

# *C. difficile* surveillance

## Quarterly report

### July - September 2016

#### Key points

- CDI reports for hospital inpatients aged 65 years and over decreased by 2% (from 62 to 61 episodes) during July - September 2016 compared to April - June 2016.
- CDI rate per 1,000 bed days increased by 3% during July - September 2016 compared to April - June 2016.
- CDI reports for community patients aged 65 years and over stayed the same (43 episodes) during July - September 2016 compared to April - June 2016.
- Total CDI reports, for hospital inpatients and community patients combined, aged two years and over, increased by 3.2% during July - September 2016 compared to April - June 2016 (from 125 to 129 episodes).
- CDI reports for hospital inpatients aged 65 years and over increased by 2% between the 2014/15 and 2015/16 financial years.
- During July - September 2016 the most prevalent ribotypes for CDI inpatients are 078 (11%), 015 (11%), and 002 (10%) (Table 1) and in the community are 002 (11%), 005 (9%) and 014 (9%) (Table 2).

For further information or clarification on HCAI definitions, please refer to previous reports or contact [hcaini@hscni.net](mailto:hcaini@hscni.net)

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

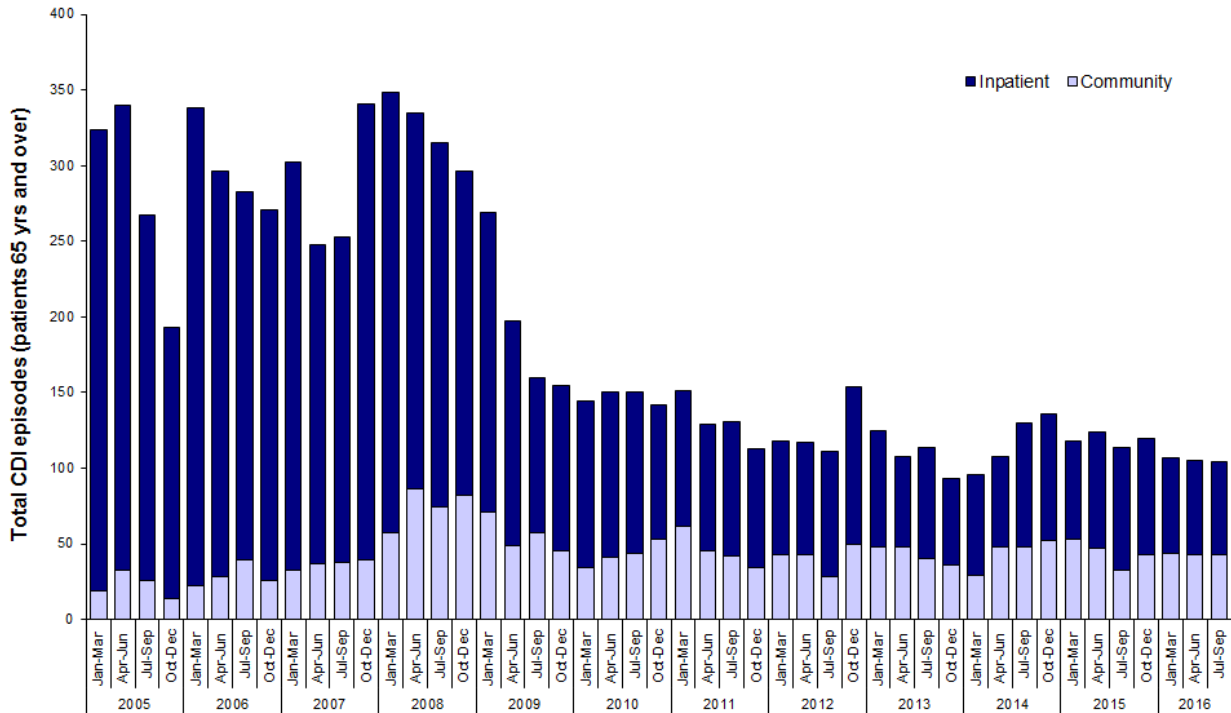


Figure 1: Total CDI episodes, inpatient and community, in Northern Ireland, by quarter (patients ≥ 65 years), between 2005 and 2016

