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**Summary**

In May 2012 Hungary participated in the first European point prevalence survey (PPS) of healthcare-associated infections (HAI) and antimicrobial use (AMU) coordinated by the European Centre for Disease Prevention and Control (ECDC). Due to the increasing incidence of healthcare-associated *Clostridium difficile* infection (HD-CDI) in Hungary, we analysed HA-CDI data in the national PPS. The survey included 29 hospitals and 10,180 in-patients. A total of 462 patients with HA (4.5%, 95% CI: 4.0-5.2%) were recorded. The mean prevalence of HA-CDI was 0.5% (95% CI: 0.3-0.9%). The percentage of HA-CDI among all HAI was 10.6% (almost 3x higher than in the overall European PPS). Nearly half of HA-CDI (45.3%) were present on admission. Factors associated with increased odds of HA-CDI were increasing age and length of stay (before onset, if HA), ultimately/rapidly fatal co-morbidity, urinary catheter in place, medical specialty, hospital fluorquinolone use, number of infection control nurses, and secondary/tertiary level of care. The results confirmed that HA-CDI is an important public health problem in Hungary which calls for multifaceted prevention strategy.

**Methods**

**European PPS of healthcare-associated infections and antimicrobial use, 2011-2012** [1]

- **Inclusion cri:** acute care hospitals → all acute care wards → patients present on PPS day at 8 am
- **Exclusion cri:** chemotherapy wards, ICU, ORs/OpDs, Outpatients
- **Case definition of HD-CDI:** The definition of CDI is based on the following criteria: 1) Several episodes of diarrhoea (at least 3 episodes per day) occurring within a 7-day period; 2) a positive diagnostic test for *C. difficile* toxins A and/or B (Tester or modified tetrathionate bile broth); 3) Colonic histopathological characteristics of CDI on a specimen obtained via endoscopy.

**Results**

**Healthcare-associated infections**

- **Number of pts in PPS:** 10,180 patients (43% male)
- **Median age of pts:** 61 years
- **Total number of HAI:** 498 infections
- **Prevalence of pts with HA:** 4.5% (95% CI: 4.0-5.2%)

**Healthcare-associated C. difficile infections**

- **Number of pts with HA-CDI:** 53 patients (43% male)
- **Median age of pts:** 75 years
- **Prevalence of HA-CDI:** 0.5% (95% CI: 0.3-0.9%)
- **Prevalence by hospital:** 0.0-1.8%
- **HA-CDI of all HAI:** 10.6% (33/298)
- **HA-CDI present on admission:** 45.3% (24/53)

The percentage of HA-CDI of all HAI was the lowest in primary level and highest in secondary level hospitals (fig. 1). Infectious disease specialty had the highest prevalence of HA-CDI (fig. 2), which were all imported infections. Several independent predictors of HA-CDI were found (table).

**Conclusions**

- Although the prevalence of patients with HA observed in the Hungarian PPS (4.5%) was lower than in the European sample (6.0%), the proportion of HA-CDI of all HAI was considerably higher in Hungary (10.6%) than in Europe (3.6%) [2].
- Imported HA-CDI cases contributed significantly to the burden of HA-CDI. This has importance regarding the risk of secondary transmission, and screening policies.
- Elderly patients with comorbidities were at high risk of HA-CDI. Length of stay and fluoroquinolone use at hospital level were important modifiable risk factors identified.
- Our findings suggest that a higher number of infection control nurses may contribute to better diagnosis of HA-CDI and lower use of fluoroquinolones.

**References**


**Acknowledgements**

We thank the participating hospitals for the data collection in the national PPS, and Dr. Carl Suetens at ECDC for his invaluable help in the data analysis.

**Figure 1. Percentage of healthcare-associated *Clostridium difficile* infection in all healthcare-associated infections, by hospital type**

**Figure 2. Specialties with at least 1% prevalence of healthcare-associated *Clostridium difficile* infection**

**Antimicrobials used**

**Figure 3. Antimicrobials received by patients with HA-CDI on the survey day**

**Table. Factors associated with increased odds of healthcare-associated *Clostridium difficile* infection in univariate analysis (crude ratios) and in the multilevel logistic regression model (adjusted ratios).**

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**Introduction**

- The epidemiology of HA-CDI has started to change in Hungary in the second half of the 2000’s.
- Notification data showed that the incidence of HA-CDI increased from 1.2 to 2.8 per 10,000 patient-days from 2011 to 2012 in Hungary.
- To complement notification data and better understand risk factors of HA-CDI, we aimed to describe HA-CDI cases, antimicrobials used and associated factors in the first Hungarian point prevalence survey of HAI and antimicrobial use.
- The national survey was conducted in the frame of the first European PPS of HAI and AMU implemented in 29 countries under the coordination of ECDC in 2011-2012.

**Data analysis**

- Calculation of mean prevalence of HA-CDI, and prevalences by hospital, specialty, age, sex.
- Calculation of adjusted odds ratios for risk factors at patient and hospital level using a multilevel mixed effect logistic regression.

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**Figure 1:** Percentage of healthcare-associated *Clostridium difficile* infection in all healthcare-associated infections, by hospital type

**Figure 2:** Specialties with at least 1% prevalence of healthcare-associated *Clostridium difficile* infection

**Figure 3:** Antimicrobials received by patients with HA-CDI on the survey day