

C. difficile surveillance

Quarterly report

April 2018 - June 2018

Key points

- CDI reports for hospital inpatients aged 65 years and over decreased by 7% (from 67 to 62 episodes) during April - June 2018 compared to January - March 2018.
- CDI rate per 1,000 bed days decreased by 1% April - June 2018 compared to January - March 2018.
- CDI reports for community patients aged 65 years and over increased by 67% (from 30 to 50 episodes) during April - June 2018 compared to January - March 2018.
- Total CDI reports, for hospital inpatients and community patients combined, aged two years and over, increased by 20% during April - June 2018 compared to January - March 2018 (from 119 to 143 episodes).
- CDI reports for hospital inpatients aged 65 years and over increased by 11% between the 2016/17 and 2017/18 financial years.
- During April - June 2018 the most prevalent ribotypes for CDI inpatients are 002 (24%), 078 (9%), 014 (7%) and 005 (5%), 020 (5%) and 106 (5%) (Table 1) and in the community are 002 (14%), 078 (14%), 011 (7%), 014 (7%), 015 (7%) and 023 (7%) (Table 2).

Surveillance of *C. difficile* infection (CDI)

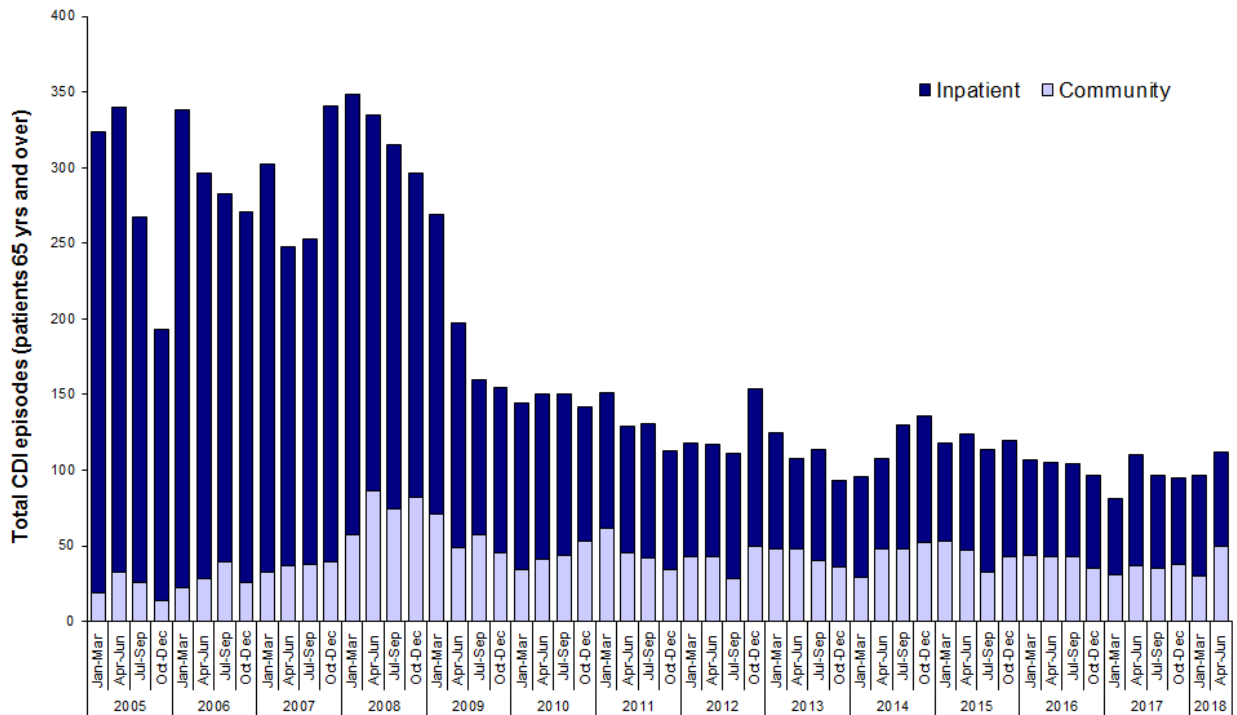


Figure 1: Total CDI episodes, inpatient and community, in Northern Ireland, by quarter (patients ≥ 65 years), between 2005 and 2018

