



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

Funded by the European Commission – DG SANCO

Project Team Prof Noël Gill Prof Bill Reilly Prof John Threlfall

Enter-net Quarterly Salmonella Report October-December 2005/4

This report gives details of the number of isolates identified by the national reference laboratories in the 4th quarter of 2005 and incorporated in the Enter-net salmonella database.

Twenty-seven countries have supplied data. The top fifteen serotypes and comparative data for the same quarter of last year are detailed in table one. Table two illustrates Salmonella drug resistance data received for the quarter. Table three gives details on multi-resistant isolates and table four give details on serotypes that have shown unusual increases during the quarter. The total number of human salmonella isolates reported this quarter are 28,331 with 22,742 (80.3%) being *S. Enteritidis*, *S. Typhimurium* or *S. Virchow*.

Top 15 serotypes reported in Q4 2005 (Q4 2004)		
Serotype	Freq	%
Enteritidis	14,730 (18,713)	61.1 (65.0)
Typhimurium	4,160 (4,153)	17.2 (14.4)
Virchow	373 (385)	1.5 (1.3)
Infantis	259 (386)	1.0 (1.3)
Goldcoast	230 (38)	0.9 (0.1)
Typhi	208 (150)	0.8 (0.5)
Hadar	207 (0)	0.8 (0)
Newport	173 (559)	0.7 (1.9)
Saintpaul	172 (143)	0.7 (0.4)
Agona	144 (153)	0.5 (0.5)
Stanley	143 (150)	0.5 (0.5)
Derby	111 (168)	0.4 (0.5)
Kentucky	104 (132)	0.4 (0.4)
Corvallis	99 (74)	0.4 (0.2)
Anatum	96 (87)	0.3 (0.3)
Others	2,885 (3,488)	11.9 (12.1)
Total	24,094 (28,779)	100 (100)

Table 1

Quarterly data - major trends.

Details below refer to the twenty-four countries that have supplied comparable data electronically for 2005 and 2004. The total number of reports in the database shows a decrease over the same period in 2004 from 28,779 to 24,094, down 16.3%. *S. Enteritidis* (14,730, 61.1%) decreased by 21.3%, *S. Typhimurium* (4,160, 17.2%) increased by 0.1% and *S. Virchow* (373, 1.5%) decreased by 3.4%. Ten serotypes were identified more than 100 times during the quarter; *S. Infantis* (259, 1.0%), *S. Goldcoast* (230, 0.9%), *S. Typhi* (208, 0.8%), *S. Hadar* (207, 0.9%) *S. Newport* (173, 0.7%), *S. Saintpaul* (172, 0.7%), *S. Agona* (144, 0.5%), *S. Stanley* (143, 0.5%), *S. Derby* (111, 0.4%) and *S. Kentucky* (104, 0.4%). Fifteen other serotypes were isolated between 50 and 99 times, *S. Corvallis*, *S. Anatum*, *S. Paratyphi A*, *S. Bovismorbificans*, *S. Oranienburg*, *S. Java*, *S. Rissen*, *S. Birkenhead*, *S. Isangi*, *S. Montevideo*, *S. Thompson*, *S. Brandenburg*, *S. Muenchen*, *S. Ohio* and *S. Give* (1,072, 4.4%).

Forty-eight serotypes were reported between 49 and 10 times totaling 1,265, 5.2% and 188, (434, 1.8%) of the total were reported less than 10 times, 516, 2.1% were untyped. The cases reported are based on the date of receipt in the reference laboratory February 2006 All data are provisional

Antimicrobial susceptibility testing results.

Antimicrobial susceptibility test results were available for 7,175 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.

