

# *C. difficile* surveillance

## Quarterly report

### January 2018 - March 2018

#### Key points

- CDI reports for hospital inpatients aged 65 years and over increased by 17.5% (from 57 to 67 episodes) during January - March 2018 compared to October - December 2017.
- CDI rate per 1,000 bed days increased by 11% January - March 2018 compared to October - December 2017.
- CDI reports for community patients aged 65 years and over decreased by 21% (from 38 to 30 episodes) during January - March 2018 compared to October - December 2017.
- Total CDI reports, for hospital inpatients and community patients combined, aged two years and over, decreased by 1% during January - March 2018 compared to October - December 2017 (from 120 to 119 episodes).
- CDI reports for hospital inpatients aged 65 years and over increased by 11% between the 2016/17 and 2017/18 financial years.
- During January - March 2018 the most prevalent ribotypes for CDI inpatients are 002 (31%), 014 (8%), 020 (8%) and 078 (8%) (Table 1) and in the community are 078 (15%) 002 (12%), 014 (12%) and 023 (12%) (Table 2).

# Surveillance of *C. difficile* infection (CDI)

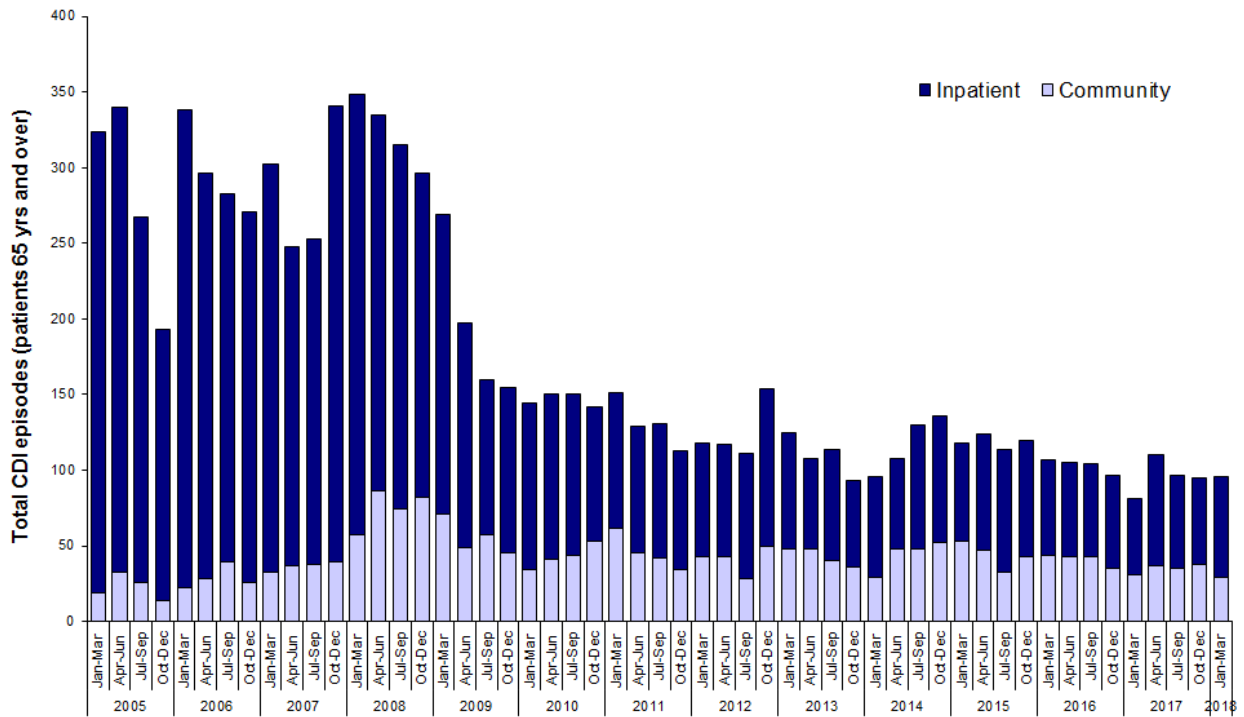


Figure 1: Total CDI episodes, inpatient and community, in Northern Ireland, by quarter (patients ≥ 65 years), between 2005 and 2018

