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2014

Annual Report of the National VTEC Reference Laboratory (VTEC NRL)

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2014 VTEC Data- PHL-DML

The incidence of VTEC in Ireland in 2014 was 15.9/100,000. This rate has consistently increased annually since 2002. Ireland now remains with the highest rate of VTEC in Europe since 2011. In 2014, 4241 stool samples or isolates were received at the VTEC Reference Laboratory (VTEC-RL)-Dublin for VTEC screening or confirmation and typing, this is a decrease of approx 13% from 2013. This was due to a significant change in VTEC methodology at local and regional laboratories, with the continued introduction of PCR based screening for VTEC in primary laboratories. Consequently the VTEC-RL received more positive screened stools samples for VTEC confirmation rather than isolates for confirmation. Thus while the total number of samples reduced, the VTEC-RL workload on primary samples and the number of tests performed increased.

Of the 4241 samples or isolates received 1424(34%) were VTEC positive, representing 731 clinical VTEC cases. Of these 731 cases 108(15%) were positive for the presence of toxin genes by PCR but culture negative. VTEC was isolated from 624(85%) of samples, 179(29%) of these were VTEC O157 and 444(71%) were non-O157 VTEC. Of the non-O157 VTEC 238(38%) were VTEC O26 and the remaining 206(33%) were from 41 other VTEC serogroups. When the PCR positive culture negative samples are included there were 24%, 33% and 43% VTEC O157, O26 and others respectively (tables 1-3).

The numbers of O157 and O26 VTEC remain stable since 2012; however the percentage of both is decreasing while non-O157/O26 VTEC increase (Tables 1-3, figures 1-3). HPSC will provide further enhanced data on VTEC cases for 2014 in their annual report WRT transmission, source, epi-data, sporadic cases and outbreaks.

Isolates were typed using standardised Pulsed Field Gel electrophoresis (PFGE). Clusters or unusual PFGE patterns are notified to the relevant Depts. of Public Health, and the potential public health significance was investigated. VTEC PFGE data is communicated to ECDC via the FWD network and in response to EU outbreak (EPIS) alerts. PFGE analysis, for example by region or by serogroup is also available on request. Should you require further information on your VTEC Data, please do not hesitate to contact us.

In 2014 we screened 145 food samples and 205 water samples for VTEC. 2 foods (uncooked meat products) and 6 waters (all non-public supplies) were positive for VTEC. Five of the 8 positive food/water samples were also culture positive (tables 5 and 6).

We look forward to continuing to provide a comprehensive VTEC service. In recognition of the further expansion of the PCR VTEC screening of stools locally, we expect to receive more positive screened stools for VTEC confirmation/analysis in addition to high risk primary samples and suspect colonies. This is in accordance with the recommendations contained in the 2014 national 'Guidance for Laboratory diagnosis of human Verotoxigenic *E. coli* infection' www.hpsc.ie/A-Z/Gastroenteric/VTEC/Guidance/ReportoftheHPSCSubCommitteeonVerotoxigenicEcoli/File,4544,en.pdf To facilitate work flow efficiency, we request that urgent samples or large numbers of samples for referral are preceded by a phone call to VTEC-RL and that all samples are accompanied by a completed VTEC-RL request form. Each laboratory should have been sent a customised request form, if you have not received this please e mail phl.dublin@hse.ie and we will send it to you. We also request that as many of the fields as possible are completed, in particular 'External lab ID', Name, 'DOB' Outbreak code (if relevant) and clinical details (especially if HUS). In addition we require your 'Technical findings' including *vtx* PCR result and CP value for those labs screening by PCR. This enables us to streamline our testing protocol and provide you with the fastest turnaround time.

Table 1: PHL-HSE-DML VTEC workload 2004-2014

Year	No. Samples Analysed*	% positive cases	Number of tests
2004	599	8.5	
2005	996	12.3	
2006	1360	11.7	
2007	1468	10.8	
2008	2403	9.3	
2009	3550	6.8	
2010	3283	6.2	
2011	4943	5.5	
2012	6118	8.6	58288
2013	4918	14.6*	51376
2014	4241	17.3*	51511

* This is based on 1 positive result/patient, however positivity was 34% for total samples analysed.