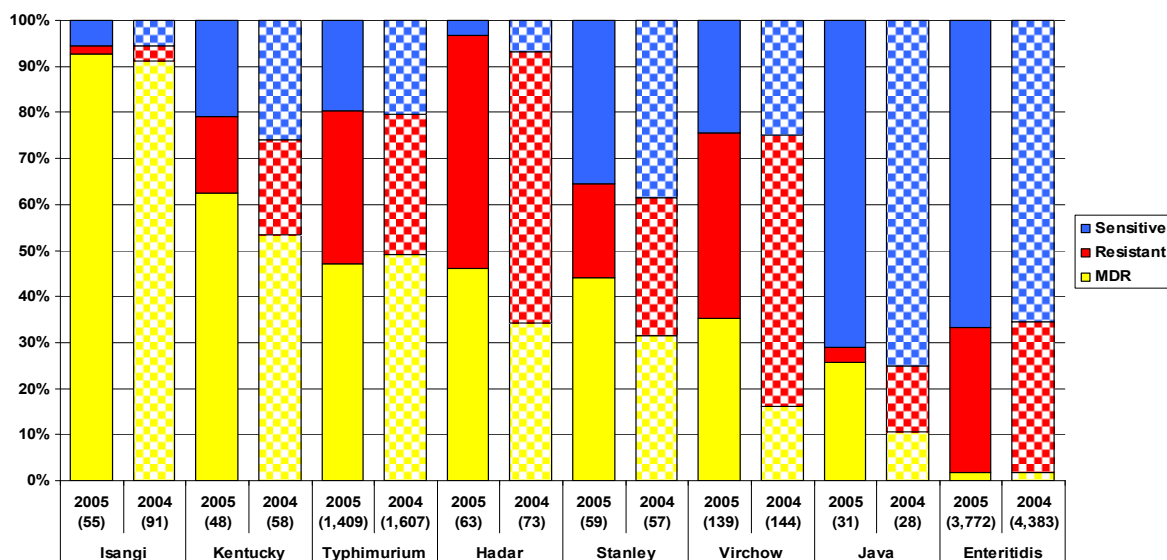
Antimicrobial agent	Resistant Freq (%)	Intermed Freq (%)	Sensitive Freq (%)
Streptomycin	1,165 (19.4)	125 (2.1)	4,726 (78.6)
Gentamicin	111 (1.1)	30 (0.5)	6,515 (97.9)
Kanamycin	262 (4.1)	70 (1.1)	6,023 (94.8)
Ampicillin	1,441 (20.3)	50 (0.7)	5,591 (78.9)
Cefotaxime	181 (2.8)	6 (0.1)	6,214 (97.1)
Sulphonamides	1,728 (28.1)	19 (0.3)	4,399 (71.6)
Trimethoprim	629 (9.2)	31 (0.5)	6,146 (90.3)
Chloramphenicol	646 (9.6)	28 (0.4)	6,039 (90.0)
Tetracyclines	1,600 (24.8)	431 (6.7)	4,413 (68.5)
Nalidixic Acid	1,220 (19.4)	46 (0.7)	5,020 (79.9)
Ciprofloxacin	233 (3.3)	71 (1.0)	6,692 (95.7)

Table 2

Multi-drug resistance; 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. Only those with 25% MDR or more are shown,

Table 3

Serotypes with MDR (≥ 4 antimicrobials), resistance (1-3) and sensitivity by proportion

