



**International surveillance network for
the enteric infections -
Salmonella, VTEC O157 and Campylobacter**

Funded by the European Commission – DG SANCO

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Enter-net Quarterly Salmonella Report July-Sept 2006/3

This report gives details of the number of isolates identified by the national reference laboratories in the 3rd quarter of 2006 and incorporated in the Enter-net salmonella database.

Twenty-seven countries have supplied data. The top 15 serotypes are detailed in table one. Table two illustrates Salmonella drug resistance data received for the quarter, and the figure gives details on multi-resistant isolates. The total number of human salmonella isolates reported this quarter are 34,854 with 28,446 (81.6%) being *S. Enteritidis*, *S. Typhimurium* or *S. Virchow*.

Top 15 serotypes reported in Q3 2006 (Q3 2005)		
Serotype	Freq	%
Enteritidis	23,531 (25,240)	67.5 (66.3)
Typhimurium	4,537 (5,114)	13.0 (13.4)
Virchow	378 (389)	1.1 (1.0)
Infantis	314 (374)	0.9 (1.0)
Newport	242 (222)	0.7 (0.6)
Hadar	231 (1,630)	0.7 (4.3)
Typhi	213 (230)	0.7 (0.6)
Derby	158 (163)	0.5 (0.4)
Kentucky	157 (109)	0.5 (0.3)
Ajiobo	151 (4)	0.4 (0.0)
Stanley	148 (158)	0.4 (0.4)
Braenderup	136 (2)	0.4 (0.0)
Saintpaul	131 (154)	0.4 (0.4)
Napoli	130 (124)	0.4 (0.3)
Agona	125 (159)	0.4 (0.4)
Others	4,272 (8,586)	12.2 (20.1)
Total	34,854 (42,658)	100 (100)

Quarterly data - major trends.

Details below refer to the 27 countries that have supplied comparable data electronically for 2006 and 2005. The total number of reports in the database shows a decrease over the same period in 2005 from 42,658 to 34,854 a decrease of 18.3%. *S. Enteritidis* (23,531, 67.5%) decreased by 19.5%, *S. Typhimurium* (4,537, 13.0%) decreased by 12.5%, *S. Virchow* (378, 1.1%) decreased by 3.3%. Fifteen serotypes were identified more than 100 times during the quarter; *S. Infantis* (314, 0.9%), *S. Newport* (242, 0.7%), *S. Hadar* (231, 0.7%), *S. Typhi* (213, 0.7%), *S. Derby* (158, 0.5%), *S. Kentucky* (157, 0.5%), *S. Ajiobo* (151, 0.4%), *S. Stanley* (148, 0.4%), *S. Braenderup* (136, 0.4%), *S. Saintpaul* (131, 0.4%), *S. Napoli* (130, 0.4%), *S. Agona* (125, 0.4%), *S. Paratyphi A* (125, 0.4%), *S. Montevideo* (107, 0.3%) and *S. Thompson* (101, 0.3%) Fifteen other serotypes were isolated between 50 and 99 times, *S. Brandenburg*, *S. Corvallis*, *S. Isangi*, *S. Oranienburg*, *S. Paratyphi B*, *S. Java*, *S. Muenchen*, *S. Bovismorbificans*, *S. Blockley*, *S. Bredeney*, *S. Kottbus*, *S. Give*, *S. Anatum*, *S. Schwarzengrund*, and *S. Senftenberg* (1,039, 3.0%). Fifty-five serotypes were reported between 49 and 10 times totaling 1,223 3.5% and 286 serotypes (653, 1.9%), were reported less than 10 times and 1,024, 2.9% were untyped. The cases reported are based on the

date of receipt in the reference laboratory

November 2006 – All data are provisional

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Antimicrobial susceptibility testing results.

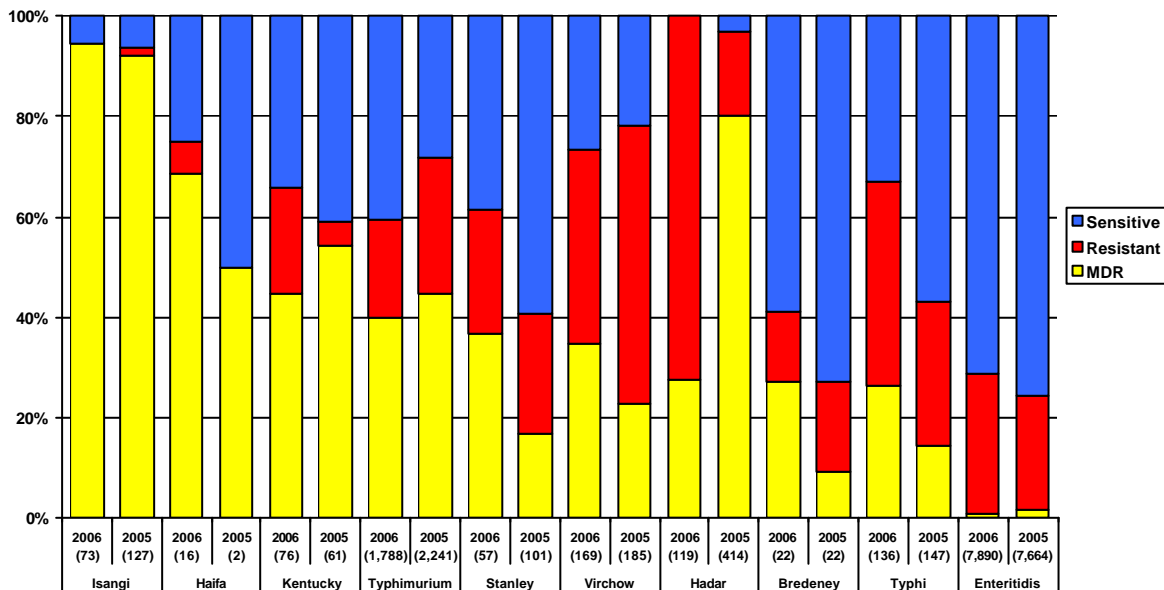
Antimicrobial susceptibility test results were available for 12,488 cases. The majority of these are tested against the panel of 11 antimicrobials recommended by Enter-net, although not all strains are tested against each one. The frequency and percent in the categories resistant, intermediate and sensitive (as defined by each reference laboratory¹) are given in table 2.

