Food and Waterborne Diseases
Quarterly STEC/VTEC Report 2007/Q3
July-September 2007

Disclaimer: Comparing 2007 Q3 data with 2006 Q3 data
This publication highlights findings from the 2007 Q3 report on cases of Verocytotoxin-producing Escherichia coli (VTEC/STEC) in Europe. It offers an overview of VTEC data from 16 countries. Seventeen countries reported in Q3 of 2006. As different countries reported in both years, direct comparisons and comments on trends in the data are avoided. At the time of this writing, ECDC did not yet have access to all historical data. Comparison across quarters from different years will be possible in future reports, once this data is available.

Quarterly data – major trends

1. The total number of cases reported in Q3 of 2007 was 594. During the same reporting period in 2006, 605 cases were reported.

2. *E. coli* O157 was the most commonly identified serogroup in Q3 of 2007 and represented the majority of all reported serogroups (56.2%).

3. Phage types 8, 32 and 4 were reported most frequently in Q3 of 2007, whereas phage type 21/28 was reported most frequently in Q3 of 2006.

4. Antimicrobial resistance was highest to sulphonamides (30.5%), streptomycin (24.4%) and tetracyclines (18.9%), and the proportion of multidrug-resistant (MDR) isolates among those submitted in Q3 of 2007 was 7.3%. The proportion of MDR isolates submitted in Q3 of 2006 was 10.6%.

5. Bloody diarrhoea was reported more frequently in cases with VTEC O157 infections compared to non-O157 infections, and haemolytic uremic syndrome (HUS) was as common among O157 as among non-O157 reported cases.

6. The majority of VTEC O157 cases were females (58.0%), whereas non-O157 cases were evenly divided between males and females. VTEC O157 cases were typically older, between the ages of 16 and 64 years (42.2%), whereas non-O157 cases were more frequently between the ages of one and five (47.0%).

Summary

This report gives detailed information on the number of isolates identified by EU and EEA/EFTA countries' national reference laboratories in the third quarter of 2007. All data are provisional; the month of report is based on the date of receipt in the reference laboratory. If this date is unknown, then the date of receipt in source laboratory is used.

Sixteen countries have supplied the relevant data electronically to ECDC (or reported a nil return). In total 594 cases have been reported. The most common serogroups identified are shown in Table 1. VTEC O157 was the most frequent serogroup and represented the majority of all reported serogroups (56.2%) and of all known serogroups (65.4%). Of the 44 reported cases in the 'Other' category, 25 were from different serogroups, and six cases were identified as non-O157s without a known serogroup.

Table 1. Top 10 VTEC serogroups, Q3 of 2007 (Q3 of 2006)

Serogroup	2007		2006	
	No	%	No	%
O157	334	56.2	253	41.8
O26	48	8.1	61	10.1
O103	22	3.7	20	3.3
O145	17	2.9	30	5.0
O111	12	2.0	10	1.7
O91	11	1.9	16	2.6
O121	7	1.2	13	2.1
O128	6	1.0	6	1.0
O55	6	1.0	9	1.5
O113	4	0.7	3	0.5
Other	44	7.4	72	11.9
NT*	83	14.0	107	17.7
Total	**594**	**100.0**	**605**	**100.0**

*NT is used throughout this report and stands for untyped, untypable or not definitively typed

Table 2 displays the most frequent VTEC O157 phage types (PT) in Q3 of 2007 and in Q3 of 2006. PTs 8, 32 and 4 were reported most frequently in Q3 of 2007. PT 21/28 was reported most commonly in Q3 of 2006.

Table 2. Phage types of VTEC O157 serotype in Q3

O157 Phage type	2007		2006	
	No	%	No	%
8	24	7.2	30	20.0
32	23	6.9	22	14.7
4	17	5.1	1	0.7
2	12	3.6	4	2.7
51	6	1.8	3	2.0
21/28	5	1.5	61	40.7
14	4	1.2	6	4.0
27	4	1.2	0	0.0
88	4	1.2	4	2.7
1	2	0.6	0	0.0
Other	5	1.5	1	0.7
NT	226*	68.1*	18	12.0
Total	**332**	**100.0**	**150**	**100.0**

* Include also “unknown”

Antimicrobial susceptibility testing results

Antimicrobial susceptibility test results were available for 164 of the 592 records (245 of 605 records were available in Q3 of 2007). The majority of these were tested against the full panel of antimicrobials recommended by Enter-net, although not all strains were necessarily tested against each one. The number and percentage of the isolates found resistant, intermediate and sensitive (as defined by each reference laboratory) are given in table 3. Antimicrobial resistance was highest to sulphonamides, streptomycin and tetracyclines.

