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Surveillance: *Clostridium difficile* (*C. difficile*)

Report: 6 monthly rates report

Time period: 1st April 2012 to 31st March 2013

Health Board: All Wales

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Introduction

Mandatory surveillance of *Clostridium difficile* in inpatients aged over 65 with diarrhoea in Welsh hospitals was introduced by the Welsh Government in January 2005. This is the 17th report of the surveillance scheme and covers the period 01/04/2012 to 31/03/2013. From April 2011 data from non-inpatient locations has been collected in Wales and results are provided in the report. The report contains:

1. Tabulated numbers of *C. difficile* and rates per 1000 admissions by Health Board in Wales for the period 01/04/2012 to 31/03/2013.
2. Tabulated numbers of *C. difficile* and rates per 1000 admissions by patient age and gender for the period 01/04/2012 to 31/03/2013.
3. Tabulated numbers of *C. difficile* and rates per 1000 admissions for the 10 hospital specialties with the highest number of reports of *C. difficile* for the period 01/04/2012 to 31/03/2013.
4. Numbers of *C. difficile* in inpatients aged 2 to 65 and numbers of *C. difficile* from non-inpatient locations by Health Board in Wales for the period 01/04/2012 to 31/03/2013.
5. Tabulated monthly numbers and rates of *C. difficile* per 1000 admissions for Wales, by Health Board and by major acute hospital for the period 01/04/2012 to 31/03/2013.
6. Monthly rates of *C. difficile* per 1000 admissions for Wales, by Health Board and by major acute hospital, presented in the form of statistical process control charts (explained in the notes for interpretation) from 01/01/2005 to 31/03/2013, although for some of the Health Boards SPC are only provided from 01/04/2008.

The recent reductions in *C. difficile* in Wales have resulted in the control limits being recalculated for the SPC charts. New control limits were put in place for Wales as a whole from March 2010 but because of further reductions in rate during the 2011/12 financial year another recalculation was introduced from June 2011. The date of recalculation may vary for individual Health Boards and hospitals depending on when the reductions started. Because of the recalculated control limits it is no longer possible to provide the 1 and 2 SD lines on the control charts.

A total of 1934 cases of *C. difficile* were reported in Wales in the 2012/13 financial year; 71% (1365) of these were from hospital inpatient locations where sample taking and testing is the most consistently applied. 80% (1094/1365) of inpatient cases were in the over 65 age group.

The total *C. difficile* rate per 1000 admissions in inpatients aged over 65 in Wales for the period 01/04/2012 to 31/03/2013 was 6.16, ranging from 2.52 to 11.04. This compares with an all Wales rate of 7.18 for the 2011/12 financial year.

Rates in females aged over 65 were higher than in males and rates increased with increasing age. The highest numbers of *C. difficile* were reported from the specialties of general medicine and geriatric medicine.

Data from the English *C. difficile* surveillance scheme is available on the HPA website:

<http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/ClostridiumDifficile/>

Data from the Scottish *C. difficile* surveillance scheme is available on the Health Protection Scotland website:

<http://www.hps.scot.nhs.uk/haic/sshaip/clostridiumdifficile.aspx?subjectid=79>

Data from the Northern Ireland *C. difficile* surveillance scheme is available on the Public Health Agency Northern Ireland website:

<http://www.publichealth.hscni.net/directorate-public-health/health-protection/healthcare-associated-infections>

This report will also be distributed to the Welsh Government, Medical Directors and Chief Executives of Health Boards.