Antimicrobial agent	Resistant Freq (%)	Intermed Freq (%)	Sensitive Freq (%)
Streptomycin	1,443 (14.2)	194 (1.9)	8,510 (83.9)
Gentamicin	209 (1.8)	112 (1.0)	11,140 (97.2)
Kanamycin	273 (2.6)	49 (0.5)	10,225 (96.9)
Ampicillin	2,080 (16.7)	71 (0.6)	10,315 (82.7)
Cefotaxime	21 (0.2)	4 (0.0)	10,336 (99.8)
Sulphonamides	2,473 (23.9)	122 (1.2)	7,770 (74.9)
Trimethoprim	889 (7.4)	15 (0.1)	11,090 (92.5)
Chloramphenicol	715 (6.4)	3 (0.0)	10,488 (93.6)
Tetracyclines	1,646 (15.5)	992 (9.3)	7,991 (75.2)
Nalidixic Acid	1,569 (15.1)	4 (0)	8,845 (84.9)
Ciprofloxacin	108 (0.9)	112 (0.9)	11,810 (98.2)

Table 2

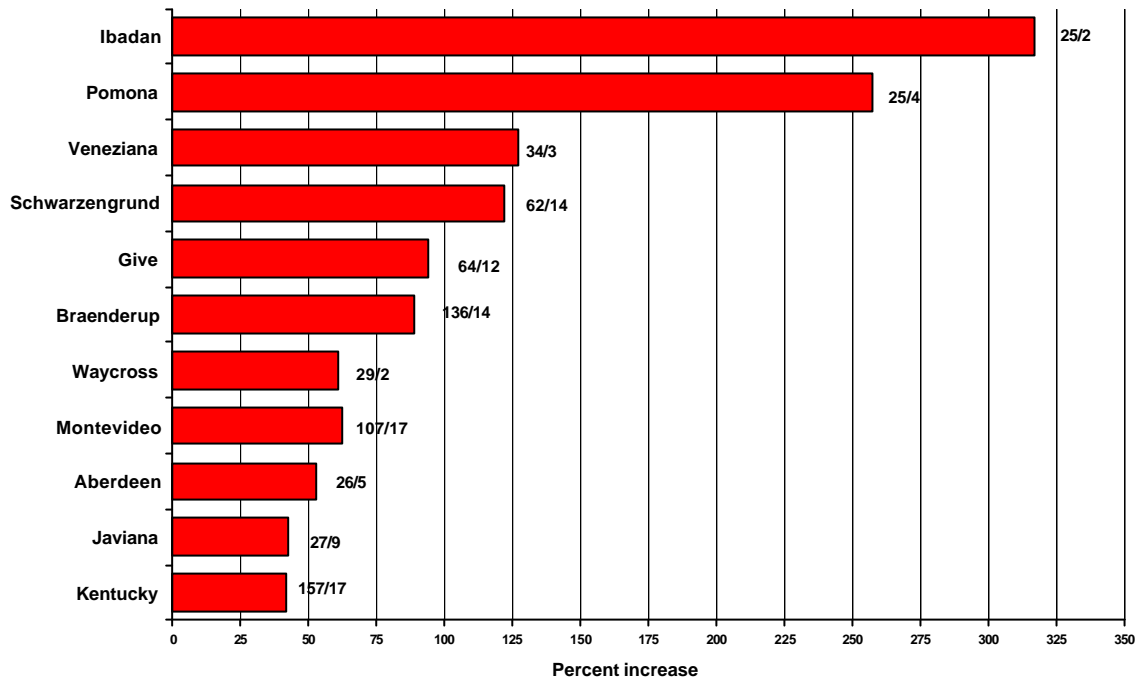
Multi-drug resistance (MDR); the figure shows the proportion of each serotype with multiple-resistance (to four or more antimicrobials), resistance 1-3 antimicrobials, and sensitivity with comparative data for the same period of last year. The number of isolates tested in this quarter each year are also shown. Only those serotypes with 25% or more being MDR are shown, plus S. Enteritidis.

