233 | MD | Ground Turkey | 03/06 | I 4,12:d:- |
| N9251 | MD | Ground Turkey | 12/06 | I 4,12:d:- |

# A-1q. PFGE Profiles for *Salmonella* IIIa 18:z4,z23:-



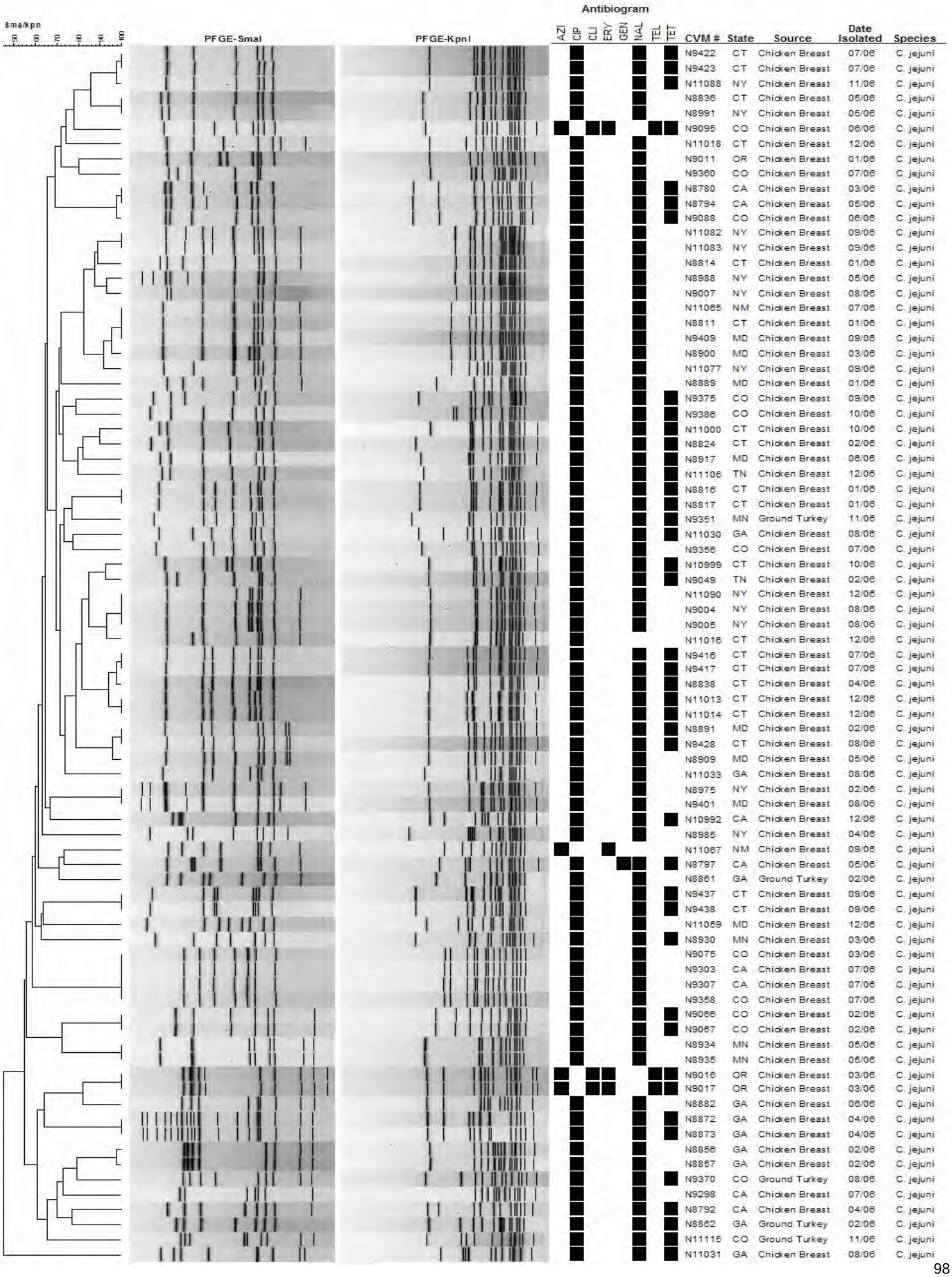

| CVM # | State | Source | Date Isolated | Serotype |
|---|---|---|---|---|
| N11203 | OR | Ground Turkey | 02/06 | IIIa 18:z4,z23:- |
| N9135 | CO | Ground Turkey | 08/06 | IIIa 18:z4,z23:- |
| N11200 | OR | Ground Turkey | 01/06 | IIIa 18:z4,z23:- |
| N11201 | OR | Ground Turkey | 01/06 | IIIa 18:z4,z23:- |
| N11206 | OR | Ground Turkey | 06/06 | IIIa 18:z4,z23:- |
| N9115 | CA | Ground Turkey | 09/06 | IIIa 18:z4,z23:- |