Notes for Interpretation

1. The report covers isolates with specimen dates in the period 01/04/2012 to 31/03/2013.
2. Reports of *C. difficile* were obtained by automatic extraction from laboratory information systems via Datastore, but supplemented manually by reports of samples from hospitals in Wales processed in laboratories in England.
3. Reports of *C. difficile* have been deduplicated: any positive *C. difficile* reports occurring within 28 days of another positive *C. difficile* report from the same patient have been excluded from the data set.
4. The denominator data used are admissions to Welsh hospitals aged over 65. The data was obtained from the NHS Wales Informatics Service database, PEDW, and is specific to the time period of the report.
5. Rates by Health Board include numerator and denominator data from all hospitals in the Health Board.
6. Laboratories in Wales have all moved to a standard protocol for testing specimens for *C. difficile* (available at: <http://wales.gov.uk/topics/health/cmo/publications/cmo/item/c.difficile/?lang=en>). Previously specimens were tested for *C. difficile* using a single test (either a toxin A and B enzyme immunoassay or a neutralised cell toxicity assay) but now a 2-stage test is used, incorporating a glutamate dehydrogenase (GDH) assay followed by a toxin enzyme immunoassay. For the 2-stage test, only those specimens that were both GDH and toxin positive were included as positive for *C. difficile*. The change in testing protocol may influence the numbers of *C. difficile* identified.
7. The median is the rate in the middle of all the rates, when ordered from lowest to highest.
8. Monthly trend data for Wales, for major acute hospitals and for Health Boards are presented in the form of statistical process control charts. SPC charts assume that rates within a Health Board/hospital will be largely similar over time. They allow the distinction between natural variation (rates that fall within the limits) and special cause variation, where something unusual is occurring in a Health Board/hospital (rates that fall outside the limits). A rate that falls outside the control limits and also certain patterns in the trend data should lead to a search for the explanation for the situation, which has resulted in the outlier rate or pattern. This could be the result of either a true high or low rate of *C. difficile* or due to reporting biases e.g. incomplete reporting or over-reporting. Further information about SPC charts has been provided previously.
9. Data represents *C. difficile* diagnosed in a Health Board/hospital; the *C. difficile* was not necessarily acquired in that Health Board/hospital.
10. Health Boards/hospitals vary in their case mix. Differences in numbers of patients with increased vulnerability to *C. difficile* may contribute to differences in rates in different locations.

Rates of *C. difficile* per 1000 hospital admissions in inpatients aged over 65, 01/04/12 – 31/03/13

Table 1. Rates of *C. difficile* in inpatients aged over 65 by Health Board

Health Board/NHS Trust	Number of <i>C. difficile</i>	Number of Admissions	Rate/1000 Admissions
Wales	1094	177455	6.16
All Wales min	2	727	2.52
All Wales max	391	41278	11.04
All Wales average	137	22182	5.99
All Wales median	125	23756	5.73

Table 2. Wales rates of *C. difficile* in inpatients aged over 65 by patient age group

Age Group	Number of <i>C. difficile</i>	Number of Admissions	Rate/1000 Admissions
66-75	206	65864	3.13
76-85	470	70160	6.70
86-95	380	38478	9.88
96+	38	2953	12.87

Table 3. Wales rates of *C. difficile* in inpatients aged over 65 by patient gender

Patient Gender	Number of <i>C. difficile</i>	Number of Admissions	Rate/1000 Admissions
Female	628	95606	6.57
Male	466	81849	5.69

Table 4. Wales rates of *C. difficile* in inpatients aged over 65 by specialty for the 10 specialties with the highest numbers of *C. difficile*

Specialty	Number of <i>C. difficile</i>	Number of Admissions	Rate/1000 Admissions
General Medicine	396	75909	5.22
Geriatric Medicine	149	8721	17.09
General Surgery	94	21611	4.35
Trauma & Orthopaedic	39	19127	2.04
Cardiology	27	8027	3.36
Nephrology	26	1244	20.90
Haematology	23	992	23.19
Urology	22	7543	2.92
GP (other than maternity)	18	3989	4.51
Rehabilitation	18	4415	4.08
<i>Others</i>	<i>97</i>		
<i>Not known</i>	<i>185</i>		

Numbers of *C.difficile* in patients aged 2 and over, 01/04/12 – 31/03/13

Table 5. Numbers of *C. difficile* in patients aged 2 and over by Health Board

Health Board/NHS Trust	Number of <i>C. difficile</i> in inpatients			Number of <i>C. difficile</i> in non-inpatients*		
	Age 2 - 65	Age over 65	Inpatient Total	Age 2 - 65	Age over 65	Non-Inpatient Total
Wales	271	1094	1365	125	444	569