Table 3: AST results, by antimicrobial, VTEC, Q3 of 2007

Anti-microbial	Resistant		Intermediate		Sensitive		Tested
	Freq	%	Freq	%	Freq	%	
Ampicillin	12	7.3	82	50.0	70	42.7	164
Cefotaxime	1	0.6	-	-	162	99.4	163
Chloramphenicol	2	1.2	-	-	162	98.8	164
Ciprofloxacin	1	0.6	-	-	163	99.4	164
Gentamicin	3	1.8	2	1.2	159	97.0	164
Kanamycin	5	3.0	2	1.2	157	95.7	164
Nalidixic Acid	4	2.4	-	-	160	97.6	164
Streptomycin	40	24.4	2	1.2	122	74.4	164
Sulphonamides	50	30.5	53	32.3	61	37.2	164
Tetracyclines	31	18.9	60	36.6	73	44.5	164
Trimethoprim	8	5.2	1	0.6	145	94.2	154

Multidrug-resistance

Table 4 shows the total number of strains which showed multidrug-resistance (resistance to four or more antimicrobials) and the percentage of the MDR isolates within the total number for that serogroup with an associated antibiogram. The proportion of MDR isolates submitted in Q3 of 2007 was 7.3%. The proportion of MDR of isolates submitted in Q3 of 2006 was 10.6%.

Table 4. Multipledrug-resistance by serogroup, VTEC, Q3 of 2007

Serogroup	No of MDR (≥4) isolates	Total	%
O26	3	27	11.1
O91	2	9	22.2
O111	2	8	25.0
O18	1	1	100.0
O55	1	6	16.7
O92	1	1	100.0
NT	2	6	33.3
Others	0	106	0.0
Total	**12**	**164**	**7.3**

Age and gender

Data on age and gender were available for 513 reports from Q3 of 2007. The age and gender breakdown of cases is shown in Table 5. The majority (58.0%) of VTEC O157 cases were females, while non-O157 cases were evenly divided between genders. VTEC O157 cases were typically older and between 16 and 64 (42.2%), whereas non-O157 were more frequently between the ages of one and five (47.0%).

Table 5: VTEC cases by age and gender, Q3 of 2007

	O157								non-O157							
	Male		Female		Unknown		Total		Male		Female		Unknown		Total	
Age-range	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
0-11m	6	4.5	3	1.5	-	-	9	2.7	11	13.3	5	5.8	-	-	16	8.8
1-5y	36	27.3	41	21.1	-	-	77	23.2	45	54.2	38	44.2	2	16.7	85	47.0
6-14y	27	20.5	24	12.4	6	100.0	57	17.2	4	4.8	14	16.3	7	58.3	25	13.8
16-64y	51	38.6	89	45.9	-	-	140	42.2	20	24.1	25	29.1	1	8.3	46	25.4
65y+	12	9.1	37	19.1	-	-	49	14.8	3	3.6	4	4.7	-	-	7	3.9
Unknown	-	-	-	-	-	-	-	-	-	-	-	-	2	16.7	2	1.1
Total	**132**	**40.0**	**194**	**58.0**	**6**	**2.0**	**332**	**100.0**	**83**	**45.9**	**86**	**47.5**	**12**	**6.6**	**181**	**100.0**

Clinical manifestation

The clinical manifestation is detailed for 291 of the cases in the database. Bloody diarrhoea was significantly more common in cases with VTEC O157 infections compared to non-O157 infections (table 7). Thirty-five cases (12.0% of cases with known clinical manifestation) presented with HUS. HUS was as common among VTEC O157 cases as with non-O157 cases, although only a small number of HUS cases were reported.

Table 6. Clinical manifestation of VTEC infections, Q3 of 2007

Clinical manifestation	O157		non-O157		Unknown serogroup		All serogroups	
	No	%	No	%	No	%	No	%
Diarrhoea	61	38.9	73	75.3	23	62.2	157	54.0
Bloody diarrhoea	68	43.3	8	8.2	4	10.8	80	27.5
HUS	17	10.8	11	11.3	7	18.9	35	12.0
Asymptomatic	11	7.0	5	5.2	3	8.1	19	6.5
Total	**157**	**100.0**	**97**	**100.0**	**37**	**100.0**	**291**	**100.0**