Table 2: Summary of VTEC detected, by methodology 2014

Serogroup	Culture and PCR positive (%)	PCR positive, culture negative (%)	Total positive.
O157	179(100)	0(0)	179
O26	238(96.4)	1(0.4)	239
Other	206(66)	107(34)	313
Total	**623(85)**	**108(15)**	**731**

Table 3: Numbers and incidence of VTEC in ROI 2002-2014

Year	Numbers of VTEC cases	Incidence/100000
2002	68	1.7
2003	82	2.1
2004	51	1.4
2005	123	3.0
2006	159	3.7
2007	115	3.9
2008	223	5.3
2009	240	5.7
2010	202	4.8
2011	270	5.9
2012	540	11.8
2013	716	15.2
2014	**731***	**15.9**

*108/ 731 cases were positive by PCR only and culture negative

Table 4: Serogroups and toxin types of VTEC in ROI in 2014

Serogroup	*vtx1 (%)*	*vtx1+vtx2 (%)*	*vtx2 (%)*	Total
O26	99(42)	130(55)	8(3)	237
O157	0(0)	32(18)	147(82)	179
Unknown*	45	36	25	106
O Unidentifiable	14(33)	6(14)	23(53)	43
O145	2(6)	5(16)	25(78)	32
O146	8(40)	6(30)	6(30)	20
O103	15(83)	0(0)	3(17)	18
O111	1(10)	9(90)	0(0)	10
O Rough	4(50)	2(250	2(25)	8
O182	7(100)	0(0)	0(0)	7
O84	6 (86)	0(0)	1 (14)	7
O5	4(67)	2(33)	0(0)	6
O91	1 (20)	3 (60)	1 (20)	5
O108	3(100)	0(0)	0(0)	3
O55	2 (50)	0(0)	2(50)	4
O76	3 (75)	1 (25)	0 (0)	4
O177	2(67)	0(0)	1(100)	3
O118	3(100)	0(0)	0(0)	3
O128ab	1(33)	2(67)	0(0)	3
O113	1(50)	1(50)	0(0)	2
O163	0(0)	0(0)	2(100)	2
O165	0(0)	2(100)	0(0)	2
O78	2 (100)	0(0)	0(0)	2
O8	0(0)	0(0)	2 (100)	2
0128ab	0(0)	1(50)	1(50)	2

O75	0(0)	1 (50)	1 (50)	2
O107	1(100)	0(0)	0(0)	1
O128ac	1(100)	0(0)	0(0)	1
O128ad	0(0)	1(100)	0(0)	1
O134	1(100)	0(0)	0(0)	1
O181	1(100)	0(0)	0(0)	1
O18ab	0(0)	1(100)	0(0)	1
O31	1(100)	0(0)	0(0)	1
O138	0(0)	0(0)	1(100)	1
O123	0(0)	0(0)	1(100)	1
O69	1(100)	0(0)	0(0)	1
O7	0(0)	1(100)	0(0)	1
O112ab	1(100)	0(0)	0(0)	1
O98	1(100)	0(0)	0(0)	1
OE11362-78	0(0)	0(0)	1(100)	1
OE7477-77	1(100)	0(0)	0(0)	1
O105ac	0(0)	0(0)	1(100)	1
Total	**235**	**242**	**259**	**731**

*PCR positive culture negative specimens that are outside O157, O26, O103, O104, O145, O111