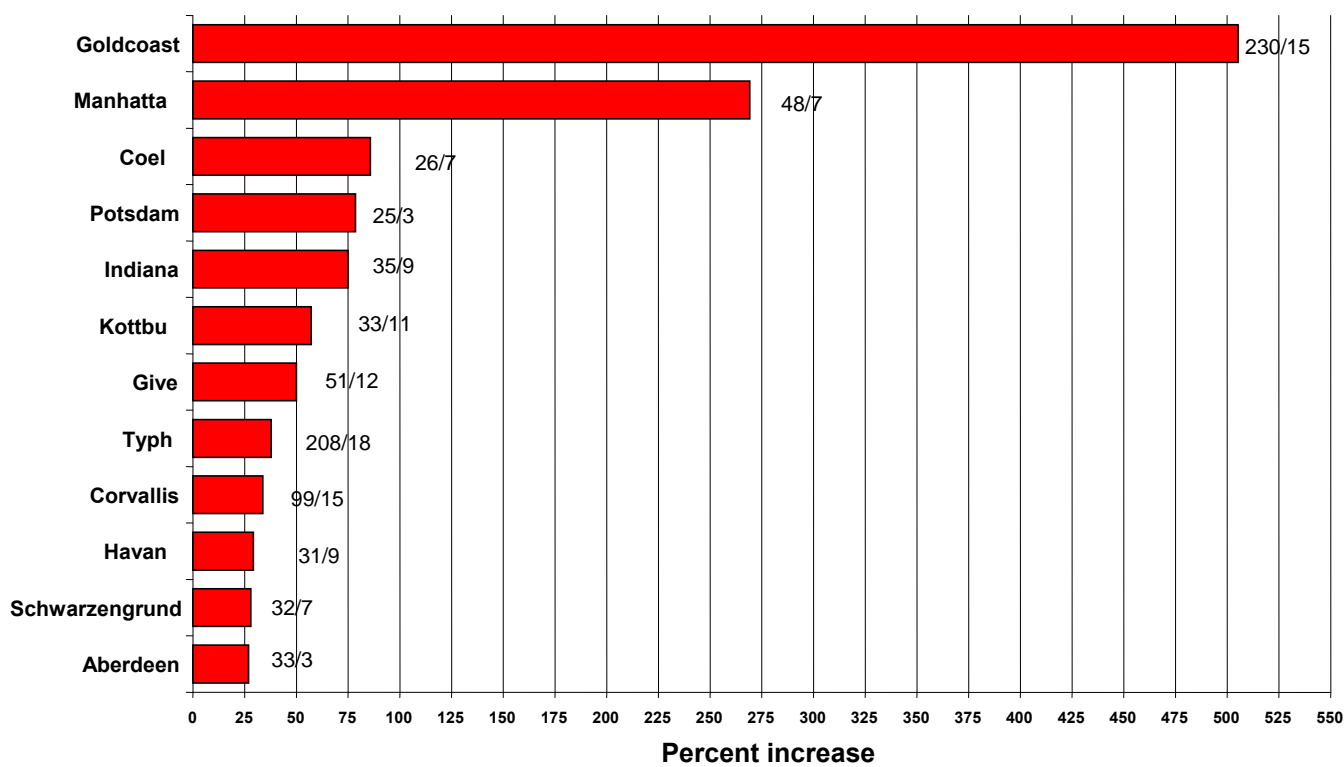


Other notable changes in MDR are for *S. Newport* which rose from 3.1% MDR in 2004 (446 strains) to 9.3% MDR in 2005 (86 strains), and *S. Schwarzengrund* which rose from 12.5% MDR (16 strains) to 22.7% MDR (22 strains).

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.

Table 4

**Serotypes with unusual increases Q4 2005 (Q4 2004)
(number of cases/number of countries reporting)**



Serotypes with unusual increases.

S. Goldcoast – Of the 230 cases, 148 from nine countries were known to be associated with travel to Mallorca, ref: <http://www.eurosurveillance.org/ew/2005/051208.asp#2>. Thirteen cases from six countries did not have their travel histories investigated as part of the outbreak. Travel is often under-reported and it is possible that some of the remaining 69 cases may have been associated with travel to Mallorca.

S. Manhattan - Forty-eight cases were reported by seven countries; of these there was one male aged 0-11m, five males, two females aged 1-5y, three males, one female aged 6-14y; nine males, 11 females were 15-64y and six males, seven females were 65y+. One case was travel related to Tunisia. Most of the cases were associated with the outbreak in France.

S. Coeln – Of the 26 cases reported this quarter there were one male, two females aged 0-11m, four males, three females aged 1-5y; three males, one female aged 6-14y; three males, seven females aged 15-64y; one male was 65y+. One case was unknown. Three cases were travel related; one each to Brazil and Venezuela, one case was unspecified.

S. Potsdam – There were three males aged 1-5y, five males, six females aged 15-64y and two males, nine females were aged 65y+. No cases were related to travel.

S. Indiana – Of the total cases reported there was one female aged 0-11m, two males and three females aged 1-5y; one male and three females aged 6-14y, 17 males, one female aged 15-64y and two males, two females aged 65y+. Five cases were related to travel; one to India, one to Turkey and three were unknown.

S. Kottbus – Of the total reported there was one female aged 0-11m; four males, one female aged 1-5y, three females were 6-14y, eight males, 11 females were 15-64y and two males, one female were 65y+. Nine cases were related to travel; two to Bulgaria, one each traveled to China, Spain, Malta and Nepal, three cases were unspecified.

S. Give – Fifty-one cases reported this quarter. One female aged 0-11m, one male, one female aged 1-5y; one male aged 6-14y, 14 males, 12 females were 15-64y and 10 males, seven females were 65y+. Four cases were related to travel, one each to Thailand and Venezuela and two were unspecified.

S. Typhi – Two-hundred and seven cases reported this quarter. There was one male aged 0-11m, eight males, 10 females aged 0-5y, 22 males, 19 females 6-14y; 69 males, 48 females were 15-64y and five males, seven females were 65y+, 18 cases were unknown. 40 cases were travel related; four to India, three to Indonesia, two to Pakistan and one to Brazil. Thirty travel related cases were unspecified.

S. Corvallis – Of the total reported there was one male, one female aged 0-11m, one male, two females were 1-5y, three males, one female were 6-14y, 46 males, 31 females were 15-64y and one male, four females were 65y+. Forty-six cases were related to travel; 16 to Thailand, six to Indonesia, five to Malaysia, three to Tunisia. One each traveled to Turkey, Bulgaria and India and Morocco, one was incorrectly specified and eleven were unspecified.

S. Havana – Thirty cases were reported this quarter. One male, one female were 0-11m, four females were aged 1-5y, one female was aged 6-14y, seven males, eight females were aged 15-64y, three males, four females were 65y+. Six cases were travel related; three to Tunisia, three unspecified.

S. Schwarzengrund – Of the total reported there were one male, two females aged 0-11m, two males, four males, were 1-5y; two males, one female aged 6-14y and 11 males, seven females aged 15-64y. Ten cases were travel related; one each traveled to Malaysia, Thailand and Tunisia, seven cases were unspecified.

S. Aberdeen – Thirty-three cases reported this quarter; eight males, three females were 0-11m, five males, six females were 1-5y, one male was 6-14y, there were four males, four females aged 15-64y and one male, one female were 65y+. One case was related to travel to Mauritius.

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