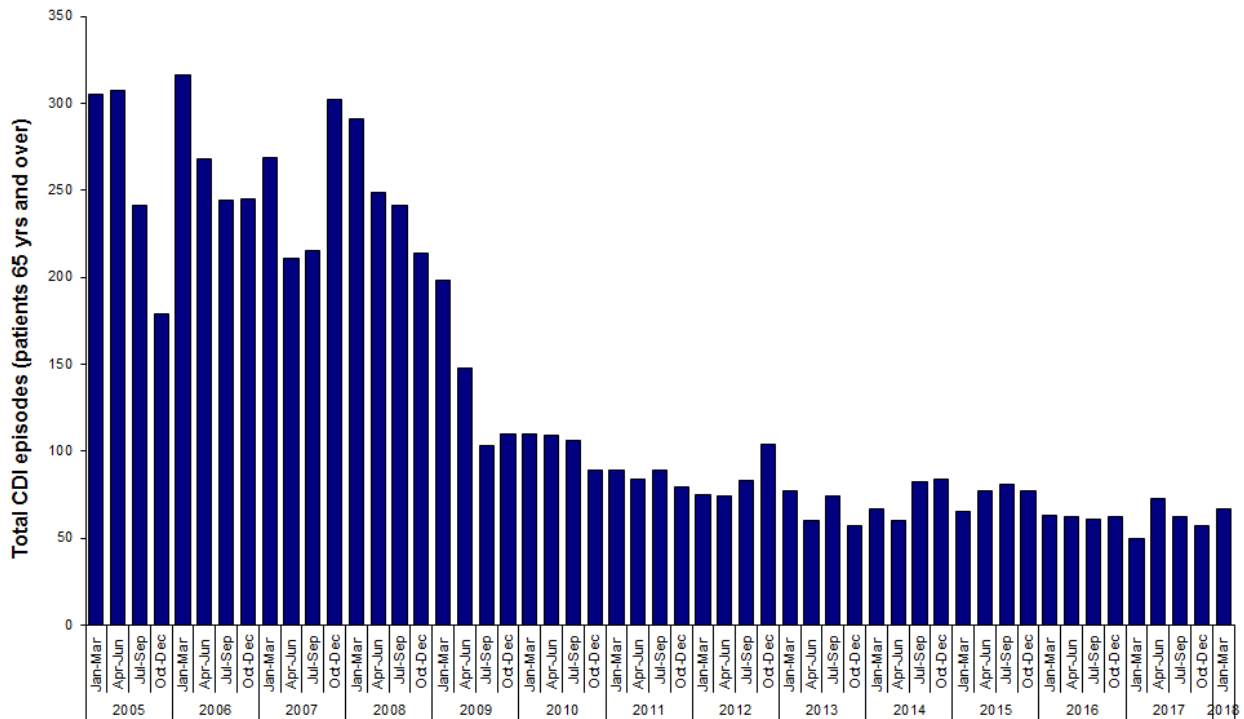


Figure 2a: Total CDI inpatient episodes in Northern Ireland, by quarter (patients ≥ 65 years), between 2005 and 2018

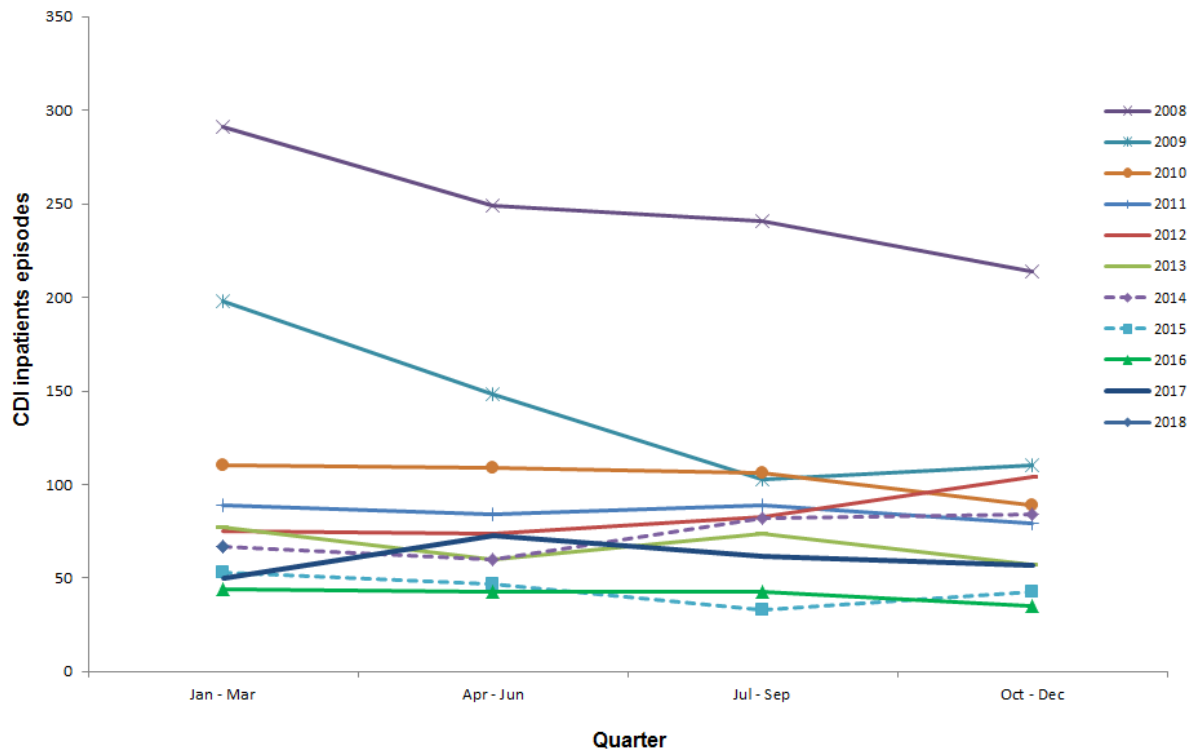
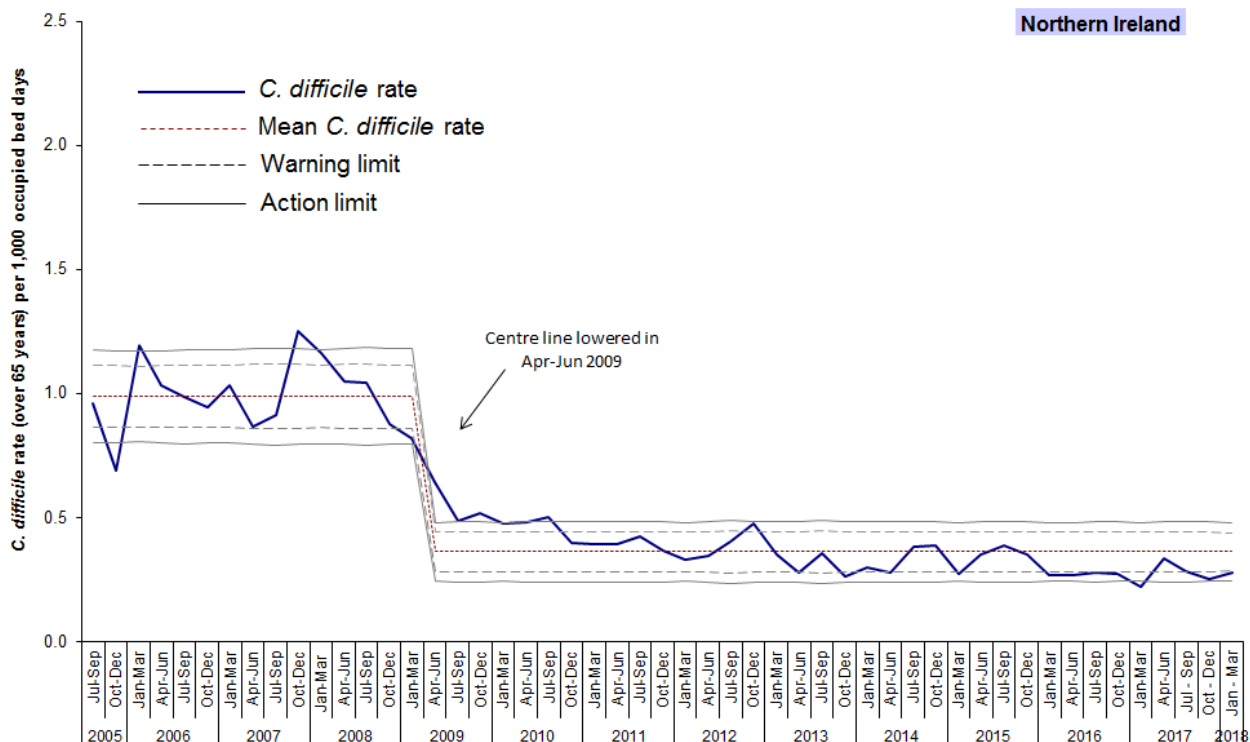