Serotypes with MDR (=4 antimicrobials), resistance (1-3) and sensitivity by proportion Q3 2006 (Q3 2005)



¹ E John Threlfall, Ian ST Fisher, Linda R Ward, Helmut Tschäpe and Peter Gerner-Smidt. Harmonisation of antibiotic susceptibility testing for *Salmonella* - results of a study by 18 national reference laboratories within the European Union funded Enter-net group. *Microb Drug Resist* 1999; **5**: 195-200.

**Serotypes with unusual increases Q3 2006 (Q3 2005)
(number of cases/number of countries reporting)**



Serotypes with unusual increases.

S. Ajiobo – One hundred and fifty-one cases from three countries were reported compared with only four in the same quarter in 2005 (an increase of 3,775%). The majority were associated with the outbreak in England and Wales. The majority of the cases were aged over 15 (132, 87.4%), of these 53 were male and 75 female; a ratio of 1.4 compared with the usual ratio of 1.16 for non-typhoidal salmonellas. The source of this outbreak is still under investigation.

S. Ibadan – Of the 25 cases reported, there was one male aged 0-11m, three males and one unknown were 1-5y, one female aged 6-14y, six males, eight females were 15-64y and three males, one female were 65y+. Four cases were travel related; two cases traveled to Egypt and one each to Turkey and Niger.

S. Pomona – Twenty-five cases reported this quarter. Of these there were one male, six females aged 0-11m, four males, one female aged 1-5y, one male aged 6-14y, five males, three females were 15-64y and two males were 65y+. The ages of two males were unknown. No cases were related to travel.

S. Veneziana – Of the total reported there were six males, one female aged 0-11m, one male and five females were 1-5y, one male, five females were 15-64y and two males, six females were 65y+. No cases were related to travel.

S. Schwarzengrund – Sixty-two cases reported of those there were two males, four females aged 0-11m, six males, four females were 1-5y, three males, one female were 6-14y; 21 males and 15 females were 15-64y and six cases were unspecified. Eighteen cases were travel related; 10 traveled to Bulgaria, three to Tunisia and one each to Spain, India, Italy and Pakistan. One case was unspecified.

S. Give – There were 64 cases reported in total. There was one male aged 0-11m, one male aged 1-5y, one male, one female aged 6-14y, 21 males, 25 females were 15-64y and three

males, nine females were 65y+. There were a very large number of cases in the 15-64y ageband, 71.9% compared with 45.5% in this ageband usually seen for non-typhoidal salmonellas. Eight cases were travel related; two cases traveled to Thailand, two to Greece, one to Ghana and three were unspecified.

S. Braenderup – Of the 135 cases reported there was one male, three females aged 0-11m, two males, eight females aged 1-5y, four males, three females were 6-14y, 72 males, 26 females were 15-64y and four males, four females were 65y+. Four cases were incorrectly specified and one was unknown. Forty-one cases were travel related; 20 traveled to Iraq, five to Tunisia, two each to India, Sweden and Kenya, one each to Bangladesh, Germany, Denmark, Spain, Sri Lanka, Maldives, Thailand and Tanzania; 2 cases were unspecified.

S Waycross – Twenty-nine cases reported in total; six males, one female were 0-11m, six males, seven females were 1-5y, four males, three females were 6-14y; one male was 15-64y and one female was 65y+. No cases were related to travel.

S. Montevideo – Of the 107 cases reported this quarter, there were four males, two females aged 0-11m, 10 males, eight females aged 1-5y, six males, three females were 6-14y; 28 males, 25 females were 15-64y and five males, seven females were 65y+, the remainder unspecified. Nine cases were travel related; three to Turkey, one each traveled to Egypt, Mexico, Thailand and Libya.

S. Aberdeen – Twenty-six cases reported this quarter, of these there were eight males, five females aged 0-11m, two males, four females aged 1-5y, one case was 6-14y, sex incorrectly specified. One male, five females were 65y+. No cases were related to travel.

S. Javiana – Of the total reported there was one male aged 0-11m, two males aged 1-5y, nine males, nine females aged 15-64y and two males, three females were 65y+. Nine cases were travel related; three traveled to Thailand, two to Cuba and one each to Cuba, Fiji and Singapore.

S. Kentucky – There were three males, two females aged 0-11m, 13 males, nine females aged 1-5y, four males aged 6-14y; 43 males, 58 females were 15-64y and three males, three females were 65y+. Eight cases were incorrectly specified. There were unusually high levels of males aged 15-64y with 53.3% in this category compared with 20.6% normally. Forty-five cases were travel related; 13 to Turkey, 10 to Egypt, five to Tunisia, two each to Bulgaria and Kenya and one each to Barbados, Cyprus, India, Malta, Thailand, Tanzania and Uganda.

This report was prepared by Ian Fisher, Scientific Co-ordinator and Francine Stalham, Administrator, on behalf of the Enter-net participants