



**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 Oct - Dec 2004/4**

This report gives details of the number of isolates identified by the national reference laboratories in the 4<sup>th</sup> quarter of 2004 and incorporated in the Enter-net salmonella database. Seventeen countries have supplied data. The top fifteen isolates reported this quarter are detailed in table one. Table two illustrates Salmonella drug resistance data received for the quarter. Table three gives details on multi-resistant isolates. Figure one details the serotypes

that have shown an unusual increase during the quarter. The total number of human salmonella isolates reported this quarter are 17,046 with 12,225 (71.7%) being *S. Enteritidis*, *S. Typhimurium* and *S. Virchow*.

<b>Top 15 serotypes reported in Q4 2004 (Q4 2003)</b>		
<b>Serotype</b>	<b>Freq</b>	<b>%</b>
Enteritidis	8,328 (10,427)	48.9 (54.4)
Typhimurium	3,549 (4,171)	20.8 (21.8)
Newport	542 (130)	3.2 (0.7)
Virchow	348 (342)	2.0 (1.8)
Infantis	342 (236)	2.0 (1.2)
Derby	153 (124)	0.9 (0.6)
Hadar	150 (228)	0.9 (1.2)
Typhi	139 (146)	0.8 (0.8)
Thompson	136 (45)	0.8 (0.2)
Agona	132 (118)	0.8 (0.6)
Stanley	123 (111)	0.7 (0.6)
Kentucky	120 (85)	0.7 (0.4)
Saintpaul	116 (105)	0.7 (0.5)
Paratyphi A	58 (58)	0.3 (0.2)
Isangi	96 (122)	0.6 (0.6)
Others	2,662 (2,710)	15.6 (15.8)
<b>Total</b>	<b>17,046</b> <b>(19,158)</b>	<b>100</b> <b>(100)</b>

**Table 1**

**Quarterly data - major trends.**

Details below refer to the twenty countries that have supplied comparable data electronically for 2004 and 2003. The total number of reports in the database shows a decrease over the same period of 2003 from 19,158 to 16,858 down 12.0% in 2004. *S. Enteritidis* (8,199, 48.6%) decreased by 21.4%, *S. Typhimurium* (3,542, 21.0%) decreased by 15.1%, *S. Virchow* (347, 2.1), increased by 1.5%, *S. Infantis* (341, 2.0%), increased by 44.5%. Ten serotypes were identified more than 100 times during the quarter; *S. Newport* (542, 3.2%), *S. Hadar* (150, 0.9%), *S. Typhi* (139, 0.8%), *S. Thompson* (136, 0.8%), *S. Agona* (131, 0.8%), *S. Stanley* (123, 0.7%), *S. Kentucky* (120, 0.7%), *S. Saintpaul* (116, 0.7%), *S. Derby* (113, 0.7%), *S. Paratyphi A* (110, 0.7%). Eleven other serotypes were isolated between 50 and 99 times, *S. Isangi*, *S. Braenderup*, *S. Paratyphi B*, *S. Anatum*, *S. Montevideo*, *S. Corvallis*, *S. Bovismorbificans*, *S. Java*, *S. Birkenhead*, *S. Brandenburg*, and *S. Rissen* (723, 4.2%). Forty-six serotypes were reported between 49 and 10 times totaling 1,224, 7.2% and 188 serotypes were reported less than 10 times, 614, 3.6% of the total.

Jan 2005 - All data are provisional and are based on the date of receipt of the strain at the reference laboratory.

## Antimicrobial susceptibility testing results<sup>1</sup>

Antimicrobial susceptibility test results were available for 2,718 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 laboratory) are given in table 2.

Antimicrobial agent	Resistant Freq (%)	Intermed Freq (%)	Sensitive Freq (%)
Streptomycin	568 (26.6)	148 (6.9)	1,418 (66.5)
Gentamicin	79 (3.3)	111 (4.6)	2,236 (92.1)
Kanamycin	58 (2.5)	93 (3.9)	2,210 (93.6)
Ampicillin	758 (28.4)	57 (2.1)	1,850 (69.4)
Cefotaxime	22 (0.9)	9 (0.4)	2,333 (98.7)
Sulphonamides	1,096 (52.1)	11 (0.5)	999 (47.4)
Trimethoprim	156 (6.6)	23 (1.0)	2,195 (92.4)
Chloramphenicol	294 (11.5)	2 (0.1)	2,252 (88.4)
Tetracyclines	785 (30.7)	500 (19.6)	1,270 (49.7)
Nalidixic Acid	352 (15.4)	3 (0.1)	1,930 (84.5)
Ciprofloxacin	44 (1.6)	1 (0.0)	2,633 (98.4)