Figure 2b: Total CDI inpatient episodes in Northern Ireland, by quarter (patients  $\geq$  65 years), between 2008 and 2018

**Statistical process control (SPC) charts**

- SPC charts allow a distinction to be made between natural variation and ‘special cause variation’, where something unusual may be occurring. Trends in CDI rates since July 2005 are shown for each HSCT in appendix B.



**Figure 3: Statistical process control chart for quarterly *C. difficile* rates among inpatients in Northern Ireland aged 65 years and over (for HSCT level, see appendix B)**

## Results from the NI Ribotype Surveillance Programme

**Table 1: A summary of *C. difficile* ribotypes in Hospital Inpatients aged 2 years and over, and the percentage of each against the overall total, in Northern Ireland during routine surveillance, April 2017 – March 2018.**

| Ribotype             | Apr - Jun 2017 |      | Jul - Sep 2017 |      | Oct - Dec 2017 |      | Jan - Mar 2018 |      |
|----------------------|----------------|------|----------------|------|----------------|------|----------------|------|
|                      | Number         | %    | Number         | %    | Number         | %    | Number         | %    |
| 001                  | 3              | 3.3  | 4              | 4.8  | 2              | 2.6  | 1              | 1.2  |
| 002                  | 8              | 8.7  | 12             | 14.5 | 14             | 18.4 | 27             | 31.4 |
| 005                  | 4              | 4.3  | 5              | 6.0  | 2              | 2.6  | 6              | 7.0  |
| 011                  | 3              | 3.3  | 4              | 4.8  | 2              | 2.6  | 3              | 3.5  |
| 014                  | 9              | 9.8  | 7              | 8.4  | 9              | 11.8 | 7              | 8.1  |
| 015                  | 7              | 7.6  | 10             | 12.0 | 5              | 6.6  | 4              | 4.7  |
| 018                  | 0              | 0.0  | 3              | 3.6  | 5              | 6.6  | 0              | 0.0  |
| 020                  | 4              | 4.3  | 3              | 3.6  | 7              | 9.2  | 7              | 8.1  |
| 023                  | 8              | 8.7  | 3              | 3.6  | 5              | 6.6  | 2              | 2.3  |
| 078                  | 15             | 16.3 | 9              | 10.8 | 3              | 3.9  | 7              | 8.1  |
| 193                  | 2              | 2.2  | 7              | 8.4  | 1              | 1.3  | 0              | 0.0  |
| Other                | 23             | 25.0 | 11             | 13.3 | 14             | 18.4 | 15             | 17.4 |
| Not groupable**      | 3              | 3.3  | 2              | 2.4  | 2              | 2.6  | 3              | 3.5  |
| Not on ribotype list | 1              | 1.1  | 1              | 1.2  | 4              | 5.3  | 4              | 4.7  |
| Not isolated***      | 2              | 2.2  | 2              | 2.4  | 1              | 1.3  | 0              | 0.0  |
| <b>Total</b>         | <b>92</b>      |      | <b>83</b>      |      | <b>76</b>      |      | <b>86</b>      |      |

**Table 2: A summary of *C. difficile* ribotypes in Community Patients aged 2 years and over, and the percentage of each against the overall total, in Northern Ireland during routine surveillance, April 2017 – March 2018.**

| Ribotype             | Apr - Jun 2017 |      | Apr - Jun 2017 |      | Jul - Sep 2017 |      | Jan - Mar 2018 |      |
|----------------------|----------------|------|----------------|------|----------------|------|----------------|------|
|                      | Number         | %    | Number         | %    | Number         | %    | Number         | %    |
| 001                  | 0              | 0.0  | 2              | 5.1  | 2              | 4.5  | 0              | 0.0  |
| 002                  | 5              | 12.2 | 5              | 12.8 | 5              | 11.4 | 4              | 12.1 |
| 005                  | 6              | 14.6 | 0              | 0.0  | 0              | 0.0  | 0              | 0.0  |
| 011                  | 0              | 0.0  | 0              | 0.0  | 1              | 2.3  | 2              | 6.1  |
| 014                  | 3              | 7.3  | 4              | 10.3 | 5              | 11.4 | 4              | 12.1 |
| 015                  | 7              | 17.1 | 3              | 7.7  | 6              | 13.6 | 3              | 9.1  |
| 018                  | 1              | 2.4  | 1              | 2.6  | 1              | 2.3  | 0              | 0.0  |
| 020                  | 2              | 4.9  | 1              | 2.6  | 3              | 6.8  | 2              | 6.1  |
| 023                  | 1              | 2.4  | 0              | 0.0  | 2              | 4.5  | 4              | 12.1 |
| 078                  | 4              | 9.8  | 6              | 15.4 | 4              | 9.1  | 5              | 15.2 |
| 193                  | 1              | 2.4  | 4              | 10.3 | 0              | 0.0  | 1              | 3.0  |
| Other                | 8              | 19.5 | 10             | 25.6 | 7              | 15.9 | 3              | 9.1  |
| Not groupable**      | 2              | 4.9  | 1              | 2.6  | 4              | 9.1  | 2              | 6.1  |
| Not on ribotype list | 0              | 0.0  | 1              | 2.6  | 3              | 6.8  | 2              | 6.1  |
| Not isolated***      | 1              | 2.4  | 1              | 2.6  | 1              | 2.3  | 1              | 3.0  |
| <b>Total</b>         | <b>41</b>      |      | <b>39</b>      |      | <b>44</b>      |      | <b>33</b>      |      |