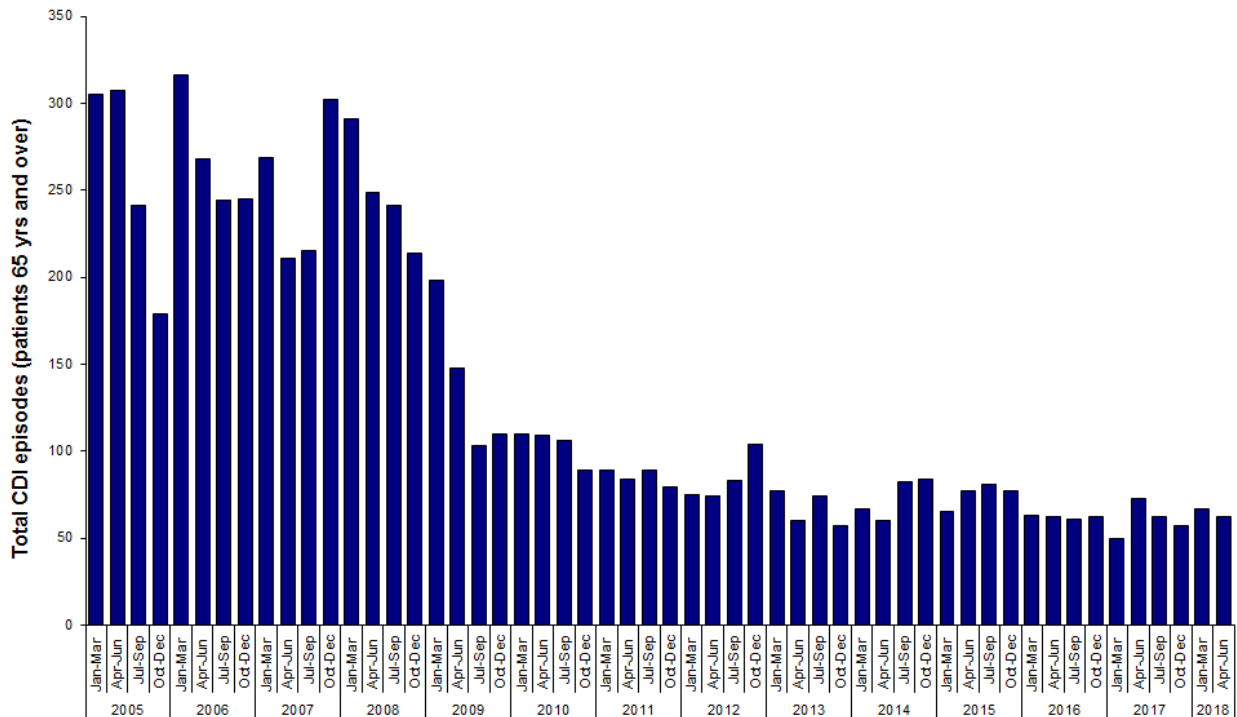


Figure 2a: Total CDI inpatient episodes in Northern Ireland, by quarter (patients ≥ 65 years), between 2005 and 2018

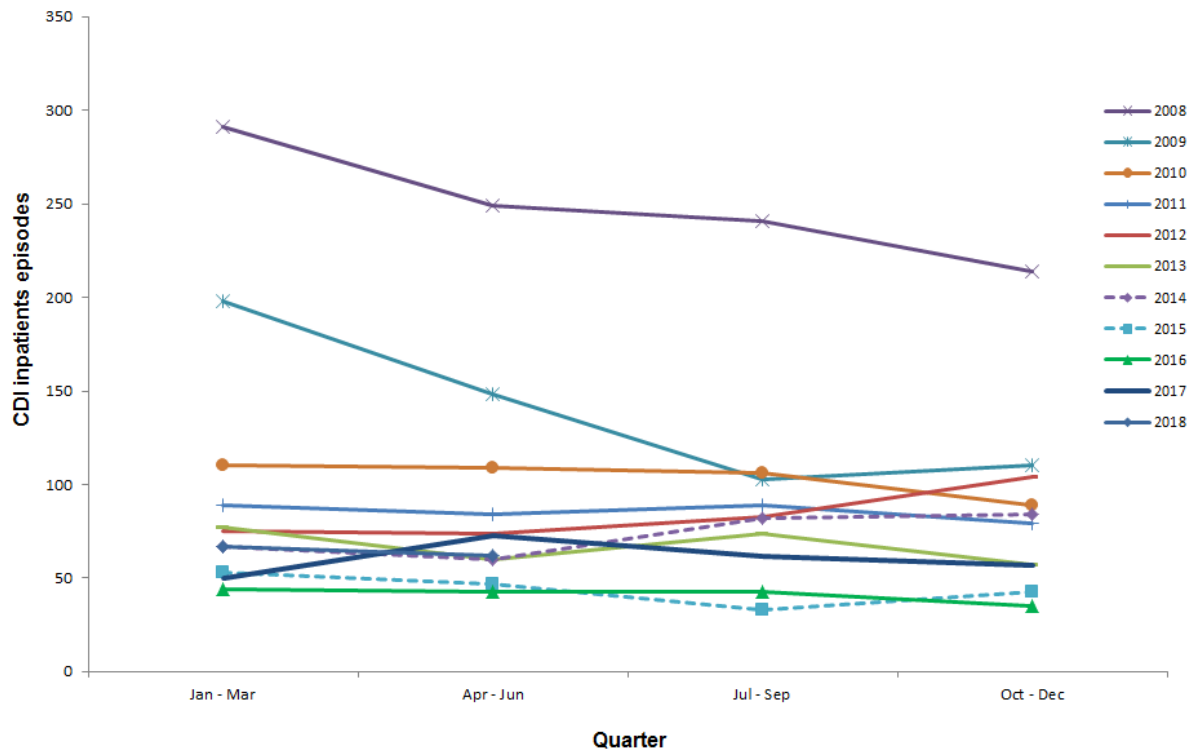


Figure 2b: Total CDI inpatient episodes in Northern Ireland, by quarter (patients ≥ 65 years), between 2008 and 2018

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.