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




| CVM # | State | Source | Date Isolated | Species |
|---|---|---|---|---|
| N11002 | CT | Chicken Breast | 10/06 | C. coli |
| N9064 | CO | Chicken Breast | 01/06 | C. coli |
| N11116 | CO | Ground Turkey | 11/06 | C. coli |
| N8854 | GA | Ground Turkey | 01/06 | C. coli |
| N11008 | CT | Chicken Breast | 11/06 | C. coli |
| N11080 | NY | Chicken Breast | 09/06 | C. coli |
| N8827 | CT | Chicken Breast | 03/06 | C. coli |
| N9424 | CT | Chicken Breast | 07/06 | C. coli |
| N11017 | CT | Chicken Breast | 12/06 | C. coli |
| N8896 | MD | Chicken Breast | 03/06 | C. coli |
| N8897 | MD | Chicken Breast | 03/06 | C. coli |
| N11056 | MD | Chicken Breast | 11/06 | C. coli |
| N8905 | MD | Chicken Breast | 04/06 | C. coli |
| N8906 | MD | Chicken Breast | 04/06 | C. coli |
| N11101 | TN | Chicken Breast | 11/06 | C. coli |
| N9434 | CT | Chicken Breast | 09/06 | C. coli |
| N8945 | MN | Chicken Breast | 08/06 | C. coli |
| N9362 | CO | Chicken Breast | 07/06 | C. coli |
| N9076 | CO | Chicken Breast | 03/06 | C. coli |
| N9077 | CO | Chicken Breast | 03/06 | C. coli |
| N9085 | CO | Chicken Breast | 05/06 | C. coli |
| N9383 | CO | Ground Turkey | 09/06 | C. coli |
| N9084 | CO | Chicken Breast | 05/06 | C. coli |
| N10983 | CA | Chicken Breast | 11/06 | C. coli |
| N10988 | CA | Chicken Breast | 11/06 | C. coli |
| N9311 | CA | Chicken Breast | 08/06 | C. coli |
| N9335 | OR | Chicken Breast | 11/06 | C. coli |
| N9012 | OR | Chicken Breast | 01/06 | C. coli |
| N9093 | CO | Chicken Breast | 06/06 | C. coli |
| N11104 | TN | Chicken Breast | 12/06 | C. coli |
| N9083 | CO | Chicken Breast | 05/06 | C. coli |
| N8950 | MN | Chicken Breast | 09/06 | C. coli |
| N9036 | OR | Pork Chop | 08/06 | C. coli |
| N8957 | NM | Chicken Breast | 02/06 | C. coli |
| N8915 | MD | Chicken Breast | 06/06 | C. coli |
| N8916 | MD | Chicken Breast | 06/06 | C. coli |
| N9078 | CO | Chicken Breast | 04/06 | C. coli |
| N10987 | CA | Chicken Breast | 11/06 | C. coli |
| N10989 | CA | Chicken Breast | 11/06 | C. coli |
| N9309 | CA | Chicken Breast | 08/06 | C. coli |
| N9315 | CA | Chicken Breast | 09/06 | C. coli |
| N9318 | CA | Chicken Breast | 09/06 | C. coli |
| N9321 | CA | Chicken Breast | 09/06 | C. coli |
| N9384 | CO | Chicken Breast | 10/06 | C. coli |
| N11110 | CO | Chicken Breast | 11/06 | C. coli |

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



# A-1t. PFGE Profiles for *Campylobacter lari*


| CVM # | State | Source | Date Isolated | Species |
|---|---|---|---|---|
| N9080 | CO | Ground Turkey | 04/06 | C. lari |
| N9383 | CO | Ground Turkey | 07/06 | C. lari |

# 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 | | | | | | | | | | | | |
| **2** | 00CB02 | | | | | | | | | | | | |
| **3** | 00CB03 | | | | | | | | | | | | |
| **4** | 00CB04 | | | | | | | | | | | | |
| **5** | 00CB05 | | | | | | | | | | | | |
| **6** | 00CB06 | | | | | | | | | | | | |
| **7** | 00CB07 | | | | | | | | | | | | |
| **8** | 00CB08 | | | | | | | | | | | | |
| **9** | 00CB09 | | | | | | | | | | | | |
| **10** | 00CB10 | | | | | | | | | | | | |

**CONT.** _

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

**E-mail log sheet to ahy4@cdc.gov, sherry.ayers@fda.hhs.gov, and elvira.hall-robinson@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** _____