

Extended-spectrum beta-lactamase-producing Enterobacteriaceae Significant increase of the prevalence of carriage in elderly residents between 2010 and 2013

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Objectives

To evaluate the spread of ESBL in nursing homes (NHs), we conducted 2 multicentre one day point-prevalence studies in the Centre region of France (2.7 M inhabitants), the first in 2010 and the second in 2013, and evaluated ESBL colonisation of 1620 residents.

Methods

37 NHs in 2010, and 38 in 2013 participated in the study (total beds 5141 and 4799 respectively). 19 NHs participated in both studies. 1620 residents were enrolled (465 in 2010, 1155 in 2013), including 1159 women and 461 men. Data were collected for all residents (age and sex, physical disability, urinary and faecal incontinence, comorbidities, recent hospitalisation and antibiotic use prior to inclusion in the study). Rectal swabs or first morning urine samples were used to screen residents for ESBL carriage. The colonising isolates were genotyped.



Results

Most characteristics were similar for the residents of the 2 studies. Residents enrolled in 2010 and 2013 did only differ significantly for age and sex (more females and less residents >85 y in 2013). Many were not able to walk unassisted (51%) and incontinent (65% urinary- and 47% faecal-). Diabetes mellitus was reported for 15% of the residents. 17% had recently been hospitalised, and 35% had recently been treated with antibiotics.

The prevalence of ESBL carriage increased significantly.

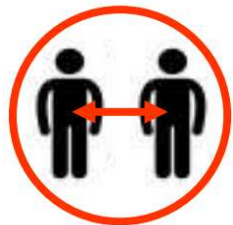
- In 2010, 6 residents were ESBL carriers (2 %) and the carriage rate was between 0 and 10% according to the NH.
- In 2013, 114 residents were ESBL carriers (10%) and the carriage rate was between 0 and 29% according to the NH.

The ESBL included 99 *E. coli* (67% of ESBL in 2010, 82% in 2013).

By comparison with non carriers, ESBL carriers were in a poorer state of health. ESBL colonisation was significantly associated with malignancy, urinary incontinence, faecal incontinence, recent hospitalisation and antibiotic treatment.

Genotyping of the ESBL strains revealed two or more residents carrying *E. coli* belonging to the same clone in none of the 37 NHs in 2010, and in 23 of the 38 NHs in 2013, suggestive of intra-NH resident-to-resident transmission.

The NHs were distributed into 2 groups: one with low ESBL carriage rates and no intra-NH ESBL spread, and the second with high rates and putative intra-NH ESBL spread.



Conclusion

Our findings show rapid changes in the epidemiology of ESBL-*E. coli* and raise the question of the factors that favour intra-NH spread. We alert about the need to investigate this point, and to conduct routinely such survey to monitor the phenomenon and to provide information for adapting preventive strategies in NHs.