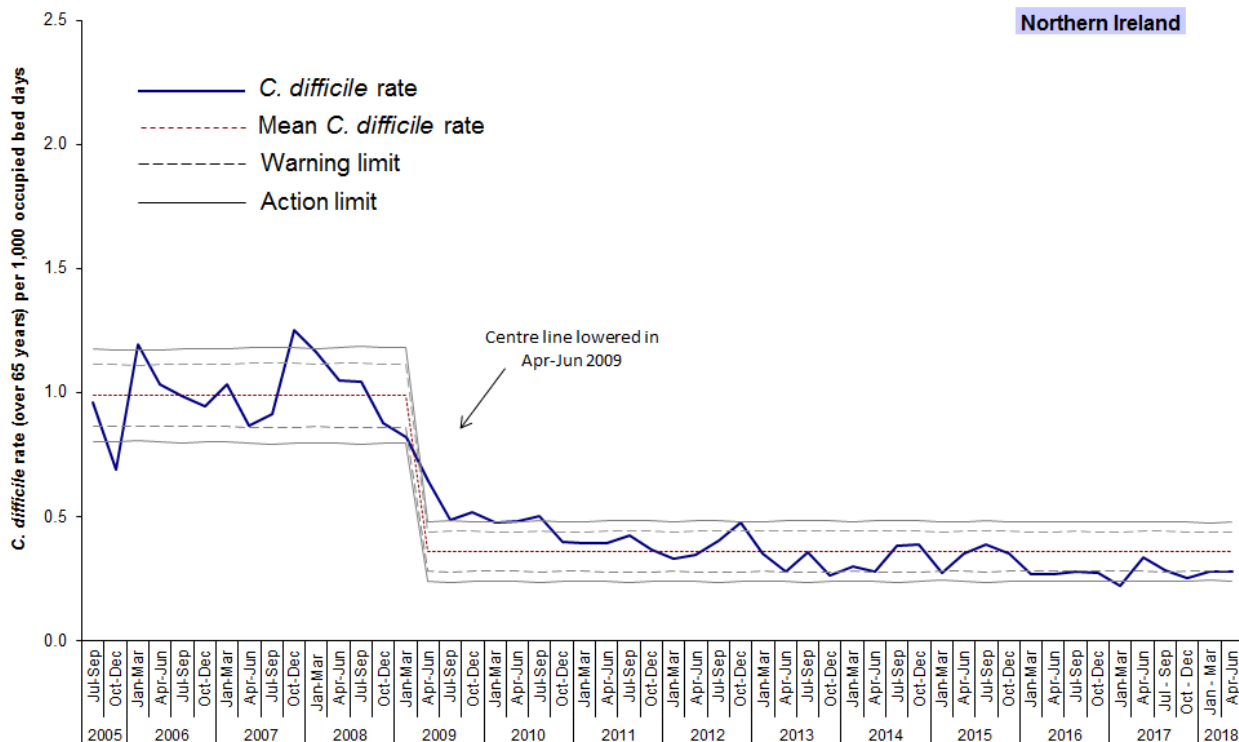


Figure 3: Statistical process control chart for quarterly *C. difficile* rates among inpatients in Northern Ireland aged 65 years and over (for HSCT level, see appendix B)

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 – June 2018.

| Ribotype | Jul - Sep 2017 | | Oct - Dec 2017 | | Jan - Mar 2018 | | Apr - Jun 2018 | |
|----------------------|----------------|------|----------------|------|----------------|------|----------------|------|
| | Number | % | Number | % | Number | % | Number | % |
| 001 | 4 | 4.7 | 2 | 2.3 | 1 | 1.2 | 2 | 2.3 |
| 002 | 12 | 14.0 | 14 | 15.9 | 27 | 31.4 | 21 | 24 |
| 005 | 5 | 5.8 | 2 | 2.3 | 6 | 7.0 | 4 | 4.5 |
| 011 | 4 | 4.7 | 2 | 2.3 | 3 | 3.5 | 1 | 1.1 |
| 014 | 7 | 8.1 | 9 | 10.2 | 7 | 8.1 | 6 | 7 |
| 015 | 10 | 11.6 | 5 | 5.7 | 4 | 4.7 | 4 | 4.5 |
| 018 | 3 | 3.5 | 5 | 5.7 | 0 | 0.0 | 2 | 2.3 |
| 020 | 3 | 3.5 | 7 | 8.0 | 7 | 8.1 | 4 | 5 |
| 023 | 3 | 3.5 | 5 | 5.7 | 2 | 2.3 | 3 | 3.4 |
| 078 | 9 | 10.5 | 3 | 3.4 | 7 | 8.1 | 8 | 9.1 |
| 193 | 7 | 8.1 | 1 | 1.1 | 0 | 0.0 | 0 | 0.0 |
| Other | 11 | 12.8 | 14 | 15.9 | 15 | 17.4 | 19 | 21.6 |
| Not groupable** | 2 | 2.3 | 2 | 2.3 | 3 | 3.5 | 6 | 6.8 |
| Not on ribotype list | 1 | 1.2 | 4 | 4.5 | 4 | 4.7 | 6 | 6.8 |
| Not isolated*** | 2 | 2.3 | 1 | 1.1 | 0 | 0.0 | 2 | 2.3 |
| Total | 83 | | 76 | | 86 | | 88 | |

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 – June 2018.