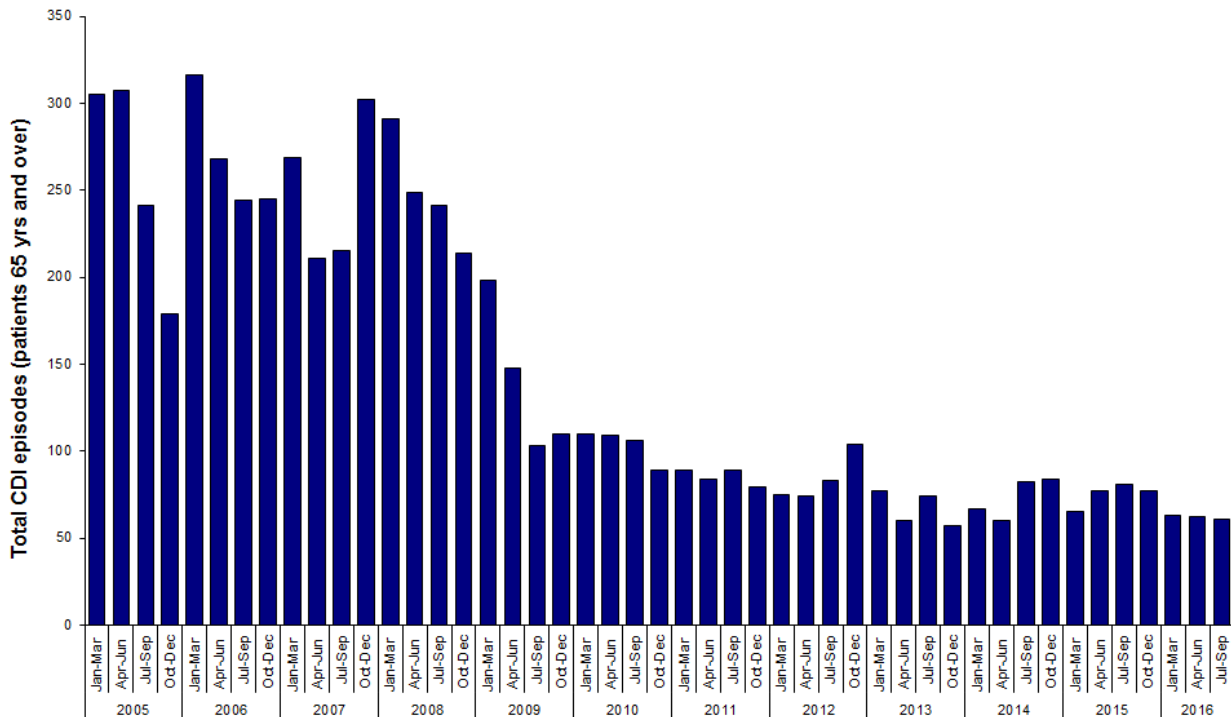


Figure 2a: Total CDI inpatient episodes in Northern Ireland, by quarter (patients ≥ 65 years), between 2005 and 2016

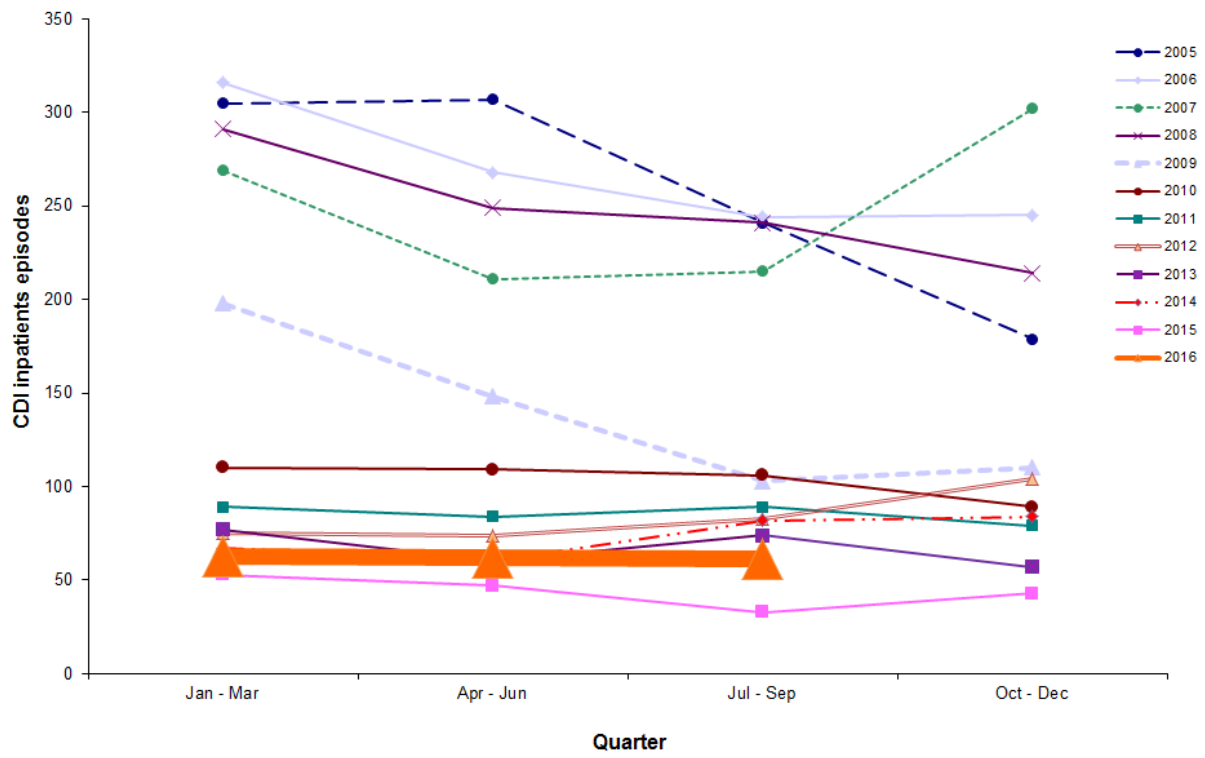
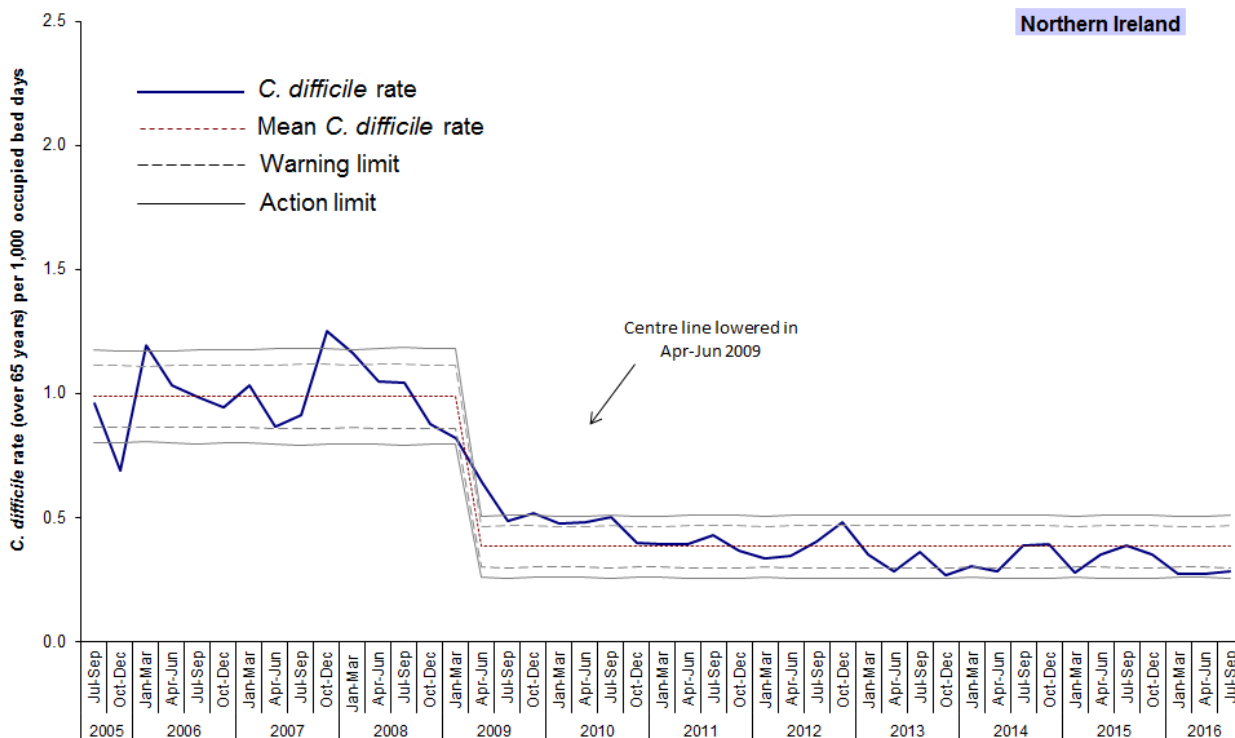