\* Figures are provisional

\*\* 'Not groupable' ribotypes do not match existing profiles

\*\*\* 'Not isolated' indicates isolates that have no ribotype information supplied, with at least six weeks since the date of the specimen. *Note: 1 CDI record in Oct-Dec 2017 was not tested and classified as Not isolated.*

**Table 3: Descriptive data for *C. difficile* ribotypes 002, 078 and 014 in Northern Ireland Hospital Inpatients and Community Patients, January - March 2018.**

|               | 002 (n =31) |      | 078 (n = 12) |      | 014 (n = 11) |      |
|---------------|-------------|------|--------------|------|--------------|------|
| <b>Age</b>    |             |      |              |      |              |      |
| range         | 5 - 94      |      | 56 - 94      |      | 49-95        |      |
| median        | 80          |      | 86           |      | 81           |      |
| <b>Sex</b>    |             |      |              |      |              |      |
|               | n           | %    | n            | %    | n            | %    |
| Female        | 16          | 51.6 | 8            | 66.7 | 8            | 72.7 |
| Male          | 15          | 48.4 | 4            | 33.3 | 3            | 27.3 |
| <b>Trust</b>  |             |      |              |      |              |      |
| Belfast       | 14          | 45.2 | 4            | 33.3 | 6            | 54.5 |
| Northern      | 3           | 9.7  | 4            | 33.3 | 2            | 18.2 |
| South Eastern | 7           | 22.6 | 1            | 8.3  | 0            | 0.0  |
| Southern      | 4           | 12.9 | 2            | 16.7 | 1            | 9.1  |
| Western       | 3           | 9.7  | 1            | 8.3  | 2            | 18.2 |
| <b>Source</b> |             |      |              |      |              |      |
| Inpatient     | 27          | 87.1 | 7            | 58.3 | 7            | 63.6 |
| Community*    | 4           | 12.9 | 5            | 41.7 | 4            | 36.4 |
|               | 31          |      | 12           |      | 11           |      |

\* Community specimens include those taken from Accident and Emergency, Outpatients, GPs, Hospice, Care Homes, Hospital Care at Home and Psychiatric facilities.

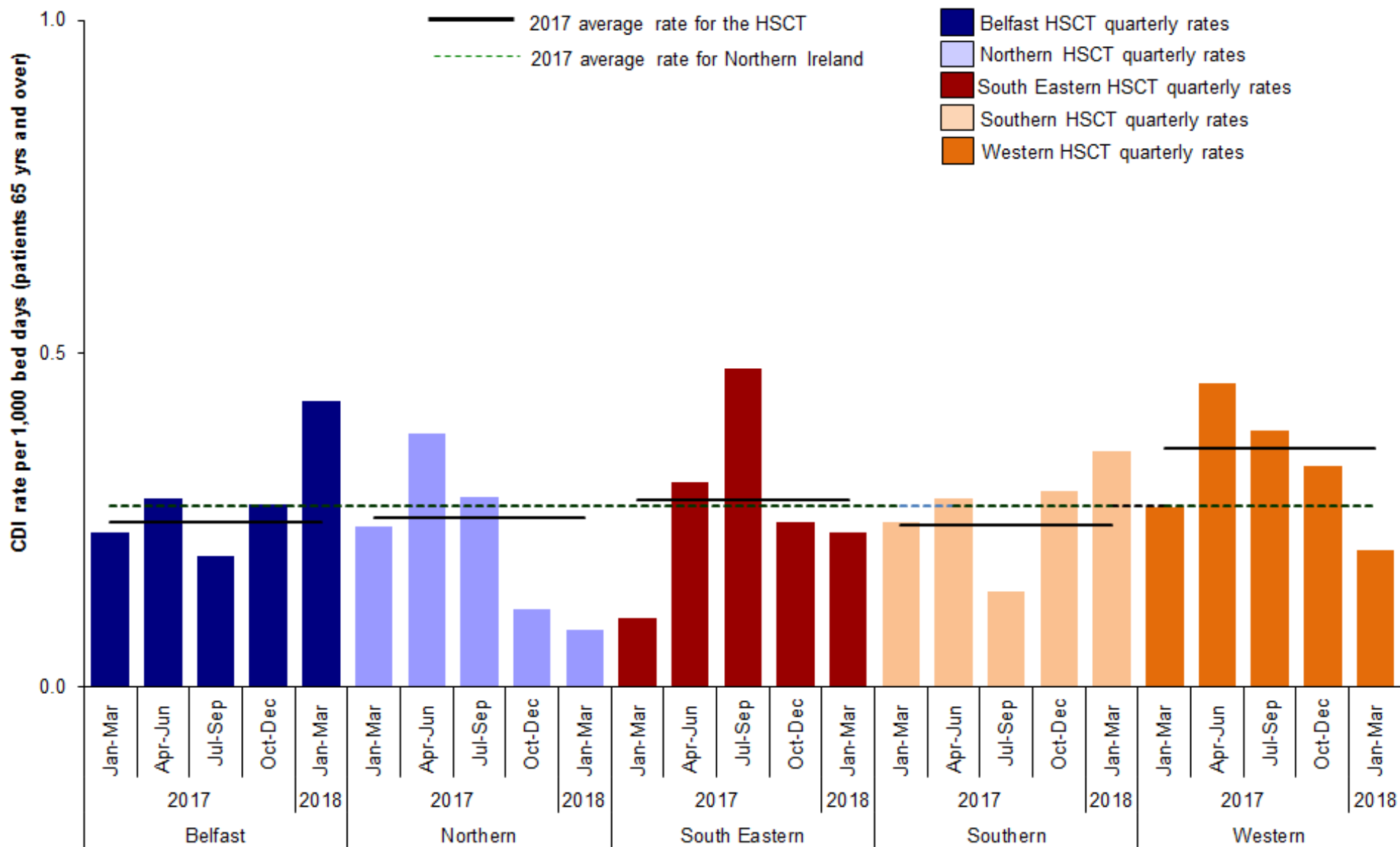


Figure 4: Quarterly rates of *C. difficile* among inpatients aged 65 years and over, by HSCT, January 2017 - March 2018, compared with annual Northern Ireland and HSCT rates for 2017