| Ribotype | Jul - Sep 2017 | | Oct - Dec 2017 | | Jan - Mar 2018 | | Apr - Jun 2018 | |
|----------------------|----------------|------|----------------|------|----------------|------|----------------|------|
| | Number | % | Number | % | Number | % | Number | % |
| 001 | 2 | 6.1 | 2 | 3.6 | 0 | 0.0 | 1 | 1.8 |
| 002 | 5 | 15.2 | 5 | 8.9 | 4 | 12.1 | 8 | 14 |
| 005 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 3.6 |
| 011 | 0 | 0.0 | 1 | 1.8 | 2 | 6.1 | 4 | 7.1 |
| 014 | 4 | 12.1 | 5 | 8.9 | 4 | 12.1 | 4 | 7 |
| 015 | 3 | 9.1 | 6 | 10.7 | 3 | 9.1 | 4 | 7 |
| 018 | 1 | 3.0 | 1 | 1.8 | 0 | 0.0 | 2 | 3.6 |
| 020 | 1 | 3.0 | 3 | 5.4 | 2 | 6.1 | 1 | 1.8 |
| 023 | 0 | 0.0 | 2 | 3.6 | 4 | 12.1 | 4 | 7.1 |
| 078 | 6 | 18.2 | 4 | 7.1 | 5 | 15.2 | 8 | 14.3 |
| 193 | 4 | 12.1 | 0 | 0.0 | 1 | 3.0 | 0 | 0.0 |
| Other | 10 | 30.3 | 7 | 12.5 | 3 | 9.1 | 10 | 17.9 |
| Not groupable** | 1 | 3.0 | 4 | 7.1 | 2 | 6.1 | 2 | 3.6 |
| Not on ribotype list | 1 | 3.0 | 3 | 5.4 | 2 | 6.1 | 6 | 10.7 |
| Not isolated*** | 1 | 3.0 | 1 | 1.8 | 1 | 3.0 | 0 | 0.0 |
| Total | 39 | | 44 | | 33 | | 56 | |

* 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, April - June 2018.

| | 002 (n =29) | | 014 (n = 10) | | 078 (n = 16) | |
|---------------|-------------|------|--------------|------|--------------|------|
| Age | | | | | | |
| range | 7-99 | | 0-90 | | 67-101 | |
| median | 75 | | 64 | | 82 | |
| Sex | | | | | | |
| | n | % | n | % | n | % |
| Female | 21 | 72.4 | 8 | 80.0 | 9 | 56.3 |
| Male | 8 | 27.6 | 2 | 20.0 | 7 | 43.8 |
| Trust | | | | | | |
| Belfast | 14 | 48.3 | 3 | 30.0 | 1 | 6.3 |
| Northern | 3 | 10.3 | 4 | 40.0 | 6 | 37.5 |
| South Eastern | 4 | 13.8 | 1 | 10.0 | 6 | 37.5 |
| Southern | 3 | 10.3 | 1 | 10.0 | 1 | 6.3 |
| Western | 5 | 17.2 | 1 | 10.0 | 2 | 12.5 |
| Source | | | | | | |
| Inpatient | 21 | 72.4 | 6 | 60.0 | 8 | 50.0 |
| Community* | 8 | 27.6 | 4 | 40.0 | 8 | 50.0 |