Figure 2b: Total CDI inpatient episodes in Northern Ireland, by quarter (patients  $\geq 65$  years), between 2005 and 2016

**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, October 2015 - September 2016**

| Ribotype             | Oct - Dec 2015 |      | Jan - Mar 2016 |      | Apr - Jun 2016 |      | Jul - Sep 2016 |      |
|----------------------|----------------|------|----------------|------|----------------|------|----------------|------|
|                      | Number         | %    | Number         | %    | Number         | %    | Number         | %    |
| 001                  | 10             | 9.5  | 6              | 7.4  | 1              | 1.3  | 2              | 2.4  |
| 002                  | 9              | 8.6  | 8              | 9.9  | 4              | 5.3  | 8              | 9.8  |
| 005                  | 7              | 6.7  | 2              | 2.5  | 6              | 8.0  | 3              | 3.7  |
| 014                  | 12             | 11.4 | 4              | 4.9  | 2              | 2.7  | 6              | 7.3  |
| 015                  | 17             | 16.2 | 5              | 6.2  | 1              | 1.3  | 9              | 11.0 |
| 020                  | 8              | 7.6  | 4              | 4.9  | 5              | 6.7  | 4              | 4.9  |
| 023                  | 6              | 5.7  | 5              | 6.2  | 2              | 2.7  | 3              | 3.7  |
| 027                  | 0              | 0.0  | 0              | 0.0  | 0              | 0.0  | 0              | 0.0  |
| 078                  | 6              | 5.7  | 16             | 19.8 | 18             | 24.0 | 9              | 11.0 |
| 106                  | 0              | 0.0  | 1              | 1.2  | 2              | 2.7  | 4              | 4.9  |
| 193                  | 3              | 2.9  | 1              | 1.2  | 5              | 6.7  | 3              | 3.7  |
| Other                | 18             | 17.1 | 11             | 13.6 | 13             | 17.3 | 16             | 19.5 |
| Not groupable**      | 4              | 3.8  | 9              | 11.1 | 9              | 12.0 | 7              | 8.5  |
| Not on ribotype list | 4              | 3.8  | 4              | 4.9  | 4              | 5.3  | 4              | 4.9  |
| Not isolated***      | 1              | 1.0  | 5              | 6.2  | 3              | 4.0  | 4              | 4.9  |
| <b>Total</b>         | <b>105</b>     |      | <b>81</b>      |      | <b>75</b>      |      | <b>82</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, October 2015 - September 2016**

| Ribotype             | Oct - Dec 2015 |      | Jan - Mar 2016 |      | Apr - Jun 2016 |      | Jul - Sep 2016 |      |
|----------------------|----------------|------|----------------|------|----------------|------|----------------|------|
|                      | Number         | %    | Number         | %    | Number         | %    | Number         | %    |
| 001                  | 4              | 7.7  | 0              | 0.0  | 3              | 6.0  | 0              | 0.0  |
| 002                  | 3              | 5.8  | 4              | 7.8  | 4              | 8.0  | 5              | 10.6 |
| 005                  | 3              | 5.8  | 4              | 7.8  | 0              | 0.0  | 4              | 8.5  |
| 014                  | 2              | 3.8  | 4              | 7.8  | 1              | 2.0  | 4              | 8.5  |
| 015                  | 6              | 11.5 | 4              | 7.8  | 4              | 8.0  | 2              | 4.3  |
| 020                  | 3              | 5.8  | 1              | 2.0  | 1              | 2.0  | 0              | 0.0  |
| 023                  | 1              | 1.9  | 3              | 5.9  | 1              | 2.0  | 2              | 4.3  |
| 027                  | 0              | 0.0  | 0              | 0.0  | 0              | 0.0  | 0              | 0.0  |
| 078                  | 8              | 15.4 | 13             | 25.5 | 16             | 32.0 | 3              | 6.4  |
| 106                  | 2              | 3.8  | 1              | 2.0  | 1              | 2.0  | 3              | 6.4  |
| 193                  | 0              | 0.0  | 2              | 3.9  | 3              | 6.0  | 2              | 4.3  |
| Other                | 10             | 19.2 | 7              | 13.7 | 7              | 14.0 | 10             | 21.3 |
| Not groupable**      | 4              | 7.7  | 3              | 5.9  | 6              | 12.0 | 6              | 12.8 |
| Not on ribotype list | 5              | 9.6  | 2              | 3.9  | 0              | 0.0  | 3              | 6.4  |
| Not isolated***      | 1              | 1.9  | 3              | 5.9  | 3              | 6.0  | 3              | 6.4  |
| <b>Total</b>         | <b>52</b>      |      | <b>51</b>      |      | <b>50</b>      |      | <b>47</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