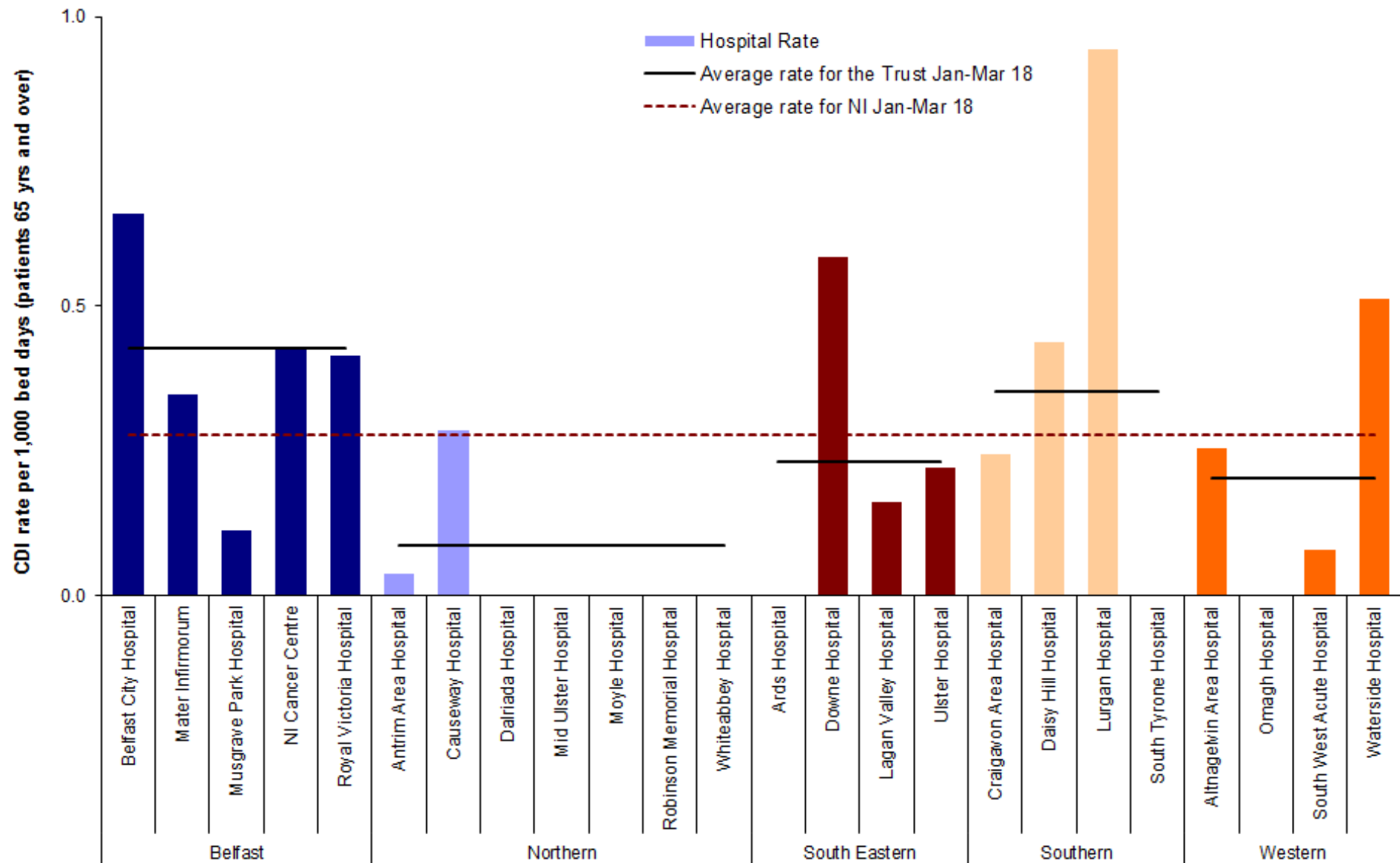


Figure 5: *C. difficile* rates during January - March 2018 - Inpatients aged 65 years and over, by hospital, including HSCT rates and average rate for Northern Ireland (see appendix A, Table 4)