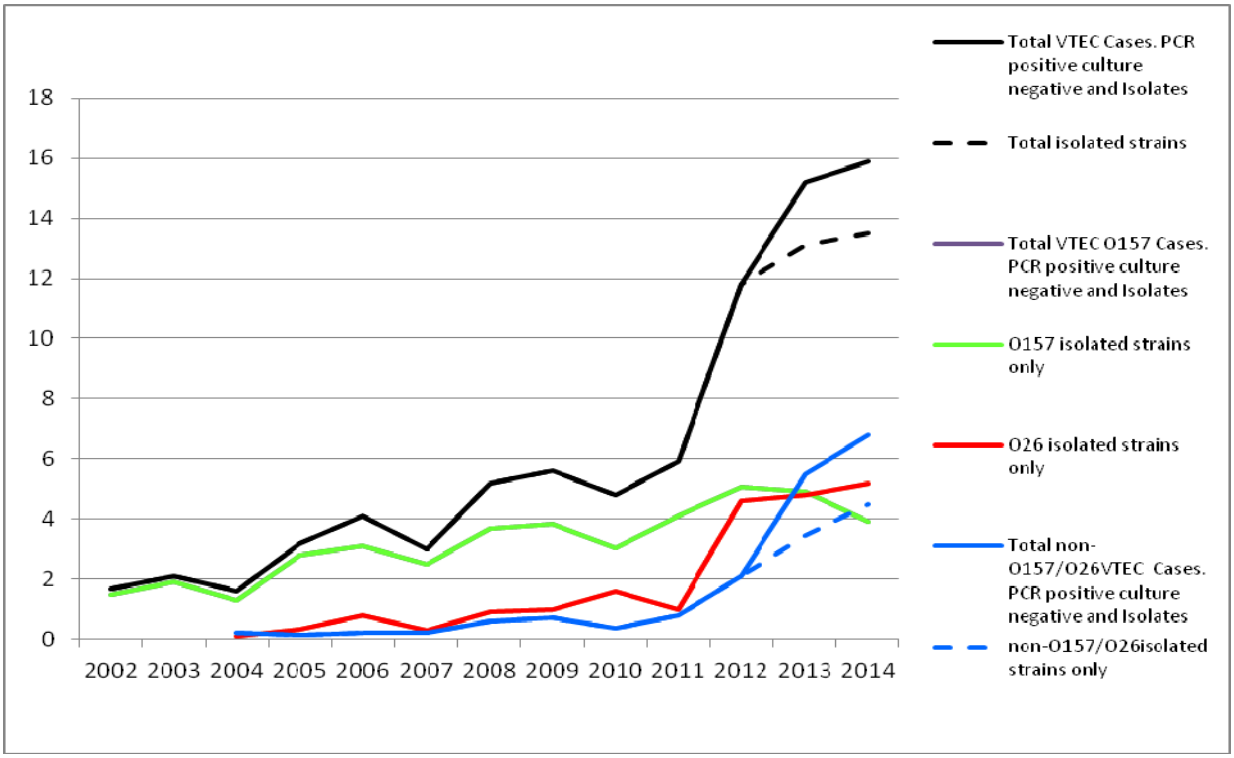

Fig 1: VTEC incidence/100000, 2002-2014

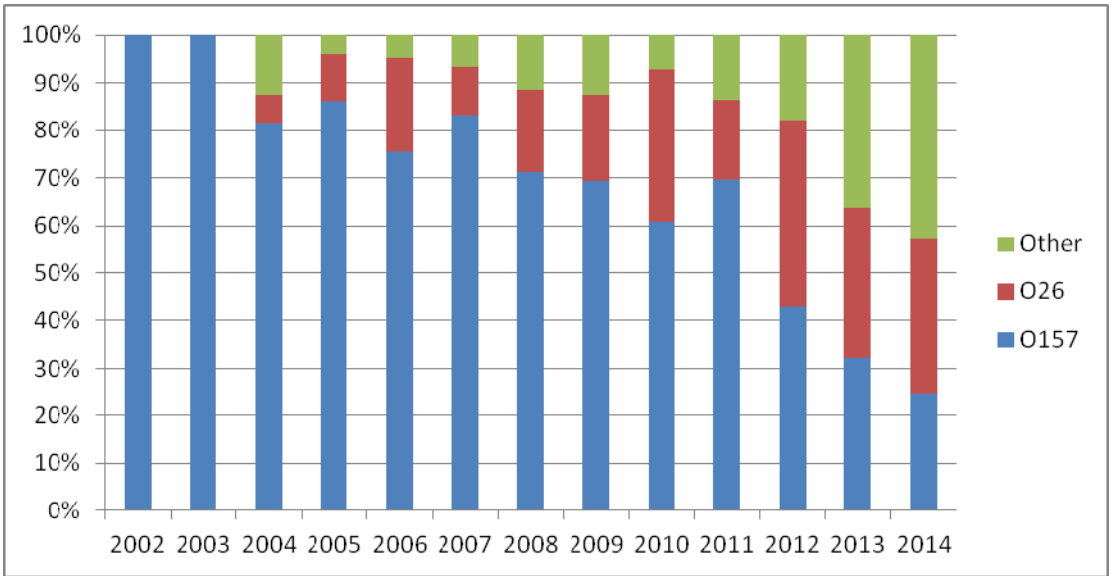

Fig 2: VTEC Serogroups%, 2004-2014

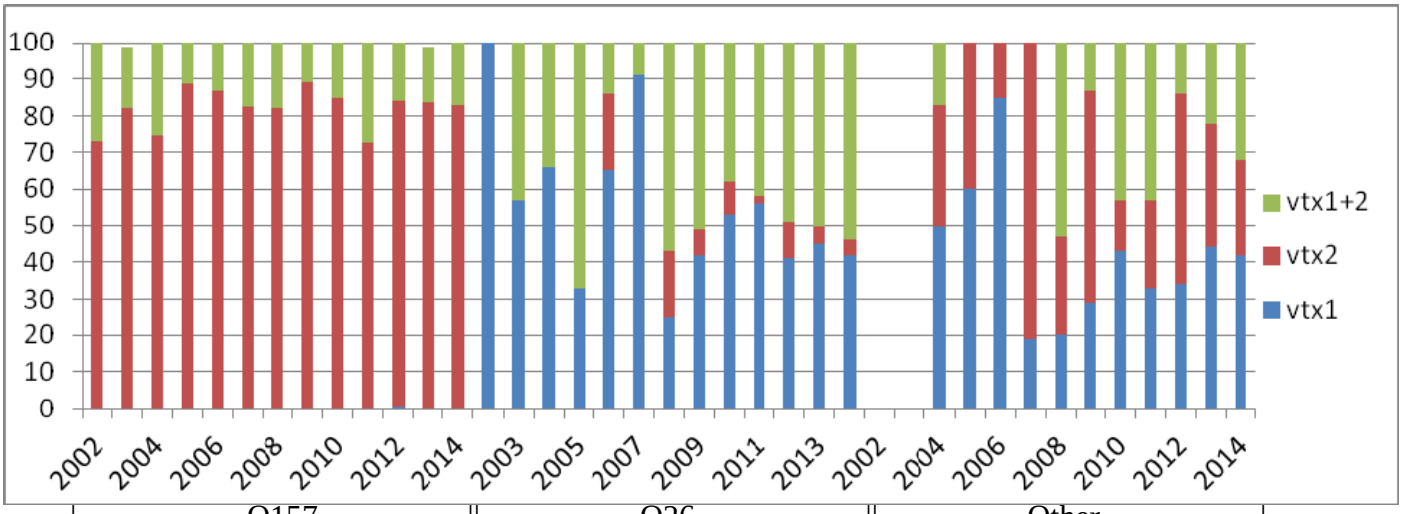

Fig 4: Toxin types of VTEC, 2002-2014

Table 5: Summary of VTEC from Foods 2014

Serogroup	Culture and PCR positive (%)	PCR only positive (%)	Total
O157	0	0	0
Other	0	2(100)	2
Total	**0**	**2**	**2**

Table 6: Summary of VTEC from Waters 2014

Serogroup	Culture and PCR positive (%)	PCR only positive (%)	Total
O157	5(100)	0(0)	5
O-Unidentifiable	1(100)	0(0)	1
Total	**6(100)**	**0(0)**	**6**