**Table 3: Descriptive data for *C. difficile* ribotypes 002, 078 and 015 in Northern Ireland Hospital Inpatients and Community Patients, July - September 2016**

|               | 002 (n = 13) |      | 078 (n =12) |      | 015 (n = 11) |      |
|---------------|--------------|------|-------------|------|--------------|------|
| <b>Age</b>    |              |      |             |      |              |      |
| range         | 33 - 89      |      | 39 - 93     |      | 22 - 90      |      |
| median        | 80           |      | 80          |      | 71           |      |
| <b>Sex</b>    | n            | %    | n           | %    | n            | %    |
| Female        | 11           | 84.6 | 4           | 33.3 | 5            | 45.5 |
| Male          | 2            | 15.4 | 8           | 66.7 | 6            | 54.5 |
| <b>Trust</b>  |              |      |             |      |              |      |
| Belfast       | 7            | 53.8 | 3           | 25.0 | 5            | 45.5 |
| Northern      | 2            | 15.4 | 4           | 33.3 | 1            | 9.1  |
| South Eastern | 0            | 0.0  | 0           | 0.0  | 3            | 27.3 |
| Southern      | 3            | 23.1 | 1           | 8.3  | 0            | 0.0  |
| Western       | 1            | 7.7  | 4           | 33.3 | 2            | 18.2 |
| <b>Source</b> |              |      |             |      |              |      |
| Inpatient     | 8            | 61.5 | 9           | 75.0 | 9            | 81.8 |
| Community*    | 5            | 38.5 | 3           | 25.0 | 2            | 18.2 |

\* Community specimens include those taken from accident and emergency, outpatients, GPs, Hospice, Care Homes and psychiatric facilities

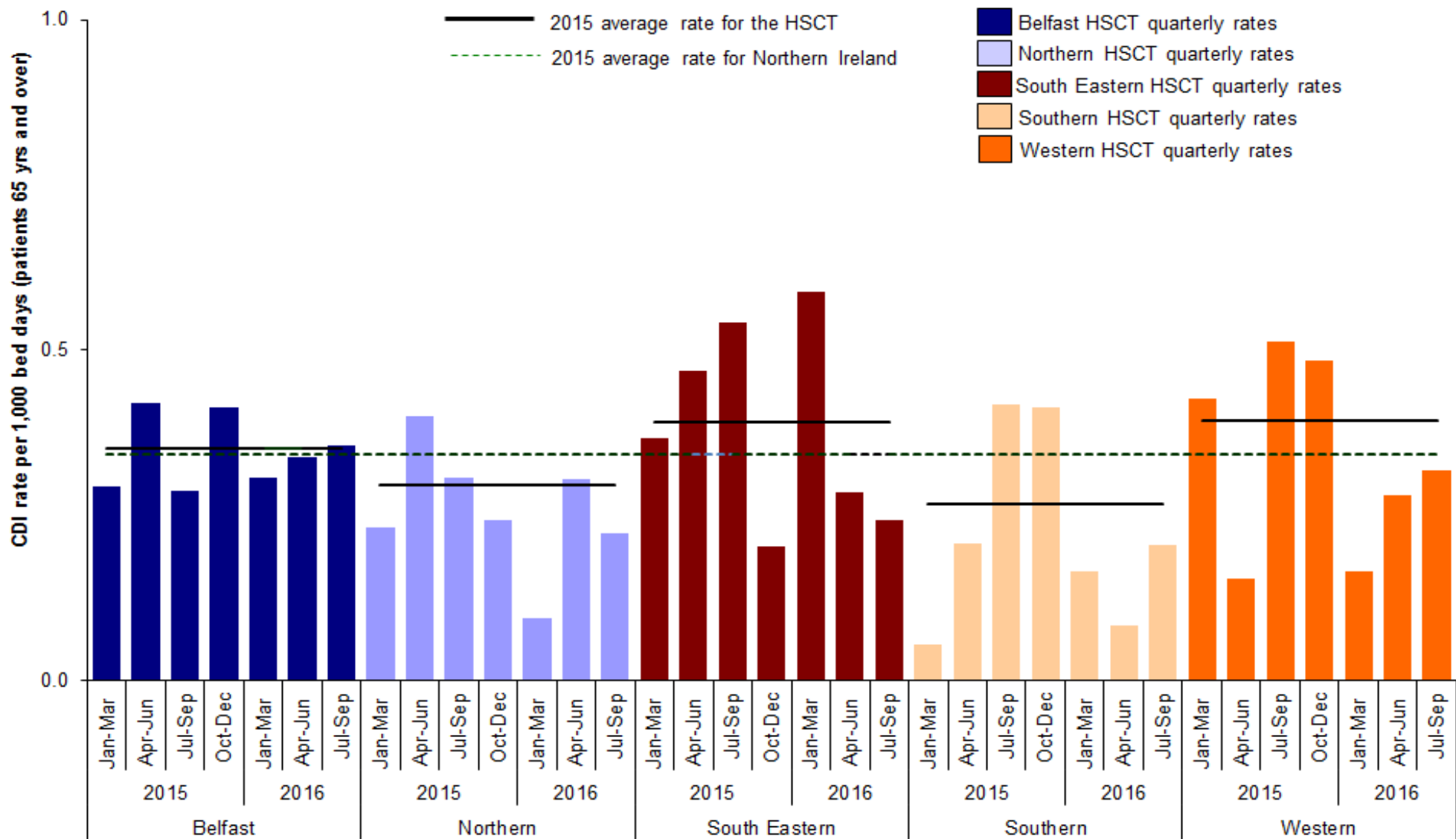


Figure 4: Quarterly rates of *C. difficile* among inpatients aged 65 years and over, by HSCT, January 2015 - September 2016, compared with annual Northern Ireland and HSCT rates for 2015

