INTRODUCTION

Clostridium difficile ribotype 078 has been reported as an emerging ribotype associated with hospitalisation and hypervirulence.1 Following a significant increase in ribotype 078 isolates reported during the first three months of 2012, ribotype 078 data from samples sent to the Scottish Salmonella Shigella and Clostridium difficile Surveillance Reference Laboratory (SSSCDRL) for PCR ribotyping between November 2007 and June 2012 were analysed.

METHODS

PCR ribotyping is routinely carried out on samples sent to SSSCDRL from severe cases and outbreaks according to standardised criteria.2,3,4 All isolates of ribotype 078 were susceptibility tested against a range of antibiotics including metronidazole, clindamycin, levofloxacin, meropenem, maxofloxacin, and piperacillin-tazobactam. All samples were categorised as community cases and were susceptibility tested against metronidazole and vancomycin.

Information provided on the request forms for typing allow collection of data relating to the submitting laboratory/NHS administration area, date of birth, sex, community or hospital setting, and the reason for ribotyping request (including severity of disease, death and/or suspected outbreak).

Comparisons of the epidemiology of ribotype 078 isolates (and characteristics of cases) were made before and after the 1st January 2012 (following which ribotype 078 became the predominant type in Scotland).

RESULTS

From November 2007 to June 2012, a total of 127 (out of 1039) isolates of ribotype 078 were reported from severe cases and outbreaks (99% female, age range 1-98 years; median 77 years).

From January 2009 to June 2012, 118 (out of 1862) isolates of ribotype 078 were reported from the Snapshot Programme (62% female, age range 18-97 years; median 73 years).

The proportion of ribotype 078 increased year on year: 2.5% (2007), 1% (2008), 3.7% (2009), 4.7% (2010) and 6.4% (2011) among isolates from severe cases/outbreaks; and 3.6% (2008), 5.6% (2009), 3.2% (2010) and 4.3% (2011) among isolates from the Snapshot Programme.

From the beginning of 2012 there was a sudden increase in ribotype 078 among submissions to both programmes (Figures 1 and 2). In the first two quarters of 2012, ribotype 078 was the most commonly observed ribotype, accounting for 22% of severe cases/outbreaks and 17% of Snapshot isolates. This is the first time that ribotype 078 has been the predominant ribotype in either surveillance typing schemes.

Among severe cases/outbreaks, the number of cases that were female, aged 26-65 years and part of a suspected outbreak was higher in ribotype 078 isolates typed after the 1st January of 2012. After 1st of January 2012 a smaller proportion of cases were categorised as community cases (4.8% vs. 13.8%). None of the changes were statistically significant proportions before and after the 1st January 2012 in the remaining antibiotics in Table 1.

From data provided by the SSSCDRL, there is strong evidence (p<0.001) to suggest that resistance to cefotaxime in ribotype 078 isolates typed after the 1st January 2012 increased significantly from 52.6% to 98.0% (Table 1). There were no significant changes in resistance proportions before and after the 1st January 2012 in the remaining antibiotics in Table 1.

The limited data available provides few clues to the emergence of ribotype 078 in Scotland. There is a lack of evidence to suggest that there has been a change in the severity, number of deaths or suspected outbreaks associated with ribotype 078 before and after the 1st January 2012.

CONCLUSIONS

C. difficile ribotype 078 has been reported as an emerging type across Europe1 and has been associated with more severe disease as a result of the increased toxin production1 and high levels of recurrence in one outbreak in the Republic of Ireland.4 Transmission to humans from animals and food has been postulated but this remains speculative.1,5,6

Since 2008, Scottish CDI incidence rates have decreased significantly in patients aged ≥65 years from 123 per 100 000 bed days in 2008 to 31 per 100 000 bed days in 2011 (significant decreases have occurred in patients aged 15-64 years since 2009).7 During this period, ribotype 078 has increased steadily but it is only since the beginning of 2012 that this ribotype has become predominant in Scotland. Ribotype 078 appears to spread across most of the Scottish NHS boards. Two outbreaks due to ribotype 078 have been reported recently but do not appear to explain the general increase observed since the beginning of 2012. In the rest of the UK, ribotype 078 has shown increasing and outbreaks have been reported in both the Republic of Ireland and Northern Ireland (where ribotype 078 is also the predominant type).8

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years.9 Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.

The increase in the resistance to cephalosporins in Scottish isolates after 1st January 2012 cannot alone explain the sudden rise in ribotype 078 cases in Scotland. Primary and secondary care data from Scotland suggests that cephalosporin prescribing has remained similar to past years. Recent increases in the prevalence of ribotypes 001, 106 and 027 which were previously the most common hospital ribotypes. Why ribotype 078 has increased while these three ribotypes have remained at relatively low levels compared to previous years is not clear.