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Emergence of *Clostridium difficile* toxinotype III, PCR-ribotype 027-associated disease, France, 2006

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On 27 March 2006, the Institut de Veille Sanitaire (InVS) was alerted to a cluster of *Clostridium difficile* associated disease (CDAD) in a healthcare facility (HCF) in northern France through its national nosocomial infection notification system [1]. This first cluster involved 41 patients (median age 82 years) who developed CDAD between 24 January 2006 and 24 May 2006, of whom 14 (34%) died. However, none of these deaths were found to be attributable to the CDAD. Of 23 strains isolated from these patients and sent to a central laboratory for typing, 17 (74%) were found to be the toxinotype III, PCR-ribotype 027 epidemic strain which had also been isolated from severe CDAD outbreaks in North America and Europe [2]. This cluster has now been controlled.

The InVS alerted all French healthcare facilities about this first 027 cluster through regional infection control coordinating centres (CClin). After the notification,other CDAD clusters were notified to the InVS. In northern France, as of 12 September 2006 and including the first described outbreak, 16 healthcare facilities and two nursing homes have notified severe CDAD cases or CDAD clusters to the InVS. A total of 266 cases have been reported which occurred from January to September 2006, mostly among elderly patients hospitalised in acute care or rehabilitation departments. Two healthcare facilities accounted for 143 (54%) of all cases. Among these 266 patients, 71 (27%) deaths were registered, 15 (6%) of which were attributable to CDAD according to mortality review results. As CDAD diagnosis relies on enzyme immunoassays, stool culture was not systematically available. Of the 114 *C. difficile* strains isolated from these 266 patients and typed, 81 (71%) were found to be the 027 strain. The 027 strain was isolated in 11 healthcare facilities and one nursing home. In other French regions, 13 healthcare facilities notified CDAD clusters to the InVs but none of these were associated with the 027 strain.

Control measures

Local infection control units implemented control measures for each cluster, assisted by the CClin when necessary. Control measures included standard and contact precautions, use of solutions containing hypochlorite for environmental cleaning, meticulous hand hygiene, and closure of wards in five facilities. Audits of antimicrobial prescriptions also were recommended. By 12 September 2006, seven episodes had been controlled and 11 were still considered as active (that is, new cases in these clusters had been notified within the past month).

Discussion

Our data confirm the emergence and spread of the 027 strain of *C. difficile* in northern France since January 2006. Clusters can be controlled if they are detected early and if strict control measures, which apply for any type of CDAD, are implemented. However, this strain has a particular epidemic potential and inter-hospital transmission is likely to occur when transferring patients, a similar situation to that which was observed in a regional outbreak of *Acinetobacter baumannii* infection in France in 2003 [3]. The emergence of *C. difficile* 027 in northern France could be linked to similar clusters in northern Europe, although our investigations did not find any evidence (such as the transfer of an index patient across borders) to support this hypothesis.

National recommendations for surveillance, prevention and control of CDAD were disseminated in France in May 2006 [4]. A national laboratory network consisting of the Anaerobe National Reference Centre and five regional laboratories has been set up in order to characterise isolated strains. Current efforts are being focused on reinforcing recommendations in all healthcare facilities and nursing homes, in order to detect and control clusters early and limit the spread of the 027 strain. Surveillance for CDAD will be instituted at national level in 2007.

More information can be found (in French) at the web page for the Réseau d'alerte, d'investigation et de surveillance des infections nosocomiales (Raisin): http://www.invs.sante.fr/raisin.

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Epidemiology of *Clostridium difficile* toxinotype III, PCR-ribotype 027 associated disease in Belgium, 2006

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As a result of the reports of outbreaks of diarrhoea due to *Clostridium difficile* North American Pulse field type 1 (NAP1), PCR ribotype 027, toxinotype III in North America, United Kingdom, the Netherlands and Belgium [1-5], two different surveillance systems for *C. difficile*-associated diarrhoea (CDAD) were set up in Belgium: a laboratory-based surveillance of clusters (since 1 January 2006) and prospective surveillance of CDAD incidence in acute care hospitals since July 1 2006 [6]. Here we report on the preliminary results of the 2 surveillance systems.

Laboratory surveillance of clusters

A total of 288 strains of *C. difficile* were sent to the reference laboratory by 27 laboratories (24 hospitals, 3 peripheral labs) from 1 January to 5 September 2006 as part of the laboratory-based surveillance of CDAD clusters. Of these, 150 (52%) were PCR ribotype 027-strains reported by 16 labs (15 hospitals, 1 peripheral lab). When grouped by trimester, the percentage of 027 strains increased from 44% in January-March 2006 to 67% in July-September 2006 (p trend=0.004).

Prospective surveillance of CDAD in hospitals

For the hospital-based surveillance, the objective is to assess and follow-up the baseline incidence of CDAD in Belgian hospitals, independently of an epidemic situation, to compare incidences between hospitals, to make a descriptive analysis of the clinical picture of the CDAD cases, and to do typing of the strains sent by the hospitals to the reference laboratory. Approximately 80% (n=96) of all Belgian acute care hospitals are taking part in the enhanced surveillance. Since 1 July 2006, 45 *C. difficile* strains were sent to the reference laboratory by 17 hospitals, 40% of which were 027 strains from 10 (59%) hospitals. However, since hospitals with higher CDAD incidences are more likely to be confronted to 027 strains and to send surveillance strains more rapidly to the reference laboratory, these percentages are probably an overestimate if interpreted as the national situation.

One patient with 027 CDAD was reported to have died as the direct consequence. Of the 40 CDAD cases for which the origin was given, 55% (027=7/non-027=15) were associated with a stay in the declaring hospital, 7.5% (0/3) originated from another hospital, 20% (4/4) were imported from nursing homes and 12.5% (2/3) originated at home. Of all healthcare-associated cases for which the date of onset was known (n=28), 32% started before the third day of hospital admission. The median age of patients was higher for 027 strains than for non-027 strains (83.5 years vs. 72 years, p<0.01). Accordingly, the proportion of 027-strains was highest among patients who stayed on the geriatric