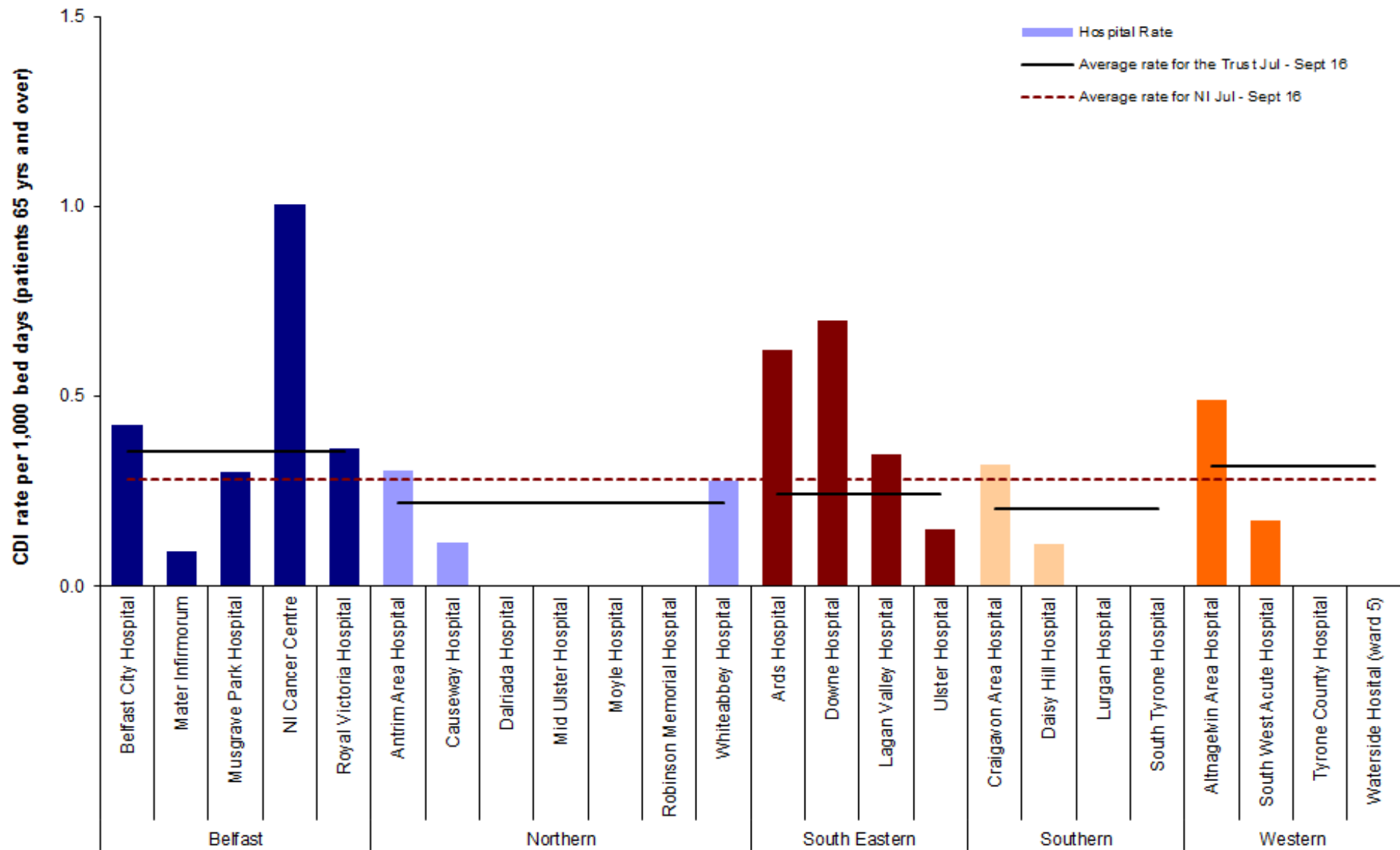


Figure 5: *C. difficile* rates during July - September 2016 - Inpatients aged 65 years and over, by hospital, including HSCT rates and average rate for Northern Ireland (see appendix A, Table 4)