Table 2

Serotype	N° MR	Total	%
Typhimurium	414 (497)	874 (1,151)	47.3 (43.1)
Hadar	15 (19)	30 (42)	50.0 (45.2)
Enteritidis	10 (23)	1,049 (1,434)	0.9 (1.6)
Kentucky	10 (4)	25 (14)	40.0 (28.5)
Blockley	7 (5)	9 (6)	77.7 (83.3)
Virchow	5 (10)	30 (40)	16.6 (25.0)
Infantis	4 (0)	68 (38)	5.8 (0)
Anatum	3 (2)	19 (17)	15.7 (11.7)
Ohio	3 (0)	7 (6)	42.8 (0)
Agona	2 (0)	12 (8)	16.6 (0)
Albany	2 (0)	2 (2)	100 (0)
Bredeney	2 (3)	7 (17)	28.5 (17.6)

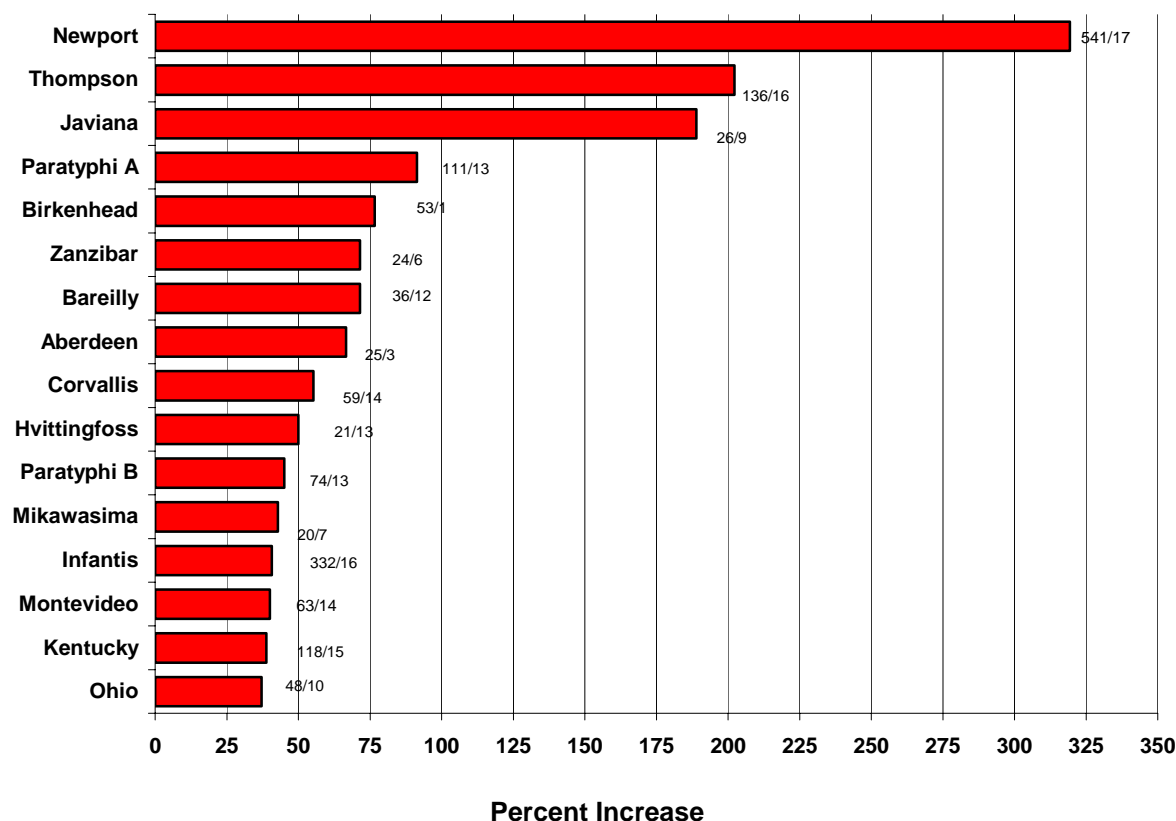
Table 3

**Multi-drug resistance;** Table three shows the total number of strains with multiple-resistance (to five or more antimicrobials) with comparative data for the same period of last year by serotype and the percent of the total for that serotype with an associated antibiogram.

<sup>1</sup> 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.

Figure 1

Serotypes with unusual increases Q4 2004 (Q4 2003)  
(number of cases/number of countries reporting)



### Serotypes with unusual increases

**S. Newport** – 541 cases reported this quarter. Fifteen males and eight females and one unspecified were aged 0-11m, 11 males, 18 females and one unspecified, aged 1-5y, 14 males, 10 females, one case incorrectly specified and one unspecified were 6-14y, 198 males and 188 females, 20 unspecified were aged 15-64y, 12 males, 24 females were aged 65y+, 11 males and three females were unspecified. Sixty-seven cases were travel related; eight traveled to Egypt, seven to Spain, seven to Brazil, three traveled to India, three cases to Tunisia, two to Thailand, one case each to Japan, Indonesia and Greece. The majority of these cases were related to the outbreak in the U.K.