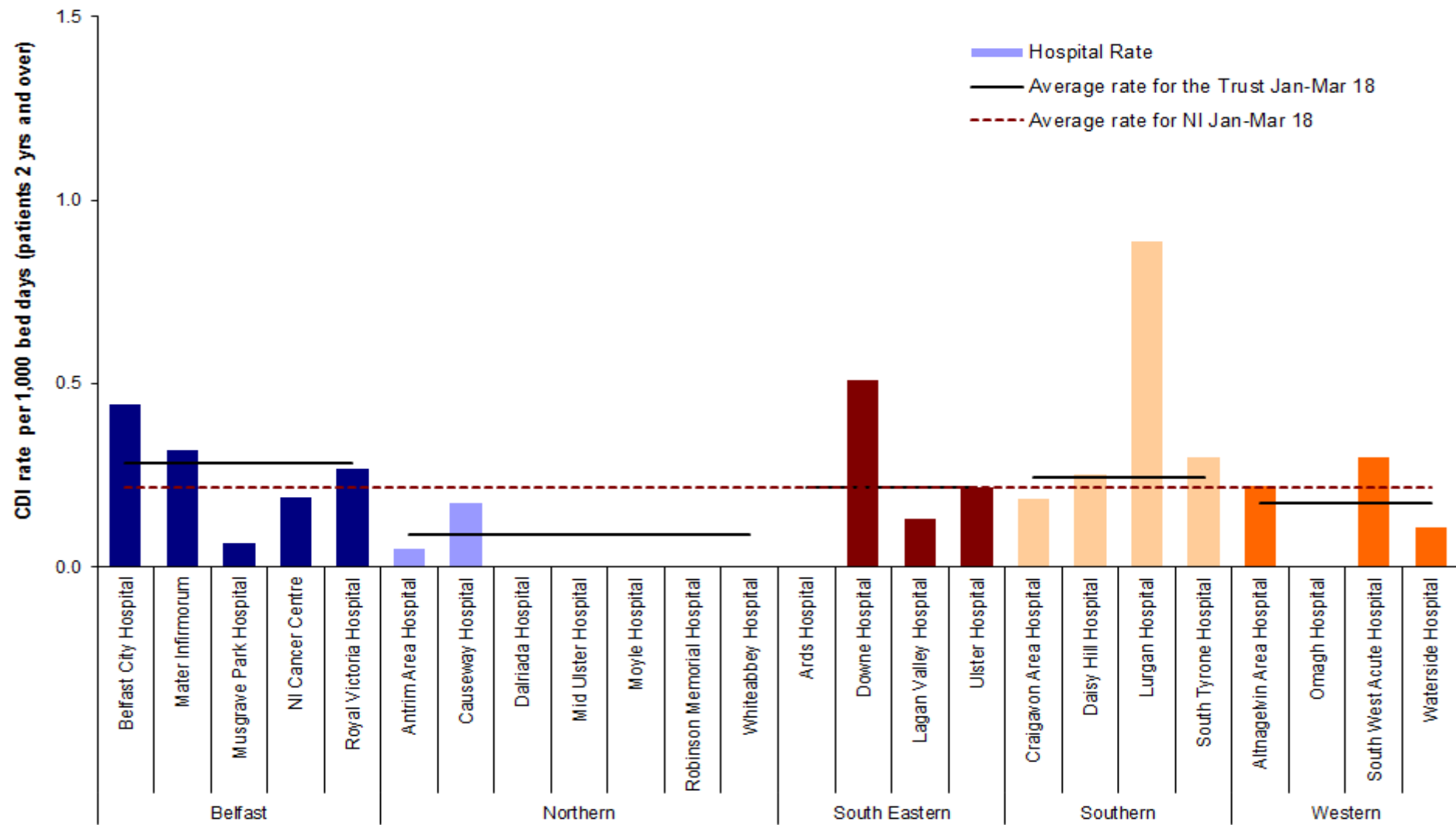


Figure 6: *C. difficile* rates during January - March 2018 - Inpatients aged two years and over, by hospital, including HSCT rates and average rate for Northern Ireland (see appendix A, Table 5)

## Appendix A

**Table 4: Quarterly rate of *C. difficile* reports in patients aged 65 years and over, by hospital, April 2017 – March 2018**

| Hospital  | Apr - Jun 2017 | Jul - Sep 2017 | Oct - Dec 2017 | Jan-Mar 2018 |
|---|----------------|----------------|----------------|--------------|
|   | Rate           | Rate           | Rate           | Rate         |
| Belfast City Hospital                               | 0.173          | 0.234          | 0.523          | 0.658        |
| Mater Infirmorum                                    | 0.201          | 0.394          | 0.374          | 0.347        |
| Musgrave Park Hospital                              | 0.555          | 0.000          | 0.000          | 0.114        |
| NICCO (formerly at Belvoir Park)                    | 0.392          | 0.000          | 0.000          | 0.424        |
| Royal Group of Hospitals                            | 0.280          | 0.181          | 0.197          | 0.415        |
| <b>Belfast Health &amp; Social Care Trust</b>       | <b>0.282</b>   | <b>0.196</b>   | <b>0.273</b>   | <b>0.442</b> |
| Antrim Area Hospital                                | 0.441          | 0.380          | 0.127          | 0.039        |
| Causeway Hospital                                   | 0.511          | 0.338          | 0.098          | 0.286        |
| Dalriada Hospital                                   | 0.000          | 0.000          | 0.000          | 0.000        |
| Mid Ulster Hospital                                 | 0.000          | 0.000          | 0.000          | 0.000        |
| Moyle Hospital                                      | 0.747          | 0.000          | 0.000          | 0.000        |
| Robinson Memorial Hospital                          | 0.000          | 0.000          | 0.000          | 0.000        |
| Whiteabbey Hospital                                 | 0.000          | 0.000          | 0.287          | 0.000        |
| <b>Northern Health &amp; Social Care Trust</b>      | <b>0.379</b>   | <b>0.284</b>   | <b>0.115</b>   | <b>0.086</b> |
| Ards Hospital                                       | 0.000          | 0.000          | 0.000          | 0.000        |
| Downe Hospital                                      | 0.647          | 0.000          | 0.000          | 0.584        |
| Lagan Valley Hospital                               | 0.000          | 0.166          | 0.322          | 0.162        |
| Ulster Hospital                                     | 0.355          | 0.630          | 0.270          | 0.220        |
| <b>South Eastern Health &amp; Social Care Trust</b> | <b>0.307</b>   | <b>0.478</b>   | <b>0.246</b>   | <b>0.232</b> |
| Craigavon Area Hospital                             | 0.259          | 0.212          | 0.286          | 0.243        |
| Daisy Hill Hospital                                 | 0.331          | 0.110          | 0.318          | 0.437        |
| Lurgan Hospital                                     | 0.000          | 0.000          | 0.466          | 0.944        |
| South Tyrone Hospital                               | 0.724          | 0.000          | 0.000          | 0.000        |
| <b>Southern Health &amp; Social Care Trust</b>      | <b>0.283</b>   | <b>0.143</b>   | <b>0.292</b>   | <b>0.352</b> |
| Altnagelvin Area Hospital                           | 0.601          | 0.324          | 0.378          | 0.254        |
| Tyrone County / Omagh Hospital                      | 0.778          | 0.401          | 0.000          | 0.000        |
| South West Acute Hospital                           | 0.288          | 0.433          | 0.453          | 0.080        |
| Waterside Hospital                                  | 0.000          | 0.498          | 0.000          | 0.512        |
| <b>Western Health &amp; Social Care Trust</b>       | <b>0.456</b>   | <b>0.383</b>   | <b>0.331</b>   | <b>0.230</b> |
| <b>NI TOTAL</b>                                     | <b>0.333</b>   | <b>0.285</b>   | <b>0.251</b>   | <b>0.279</b> |