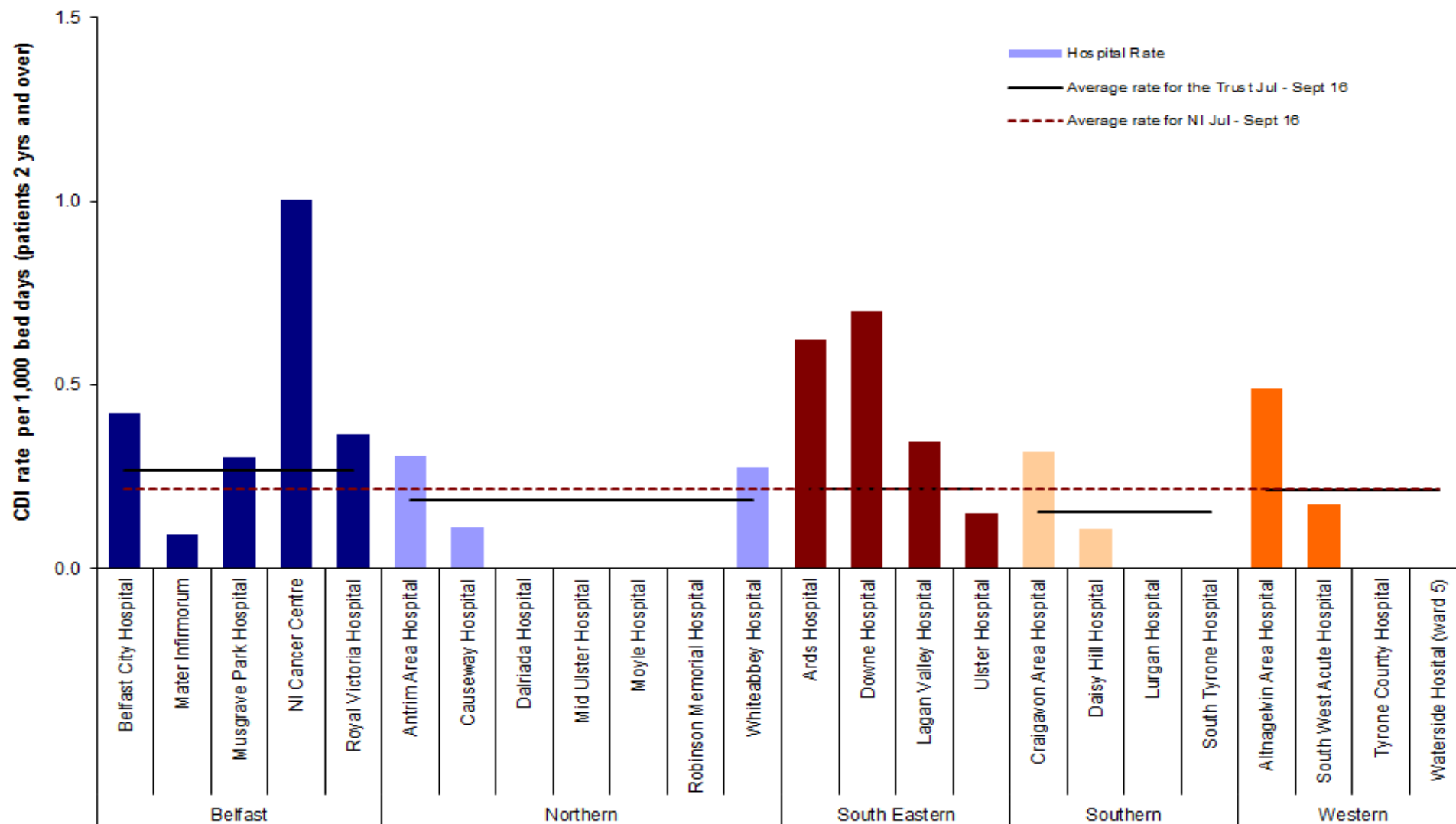


Figure 6: *C. difficile* rates during July - September 2016 - Inpatients aged two years and over, by hospital, including HSCT rates and average rate for Northern Ireland (see appendix A, Table 6)

## Appendix A

**Table 4: Quarterly rate of *C. difficile* reports in patients aged 65 years and over, by hospital, October 2015 - September 2016**

| Hospital  | Oct - Dec 2015 | Jan - Mar 2016 | Apr - Jun 2016 | Jul - Sept 2016 |
|---|----------------|----------------|----------------|-----------------|
|   | Rate           | Rate           | Rate           | Rate            |
| Belfast City Hospital                               | 0.618          | 0.211          | 0.540          | 0.423           |
| Mater Infirmorum                                    | 0.346          | 0.526          | 0.086          | 0.092           |
| Musgrave Park Hospital                              | 0.000          | 0.182          | 0.094          | 0.302           |
| NICCO (formerly at Belvoir Park)                    | 1.073          | 0.000          | 0.370          | 1.006           |
| Royal Group of Hospitals                            | 0.392          | 0.356          | 0.393          | 0.364           |
| <b>Belfast Health &amp; Social Care Trust</b>       | <b>0.412</b>   | <b>0.307</b>   | <b>0.338</b>   | <b>0.355</b>    |
| Antrim Area Hospital                                | 0.352          | 0.171          | 0.387          | 0.305           |
| Causeway Hospital                                   | 0.219          | 0.000          | 0.198          | 0.113           |
| Dalriada Hospital                                   | 0.000          | 0.000          | 0.000          | 0.000           |
| Mid Ulster Hospital                                 | 0.000          | 0.000          | 0.000          | 0.000           |
| Moyle Hospital                                      | 0.000          | 0.000          | 0.000          | 0.000           |
| Robinson Memorial Hospital                          | 0.000          | 0.000          | 0.548          | 0.000           |
| Whiteabbey Hospital                                 | 0.000          | 0.000          | 0.283          | 0.276           |
| <b>Northern Health &amp; Social Care Trust</b>      | <b>0.242</b>   | <b>0.094</b>   | <b>0.303</b>   | <b>0.221</b>    |
| Ards Hospital                                       | 0.000          | 0.000          | 0.000          | 0.620           |
| Downe Hospital                                      | 0.342          | 0.687          | 0.000          | 0.699           |
| Lagan Valley Hospital                               | 0.334          | 0.808          | 0.492          | 0.346           |
| Ulster Hospital                                     | 0.172          | 0.565          | 0.286          | 0.149           |
| <b>South Eastern Health &amp; Social Care Trust</b> | <b>0.202</b>   | <b>0.587</b>   | <b>0.284</b>   | <b>0.248</b>    |
| Craigavon Area Hospital                             | 0.369          | 0.291          | 0.097          | 0.319           |
| Daisy Hill Hospital                                 | 0.247          | 0.000          | 0.110          | 0.110           |
| Lurgan Hospital                                     | 1.021          | 0.000          | 0.000          | 0.000           |
| South Tyrone Hospital                               | 0.343          | 0.000          | 0.000          | 0.000           |
| <b>Southern Health &amp; Social Care Trust</b>      | <b>0.413</b>   | <b>0.164</b>   | <b>0.082</b>   | <b>0.205</b>    |
| Altnagelvin Area Hospital                           | 0.663          | 0.205          | 0.523          | 0.491           |
| South West Acute Hospital                           | 0.369          | 0.160          | 0.000          | 0.172           |
| Tyrone County Hospital                              | 0.000          | 0.000          | 0.000          | 0.000           |
| Waterside Hospital (Wards 1, 2, 3, 5)               | 0.000          | 0.000          | 0.000          | 0.000           |
| <b>Western Health &amp; Social Care Trust</b>       | <b>0.483</b>   | <b>0.165</b>   | <b>0.279</b>   | <b>0.318</b>    |
| <b>NI TOTAL</b>                                     | <b>0.353</b>   | <b>0.272</b>   | <b>0.272</b>   | <b>0.281</b>    |