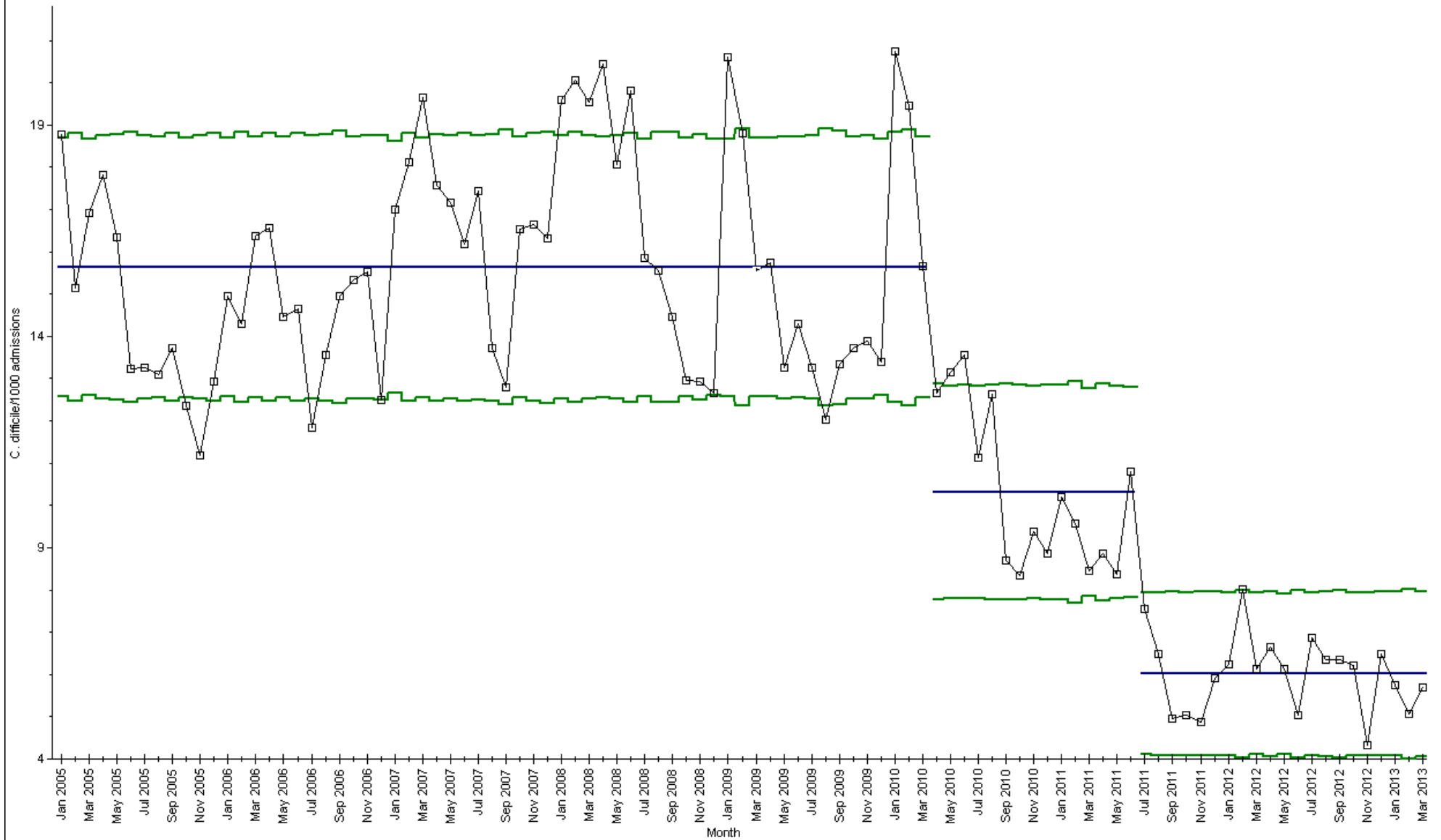
* Non-inpatients include *C. difficile* from non-inpatient wards within hospitals and from community locations such as GPs and nursing homes

Wales *C. difficile* trend data, 01/04/12 - 31/03/13

Monthly number and rate per 1000 hospital admissions of *C. difficile* in inpatients aged over 65 in Wales, 01/04/12 - 31/03/13

Mth/Yr	Number of <i>C. difficile</i>	Number of admissions	Rate/1000 admissions
Apr 12	101	14617	6.91
May 12	99	15537	6.37
Jun 12	75	14222	5.27
Jul 12	108	15169	7.12
Aug 12	97	14684	6.61
Sep 12	94	14226	6.61
Oct 12	98	15176	6.46
Nov 12	69	15073	4.58
Dec 12	101	14993	6.74
Jan 13	90	15022	5.99
Feb 13	74	13931	5.31
Mar 13	88	14805	5.94

Monthly rates of C. difficile per 1000 hospital admissions in inpatients aged over 65 in Wales, 01/01/05 - 31/03/13



Split Start	Jan 2005	Apr 2010	Jul 2011
Overall U.C.L.	=19.01	13.09	8.20
U-bar	=15.88	10.56	6.26
Overall L.C.L.	=12.75	8.03	4.31

Monthly rates and 12 month moving average rate of *C. difficile* per 1000 hospital admissions in inpatients aged over 65 in Wales, 01/01/05 - 31/03/13