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

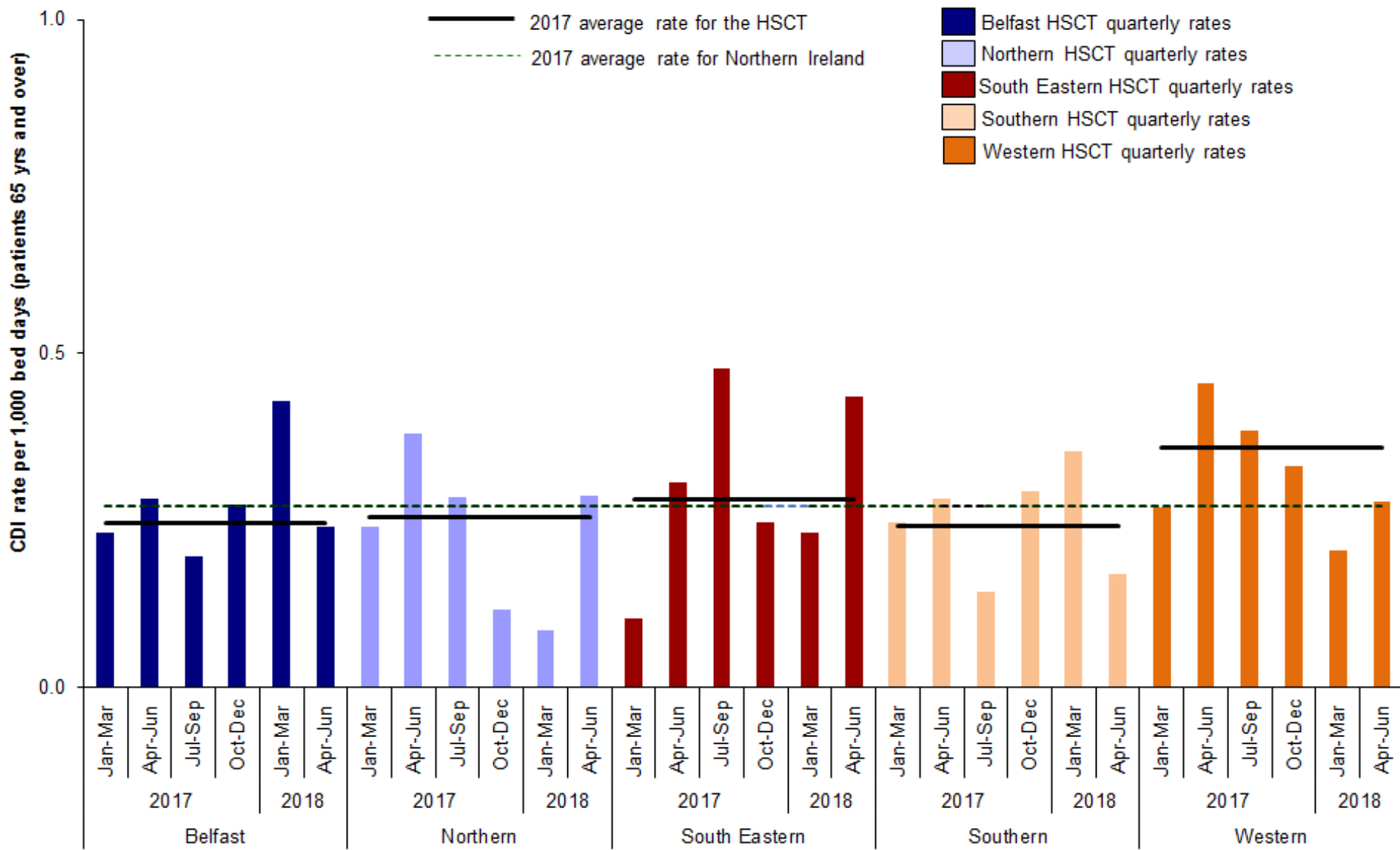


Figure 4: Quarterly rates of *C. difficile* among inpatients aged 65 years and over, by HSCT, January 2017 – June 2018, compared with annual Northern Ireland and HSCT rates for 2017

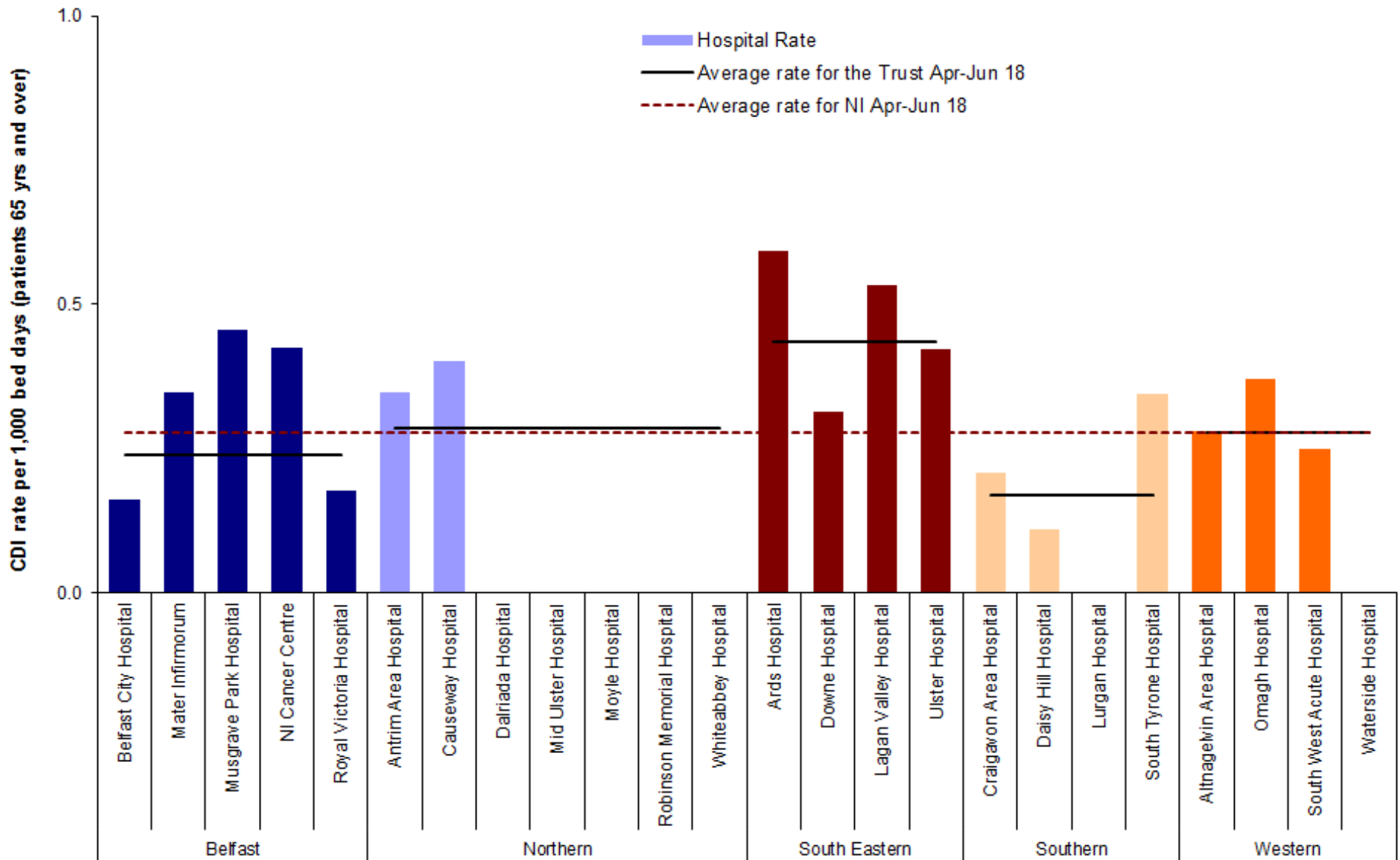


Figure 5: *C. difficile* rates during April - June 2018 - Inpatients aged 65 years and over, by hospital, including HSCT rates and average rate for Northern Ireland (see appendix A, Table 4)