**Table 5: Quarterly episodes of *C. difficile* reports in patients aged 65 years and over, by Trust, October 2015 - September 2016**

| Trust                                    | Oct - Dec 2015 | Jan - Mar 2016 | Apr - Jun 2016 | Jul - Sept 2016 |
|--|----------------|----------------|----------------|-----------------|
|  | Episodes       | Episodes       | Episodes       | Episodes        |
| Belfast Health & Social Care Trust       | 29             | 23             | 25             | 25              |
| Northern Health & Social Care Trust      | 10             | 4              | 13             | 9               |
| South Eastern Health & Social Care Trust | 8              | 24             | 11             | 9               |
| Southern Health & Social Care Trust      | 14             | 6              | 3              | 7               |
| Western Health & Social Care Trust       | 16             | 6              | 10             | 11              |
| <b>NI TOTAL</b>                          | <b>77</b>      | <b>63</b>      | <b>62</b>      | <b>61</b>       |
| <b>NI community TOTAL</b>                | <b>43</b>      | <b>44</b>      | <b>43</b>      | <b>43</b>       |

## Appendix A

**Table 6: Quarterly rate of *C. difficile* reports in patients aged two years and over, by hospital, October 2015 - September 2016**

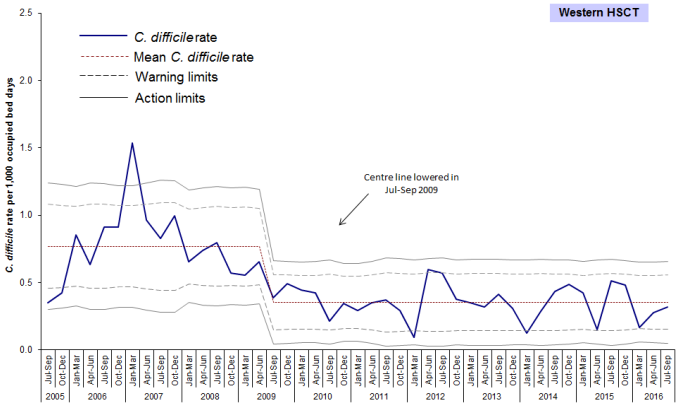
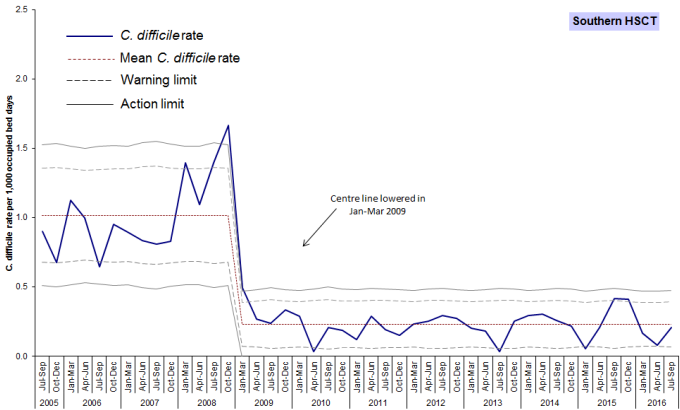
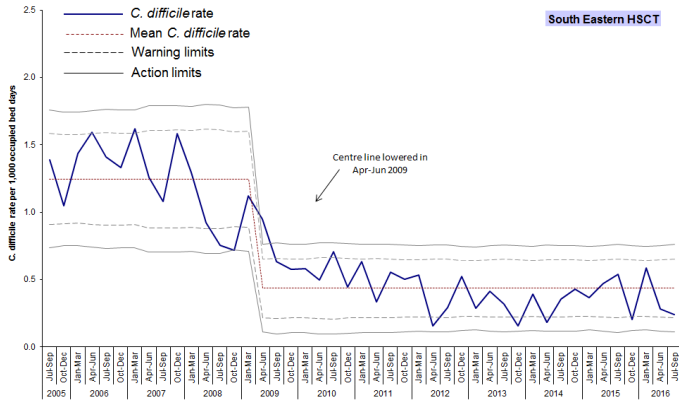
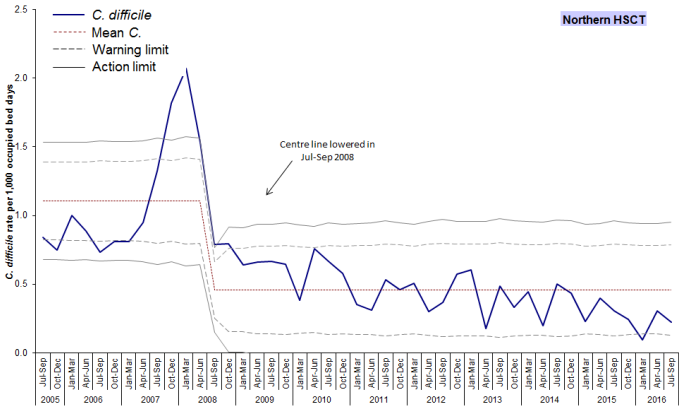
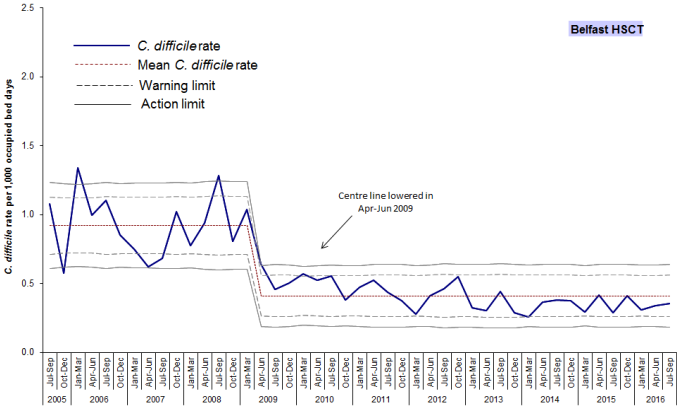
| Hospital  | Oct - Dec 2015 | Jan - Mar 2016 | Apr - Jun 2016 | Jul - Sept 2016 |
|---|----------------|----------------|----------------|-----------------|
|   | Rate           | Rate           | Rate           | Rate            |
| Belfast City Hospital                               | 0.436          | 0.141          | 0.361          | 0.339           |
| Mater Infirmorum                                    | 0.251          | 0.301          | 0.075          | 0.077           |
| Musgrave Park Hospital                              | 0.000          | 0.111          | 0.057          | 0.242           |
| NICCO (formerly at Belvoir Park)                    | 0.668          | 0.171          | 0.172          | 0.706           |
| Royal Group of Hospitals                            | 0.250          | 0.184          | 0.212          | 0.243           |
| <b>Belfast Health &amp; Social Care Trust</b>       | <b>0.275</b>   | <b>0.182</b>   | <b>0.207</b>   | <b>0.266</b>    |
| Antrim Area Hospital                                | 0.235          | 0.153          | 0.284          | 0.241           |
| Causeway Hospital                                   | 0.242          | 0.060          | 0.115          | 0.120           |
| Dalriada Hospital                                   | 0.000          | 0.000          | 0.000          | 0.000           |
| Mid Ulster Hospital                                 | 0.000          | 0.000          | 0.000          | 0.000           |
| Moyle Hospital                                      | 0.000          | 0.000          | 0.000          | 0.000           |
| Robinson Memorial Hospital                          | 0.000          | 0.000          | 0.547          | 0.000           |
| Whiteabbey Hospital                                 | 0.000          | 0.000          | 0.259          | 0.266           |
| <b>Northern Health &amp; Social Care Trust</b>      | <b>0.198</b>   | <b>0.104</b>   | <b>0.226</b>   | <b>0.186</b>    |
| Ards Hospital                                       | 0.000          | 0.000          | 0.000          | 0.601           |
| Downe Hospital                                      | 0.284          | 0.528          | 0.000          | 0.570           |
| Lagan Valley Hospital                               | 0.563          | 0.783          | 0.526          | 0.423           |
| Ulster Hospital                                     | 0.163          | 0.420          | 0.227          | 0.148           |
| <b>South Eastern Health &amp; Social Care Trust</b> | <b>0.212</b>   | <b>0.459</b>   | <b>0.245</b>   | <b>0.218</b>    |
| Craigavon Area Hospital                             | 0.276          | 0.159          | 0.079          | 0.220           |
| Daisy Hill Hospital                                 | 0.197          | 0.061          | 0.063          | 0.063           |
| Lurgan Hospital                                     | 0.929          | 0.000          | 0.000          | 0.000           |
| South Tyrone Hospital                               | 0.348          | 0.000          | 0.000          | 0.000           |
| <b>Southern Health &amp; Social Care Trust</b>      | <b>0.307</b>   | <b>0.114</b>   | <b>0.065</b>   | <b>0.153</b>    |
| Altnagelvin Area Hospital                           | 0.511          | 0.276          | 0.362          | 0.312           |
| South West Acute Hospital                           | 0.230          | 0.162          | 0.000          | 0.114           |
| Tyrone County Hospital                              | 0.000          | 0.000          | 0.000          | 0.000           |
| Waterside Hospital (Wards 1, 2, 3, 5)               | 0.000          | 0.000          | 0.000          | 0.000           |
| <b>Western Health &amp; Social Care Trust</b>       | <b>0.364</b>   | <b>0.207</b>   | <b>0.208</b>   | <b>0.212</b>    |
| <b>NI TOTAL</b>                                     | <b>0.271</b>   | <b>0.206</b>   | <b>0.194</b>   | <b>0.218</b>    |