**Table 5: Quarterly episodes of *C. difficile* episodes in patients aged 65 years and over, by Trust, April 2017 – March 2018**

| Trust   | Apr - Jun 2017 | Jul - Sep 2017 | Oct - Dec 2017 | Jan - Mar 2018 |
|---|----------------|----------------|----------------|----------------|
|   | Episodes       | Episodes       | Episodes       | Episodes       |
| <b>Belfast Health &amp; Social Care Trust</b>       | <b>19</b>      | <b>13</b>      | <b>19</b>      | <b>32</b>      |
| <b>Northern Health &amp; Social Care Trust</b>      | <b>16</b>      | <b>12</b>      | <b>5</b>       | <b>4</b>       |
| <b>South Eastern Health &amp; Social Care Trust</b> | <b>12</b>      | <b>18</b>      | <b>10</b>      | <b>10</b>      |
| <b>Southern Health &amp; Social Care Trust</b>      | <b>10</b>      | <b>5</b>       | <b>11</b>      | <b>13</b>      |
| <b>Western Health &amp; Social Care Trust</b>       | <b>16</b>      | <b>14</b>      | <b>12</b>      | <b>8</b>       |
| <b>NI TOTAL</b>                                     | <b>73</b>      | <b>62</b>      | <b>57</b>      | <b>67</b>      |
| <b>NI community TOTAL</b>                           | <b>37</b>      | <b>35</b>      | <b>38</b>      | <b>30</b>      |

## Appendix A

**Table 6: Quarterly rate of *C. difficile* reports in patients aged two years and over, by hospital, April 2017 – March 2018**

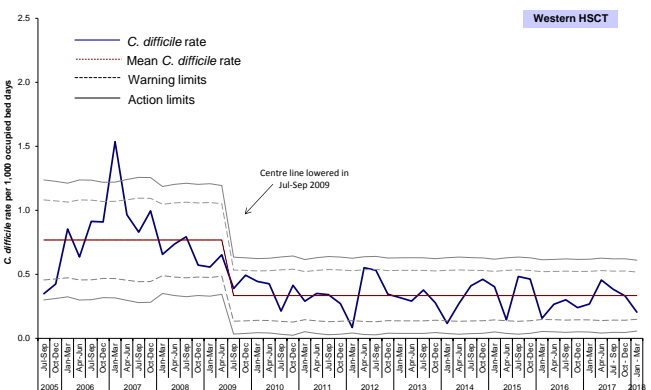
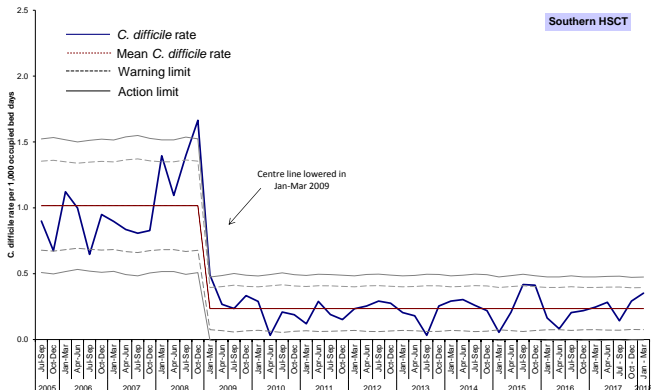
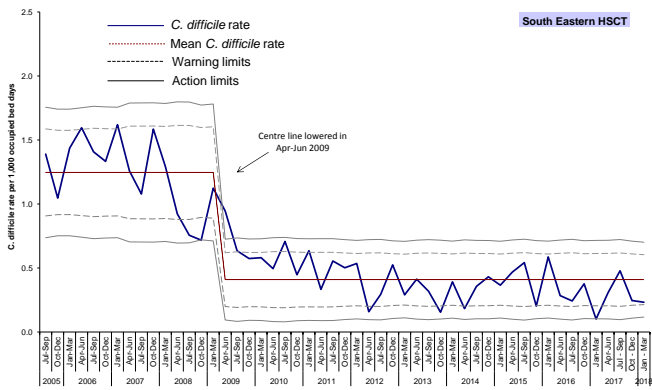
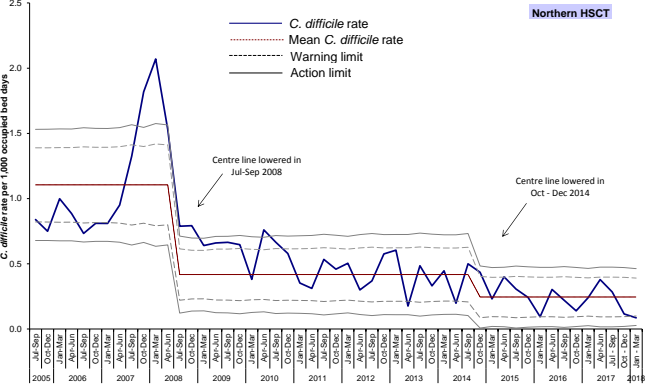
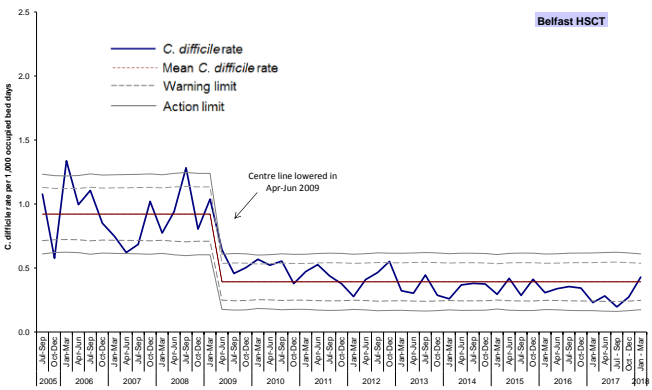
| Hospital  | Apr - Jun 2017 | Jul - Sep 2017 | Oct - Dec 2017 | Jan - Mar 2018 |
|---|----------------|----------------|----------------|----------------|
|   | Rate           | Rate           | Rate           | Rate           |
| Belfast City Hospital                               | 0.217          | 0.187          | 0.343          | 0.441          |
| Mater Infirmorum                                    | 0.161          | 0.324          | 0.261          | 0.370          |
| Musgrave Park Hospital                              | 0.316          | 0.000          | 0.000          | 0.065          |
| NICCO (formerly at Belvoir Park)                    | 0.375          | 0.000          | 0.197          | 0.191          |
| Royal Group of Hospitals                            | 0.147          | 0.137          | 0.176          | 0.269          |
| <b>Belfast Health &amp; Social Care Trust</b>       | <b>0.192</b>   | <b>0.152</b>   | <b>0.202</b>   | <b>0.291</b>   |
| Antrim Area Hospital                                | 0.283          | 0.283          | 0.125          | 0.049          |
| Causeway Hospital                                   | 0.496          | 0.183          | 0.174          | 0.228          |
| Dalriada Hospital                                   | 0.000          | 0.000          | 0.000          | 0.000          |
| Mid Ulster Hospital                                 | 0.000          | 0.000          | 0.000          | 0.000          |
| Moyle Hospital                                      | 0.718          | 0.000          | 0.000          | 0.000          |
| Robinson Memorial Hospital                          | 0.000          | 0.000          | 0.000          | 0.000          |
| Whiteabbey Hospital                                 | 0.000          | 0.000          | 0.256          | 0.000          |
| <b>Northern Health &amp; Social Care Trust</b>      | <b>0.303</b>   | <b>0.212</b>   | <b>0.132</b>   | <b>0.086</b>   |
| Ards Hospital                                       | 0.000          | 0.000          | 0.000          | 0.000          |
| Downe Hospital                                      | 0.521          | 0.000          | 0.000          | 0.507          |
| Lagan Valley Hospital                               | 0.132          | 0.277          | 0.268          | 0.131          |
| Ulster Hospital                                     | 0.227          | 0.377          | 0.220          | 0.217          |
| <b>South Eastern Health &amp; Social Care Trust</b> | <b>0.227</b>   | <b>0.332</b>   | <b>0.207</b>   | <b>0.219</b>   |
| Craigavon Area Hospital                             | 0.216          | 0.217          | 0.186          | 0.186          |
| Daisy Hill Hospital                                 | 0.188          | 0.126          | 0.182          | 0.251          |
| Lurgan Hospital                                     | 0.000          | 0.000          | 0.444          | 0.888          |
| South Tyrone Hospital                               | 0.670          | 0.000          | 0.000          | 0.000          |
| <b>Southern Health &amp; Social Care Trust</b>      | <b>0.215</b>   | <b>0.166</b>   | <b>0.195</b>   | <b>0.245</b>   |
| Altnagelvin Area Hospital                           | 0.372          | 0.318          | 0.233          | 0.222          |
| Tyrone County / Omagh Hospital                      | 0.711          | 0.376          | 0.000          | 0.000          |
| South West Acute Hospital                           | 0.236          | 0.280          | 0.394          | 0.300          |
| Waterside Hospital                                  | 0.000          | 0.338          | 0.000          | 0.107          |
| <b>Western Health &amp; Social Care Trust</b>       | <b>0.314</b>   | <b>0.311</b>   | <b>0.246</b>   | <b>0.172</b>   |
| <b>NI TOTAL</b>                                     | <b>0.240</b>   | <b>0.219</b>   | <b>0.196</b>   | <b>0.217</b>   |