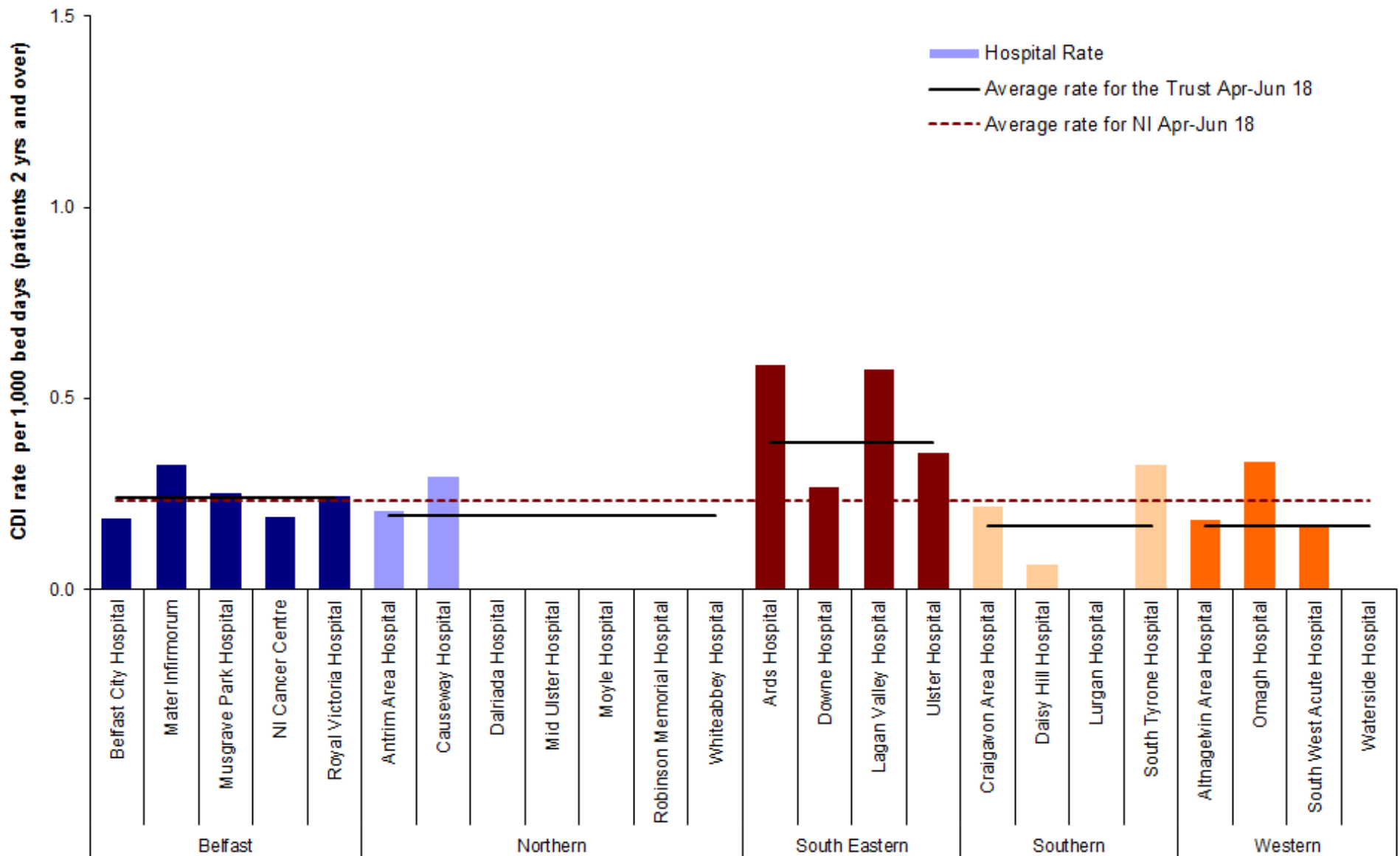


Figure 6: *C. difficile* rates during April - June 2018 - Inpatients aged two years and over, by hospital, including HSCT rates and average rate for Northern Ireland (see appendix A, Table 5)

Appendix A

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

| Hospital | Jul - Sep 2017 | Oct - Dec 2017 | Jan - Mar 2018 | Apr - Jun 2018 |
|---|----------------|----------------|----------------|----------------|
| | Rate | Rate | Rate | Rate |
| Belfast City Hospital | 0.234 | 0.523 | 0.658 | 0.163 |
| Mater Infirmorum | 0.394 | 0.374 | 0.347 | 0.347 |
| Musgrave Park Hospital | 0.000 | 0.000 | 0.114 | 0.456 |
| NICCO (formerly at Belvoir Park) | 0.000 | 0.000 | 0.424 | 0.424 |
| Royal Group of Hospitals | 0.181 | 0.197 | 0.415 | 0.177 |
| Belfast Health & Social Care Trust | 0.196 | 0.273 | 0.429 | 0.240 |
| Antrim Area Hospital | 0.380 | 0.127 | 0.039 | 0.347 |
| Causeway Hospital | 0.338 | 0.098 | 0.286 | 0.402 |
| 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 | 0.000 | 0.000 |
| Whiteabbey Hospital | 0.000 | 0.287 | 0.000 | 0.000 |
| Northern Health & Social Care Trust | 0.284 | 0.115 | 0.086 | 0.286 |
| Ards Hospital | 0.000 | 0.000 | 0.000 | 0.592 |
| Downe Hospital | 0.000 | 0.000 | 0.584 | 0.313 |
| Lagan Valley Hospital | 0.166 | 0.322 | 0.162 | 0.532 |
| Ulster Hospital | 0.630 | 0.270 | 0.220 | 0.422 |
| South Eastern Health & Social Care Trust | 0.478 | 0.246 | 0.232 | 0.436 |
| Craigavon Area Hospital | 0.212 | 0.286 | 0.243 | 0.207 |
| Daisy Hill Hospital | 0.110 | 0.318 | 0.437 | 0.110 |
| Lurgan Hospital | 0.000 | 0.466 | 0.944 | 0.000 |
| South Tyrone Hospital | 0.000 | 0.000 | 0.000 | 0.346 |
| Southern Health & Social Care Trust | 0.143 | 0.292 | 0.352 | 0.169 |
| Altnagelvin Area Hospital | 0.324 | 0.378 | 0.254 | 0.282 |
| Tyrone County / Omagh Hospital | 0.401 | 0.000 | 0.000 | 0.371 |
| South West Acute Hospital | 0.433 | 0.453 | 0.080 | 0.250 |
| Waterside Hospital | 0.498 | 0.000 | 0.512 | 0.000 |
| Western Health & Social Care Trust | 0.383 | 0.331 | 0.230 | 0.277 |
| NI TOTAL | 0.285 | 0.251 | 0.279 | 0.277 |