**Table 7: Quarterly episodes of *C. difficile* reports in patients aged 2 years and over, by Trust, October 2015 - September 2016**

| Trust                                    | Oct - Dec 2015 | Jan - Mar 2016 | Apr - Jun 2016 | Jul - Sept 2016 |
|--|----------------|----------------|----------------|-----------------|
|  | Episodes       | Episodes       | Episodes       | Episodes        |
| Belfast Health & Social Care Trust       | 38             | 26             | 28             | 35              |
| Northern Health & Social Care Trust      | 13             | 7              | 15             | 12              |
| South Eastern Health & Social Care Trust | 13             | 29             | 15             | 13              |
| Southern Health & Social Care Trust      | 18             | 7              | 4              | 9               |
| Western Health & Social Care Trust       | 22             | 13             | 13             | 13              |
| <b>NI TOTAL</b>                          | <b>104</b>     | <b>82</b>      | <b>75</b>      | <b>82</b>       |
| <b>NI community TOTAL</b>                | <b>52</b>      | <b>51</b>      | <b>50</b>      | <b>47</b>       |

# Appendix B

Trends in *C. difficile* rates in inpatients aged 65 years and over, by HSCT and quarter, 2005–2016



## Appendix C

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

| <b>HSCT</b>                 | <b>Financial Year</b> |             |             |            |            |            |            |            |            |            |            |
|-----------------------------|-----------------------|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                             | 2005/06               | 2006/07     | 2007/08     | 2008/09    | 2009/10    | 2010/11    | 2011/12    | 2012/13    | 2013/14    | 2014/15    | 2015/16    |
| Belfast                     | 352                   | 336         | 280         | 327        | 163        | 147        | 117        | 124        | 90         | 103        | 102        |
| Northern                    | 184                   | 172         | 297         | 172        | 102        | 103        | 75         | 73         | 56         | 54         | 43         |
| South Eastern               | 243                   | 256         | 199         | 135        | 98         | 80         | 72         | 50         | 50         | 53         | 70         |
| Southern                    | 168                   | 130         | 134         | 164        | 37         | 17         | 28         | 33         | 25         | 27         | 40         |
| Western                     | 96                    | 132         | 109         | 104        | 71         | 46         | 35         | 58         | 37         | 54         | 43         |
| <b>Northern<br/>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>291</b> | <b>298</b> |