**S. Thompson** – 136 cases reported this quarter. One male, 11 females aged 0-11m, five males, three females and two incorrectly specified aged 1-5y, five males, one females aged 6-14y, 41 males, 57 females aged 15-64y. Two males, ten females aged 65y+, two female cases were unspecified. Ten cases were travel related; one case each traveled to Hungary, China, Egypt and Thailand, six cases were unspecified.

**S. Javiana** – Of the 26 cases reported this quarter, there were two males and one incorrectly specified aged 1-5y, one female aged 6-14y, four males, 11 females and one case unspecified aged 15-64y and five males aged 65y+. Seven cases were travel related; three traveled to Brazil, one traveled to Thailand, one to Singapore. One case was unspecified

**S. Paratyphi A** – 111 cases reported this quarter. There was one female aged 0-11m, one female, two cases unspecified aged 1-5y, four males, eight females and two not known aged 6-

14y, 38 males and 44 females aged 15-64y. Sixty cases were travel related. Six cases traveled to India, two to Indonesia, one each traveled to Nepal, Cuba, Pakistan, Singapore, Myanmar, the remainder were unspecified.

**S. Birkenhead** – Of the total reported there were 10 males, four females aged 0-11m, there were seven males, one female aged 1-5y, three males, two females aged 6-14yrs, eight males, 14 females aged 15-64y, two males, two females aged 65y+. No cases were travel related.

**S. Zanzibar** – 24 cases were reported; of these there were one male aged 0-11m, one male, two females aged 1-5y, one female aged 6-14y, six males, 11 females aged 15-64y, one male, one female aged 65y+. Seven cases were travel related; three traveled to Tunisia, four cases were unspecified.

**S. Bareilly** – There were three males aged 0-11m, two males and two cases incorrectly specified aged 1-5y, one incorrectly specified case was aged 6-14y, 12 males, 11 females and two unknown aged 15-64y and one male, one female aged 65y+. Ten cases were related to travel, one traveled to Venezuela, one to India, eight cases were unspecified.

**S. Aberdeen** – Of the total reported this quarter there were two males, four females aged 0-11m, three males, three females aged 1-5y, three females aged 6-14y, five males, three females aged 15-64y and one male, one female aged 65y+. Two cases were travel related; one to Thailand, one case was unspecified.

**S. Corvallis** – 60 cases reported in total. Two males, one female aged 0-11m, one male, two females and three incorrectly specified were 1-5y, five males were 6-14y, 16 males, 19 females were 15-64y, three males, two females aged 65y+. Twenty-four cases were related to travel. Five traveled to Thailand, three to Turkey, three to Malaysia, one to Indonesia, one to Tunisia. Eleven cases were unspecified.

**S. Hvittingfoss** – Of the total cases reported there were two males, one female aged 0-11m, one male, two females aged 1-5yrs, one male, one female aged 6-14y, three males, eight females aged 15-64yrs and one male aged 65y+. One case was travel related.

**S. Paratyphi B** – There were two males, one female aged 0-11m, five males, nine females aged 1-5y, two males, four females aged 6-14y, 10 males, 17 females aged 15-64y and four males, three females aged 65y+. Six cases were related to travel; two traveled to Indonesia, one traveled to Peru, three were unspecified.

**S. Mikawasima** - 20 cases reported this quarter. One male aged 0-11m, one male, two females aged 0-5y, three males, six females aged 15-64y, two males, one female aged 65y+. One male and one female were unspecified. Two cases related to travel; one to Estonia and one to Spain.

**S. Infantis** - Ten males, three females were 0-11m; nine males, eleven females and fifteen cases incorrectly specified 1-5y, there were seven males, eight females, eight cases incorrectly specified aged 6-14y. There were 54 males, 125 females aged 15-64y and 25 males, 40 females were 65y+. Thirty-one cases were travel related. Four traveled to Bulgaria. One each traveled to China, Cyprus, India, Malta, Mozambique and Tunisia. Twenty-one cases were unspecified.

**S. Montevideo** – Of the 62 cases reported there were one male, three females aged 0-11m, six males, six females aged 1-5y, two males aged 6-14y, 11 males and 22 females aged 15-64y, four cases were unspecified and four males, one female aged 65y+. Twelve cases were travel related one each traveled to Bangladesh, Egypt, Indonesia, Mexico, Mozambique, Syria, Thailand and Turkey. Four cases were unspecified.

**S. Kentucky** – 118 cases reported this quarter. Of these there were one male, two females and one unspecified aged 0-11m, one male, one female aged 1-5y. One male, two females aged 6-14y, 33 males and 45 females aged 15-64y and four males, six females aged 65y+. Fifty-three cases were travel related; 16 traveled to Egypt, four to Turkey, two to Thailand, one to Kampuchea. Twenty-seven cases were unspecified.

**S. Ohio** - There were a lot of unknown or incorrectly specified cases reported from the forty-eight cases in total. Three females 0-11m, one male, six females 1-5y, one male, one female were 6-14y, five males seven females were 15-64y and there were three males, six females aged 65y+. Two cases traveled to Spain, four were unspecified.

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