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

| Trust | Jul - Sep 2017 | Oct - Dec 2017 | Jan - Mar 2018 | Apr - Jun 2018 |
|--|----------------|----------------|----------------|----------------|
| | Episodes | Episodes | Episodes | Episodes |
| Belfast Health & Social Care Trust | 13 | 19 | 32 | 18 |
| Northern Health & Social Care Trust | 12 | 5 | 4 | 12 |
| South Eastern Health & Social Care Trust | 18 | 10 | 10 | 17 |
| Southern Health & Social Care Trust | 5 | 11 | 13 | 6 |
| Western Health & Social Care Trust | 14 | 12 | 8 | 9 |
| NI TOTAL | 62 | 57 | 67 | 62 |
| NI community TOTAL | 35 | 38 | 30 | 50 |

Appendix A

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

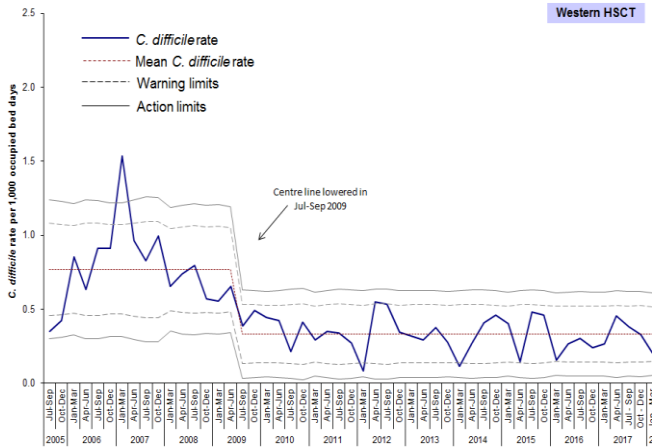
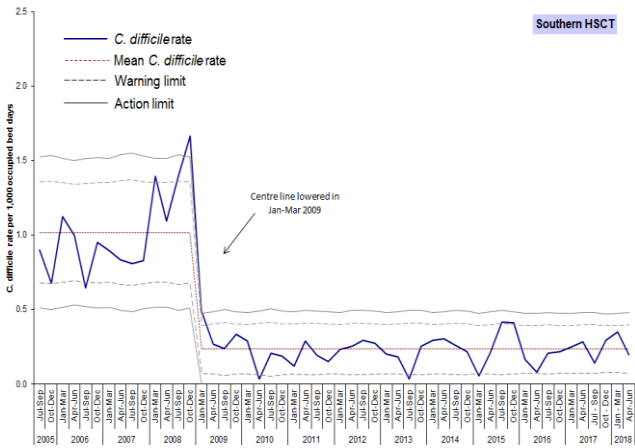
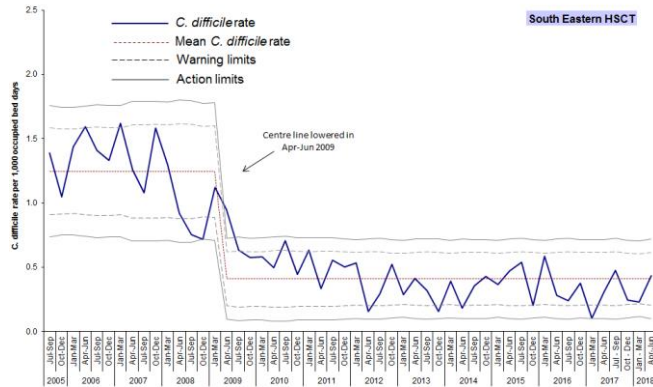
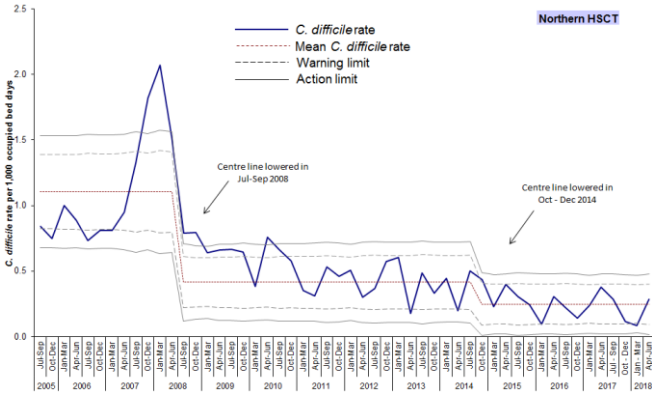
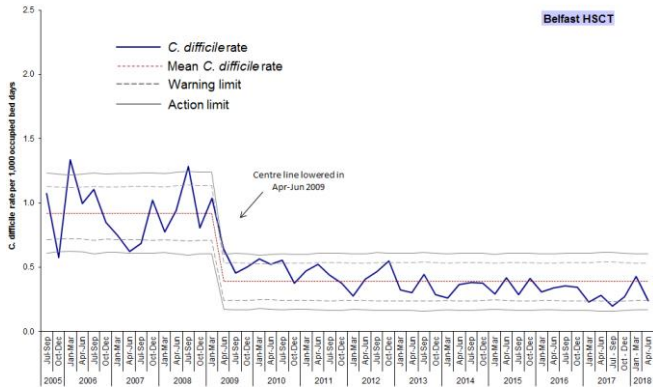
| Hospital | Jul - Sep 2017 | Oct - Dec 2017 | Jan - Mar 2018 | Apr - Jun 2018 |
|---|----------------|----------------|----------------|----------------|
| | Rate | Rate | Rate | Rate |
| Belfast City Hospital | 0.187 | 0.343 | 0.441 | 0.185 |
| Mater Infirmorum | 0.324 | 0.261 | 0.370 | 0.326 |
| Musgrave Park Hospital | 0.000 | 0.000 | 0.065 | 0.250 |
| NICCO (formerly at Belvoir Park) | 0.000 | 0.197 | 0.191 | 0.189 |
| Royal Group of Hospitals | 0.137 | 0.176 | 0.269 | 0.245 |
| Belfast Health & Social Care Trust | 0.152 | 0.202 | 0.291 | 0.242 |
| Antrim Area Hospital | 0.283 | 0.125 | 0.049 | 0.206 |
| Causeway Hospital | 0.183 | 0.174 | 0.228 | 0.294 |
| 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 | 0.000 | 0.000 |
| Whiteabbey Hospital | 0.000 | 0.256 | 0.000 | 0.000 |
| Northern Health & Social Care Trust | 0.212 | 0.132 | 0.086 | 0.195 |
| Ards Hospital | 0.000 | 0.000 | 0.000 | 0.587 |
| Downe Hospital | 0.000 | 0.000 | 0.507 | 0.267 |
| Lagan Valley Hospital | 0.277 | 0.268 | 0.131 | 0.574 |
| Ulster Hospital | 0.377 | 0.220 | 0.217 | 0.379 |