**Table 7: Quarterly episodes of *C. difficile* episodes in patients aged 2 years and over, by Trust, April 2017 – March 2018**

| Trust                                    | Apr - Jun 2017 | Jul - Sep 2017 | Oct - Dec 2017 | Jan - Mar 2018 |
|--|----------------|----------------|----------------|----------------|
|  | Episodes       | Episodes       | Episodes       | Episodes       |
| Belfast Health & Social Care Trust       | 26             | 20             | 27             | 40             |
| Northern Health & Social Care Trust      | 20             | 14             | 9              | 6              |
| South Eastern Health & Social Care Trust | 14             | 20             | 13             | 14             |
| Southern Health & Social Care Trust      | 13             | 10             | 12             | 15             |
| Western Health & Social Care Trust       | 19             | 19             | 15             | 11             |
| <b>NI TOTAL</b>                          | <b>92</b>      | <b>83</b>      | <b>76</b>      | <b>86</b>      |
| <b>NI community TOTAL</b>                | <b>41</b>      | <b>39</b>      | <b>44</b>      | <b>33</b>      |

# Appendix B

## Trends in *C. difficile* rates in inpatients aged 65 years and over, by HSCT and quarter, 2005 – 2018



## Appendix C

**Table 8: *C. difficile* reports among inpatients in Northern Ireland aged 65 years and over, by financial year and HSCT**

| Financial Year          |             |             |             |            |            |            |            |            |            |            |            |            |            |
|-------------------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| HSCT                    | 2005/06     | 2006/07     | 2007/08     | 2008/09    | 2009/10    | 2010/11    | 2011/12    | 2012/13    | 2013/14    | 2014/15    | 2015/16    | 2016/17    | 2017/18    |
| Belfast                 | 352         | 336         | 280         | 327        | 163        | 147        | 117        | 124        | 90         | 103        | 102        | 90         | 84         |
| Northern                | 184         | 172         | 297         | 172        | 102        | 103        | 75         | 73         | 56         | 54         | 43         | 39         | 37         |
| South Eastern           | 243         | 256         | 199         | 135        | 98         | 80         | 72         | 50         | 50         | 53         | 70         | 39         | 50         |
| Southern                | 168         | 130         | 134         | 164        | 37         | 17         | 28         | 33         | 25         | 27         | 40         | 27         | 39         |
| Western                 | 96          | 132         | 109         | 104        | 71         | 46         | 35         | 58         | 37         | 53         | 43         | 40         | 50         |
| <b>Northern Ireland</b> | <b>1043</b> | <b>1026</b> | <b>1019</b> | <b>902</b> | <b>471</b> | <b>393</b> | <b>327</b> | <b>338</b> | <b>258</b> | <b>290</b> | <b>298</b> | <b>235</b> | <b>260</b> |