| South Eastern Health & Social Care Trust | 0.332 | 0.207 | 0.219 | 0.384 |
| Craigavon Area Hospital | 0.217 | 0.186 | 0.186 | 0.215 |
| Daisy Hill Hospital | 0.126 | 0.182 | 0.251 | 0.065 |
| Lurgan Hospital | 0.000 | 0.444 | 0.888 | 0.000 |
| South Tyrone Hospital | 0.000 | 0.000 | 0.000 | 0.324 |
| Southern Health & Social Care Trust | 0.166 | 0.195 | 0.245 | 0.167 |
| Altnagelvin Area Hospital | 0.318 | 0.233 | 0.222 | 0.183 |
| Tyrone County / Omagh Hospital | 0.376 | 0.000 | 0.000 | 0.334 |
| South West Acute Hospital | 0.280 | 0.394 | 0.300 | 0.168 |
| Waterside Hospital | 0.338 | 0.000 | 0.107 | 0.000 |
| Western Health & Social Care Trust | 0.311 | 0.246 | 0.172 | 0.168 |
| NI TOTAL | 0.219 | 0.196 | 0.217 | 0.233 |

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

| Trust | Jul - Sep 2017 | Oct - Dec 2017 | Jan - Mar 2018 | Apr - Jun 2018 |
|--|----------------|----------------|----------------|----------------|
| | Episodes | Episodes | Episodes | Episodes |
| Belfast Health & Social Care Trust | 20 | 27 | 40 | 29 |
| Northern Health & Social Care Trust | 14 | 9 | 6 | 13 |
| South Eastern Health & Social Care Trust | 20 | 13 | 14 | 24 |
| Southern Health & Social Care Trust | 10 | 12 | 15 | 10 |
| Western Health & Social Care Trust | 19 | 15 | 11 | 10 |
| NI TOTAL | 83 | 76 | 86 | 86 |
| NI community TOTAL | 39 | 44 | 33 | 57 |

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

| HSCT | 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 | 336 | 280 | 327 | 163 | 147 | 117 | 124 | 90 | 103 | 102 | 90 | 83 |
| Northern | 172 | 297 | 172 | 102 | 103 | 75 | 73 | 56 | 54 | 43 | 39 | 37 |
| South Eastern | 256 | 199 | 135 | 98 | 80 | 72 | 50 | 50 | 53 | 70 | 39 | 50 |
| Southern | 130 | 134 | 164 | 37 | 17 | 28 | 33 | 25 | 27 | 40 | 27 | 39 |
| Western | 132 | 109 | 104 | 71 | 46 | 35 | 58 | 37 | 53 | 43 | 40 | 50 |
| Northern Ireland | 1026 | 1019 | 902 | 471 | 393 | 327 | 338 | 258 | 290 | 298 | 235 | 259 |