

Antibiotic use in 61 acute care hospitals in Switzerland: trends over the years 2004 – 2012 and comparison with Europe

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Aims

To describe antibiotic use in a sentinel network of Swiss acute care hospitals in the frame of the program anresis.ch and to compare it to European antibiotic use level.

Method

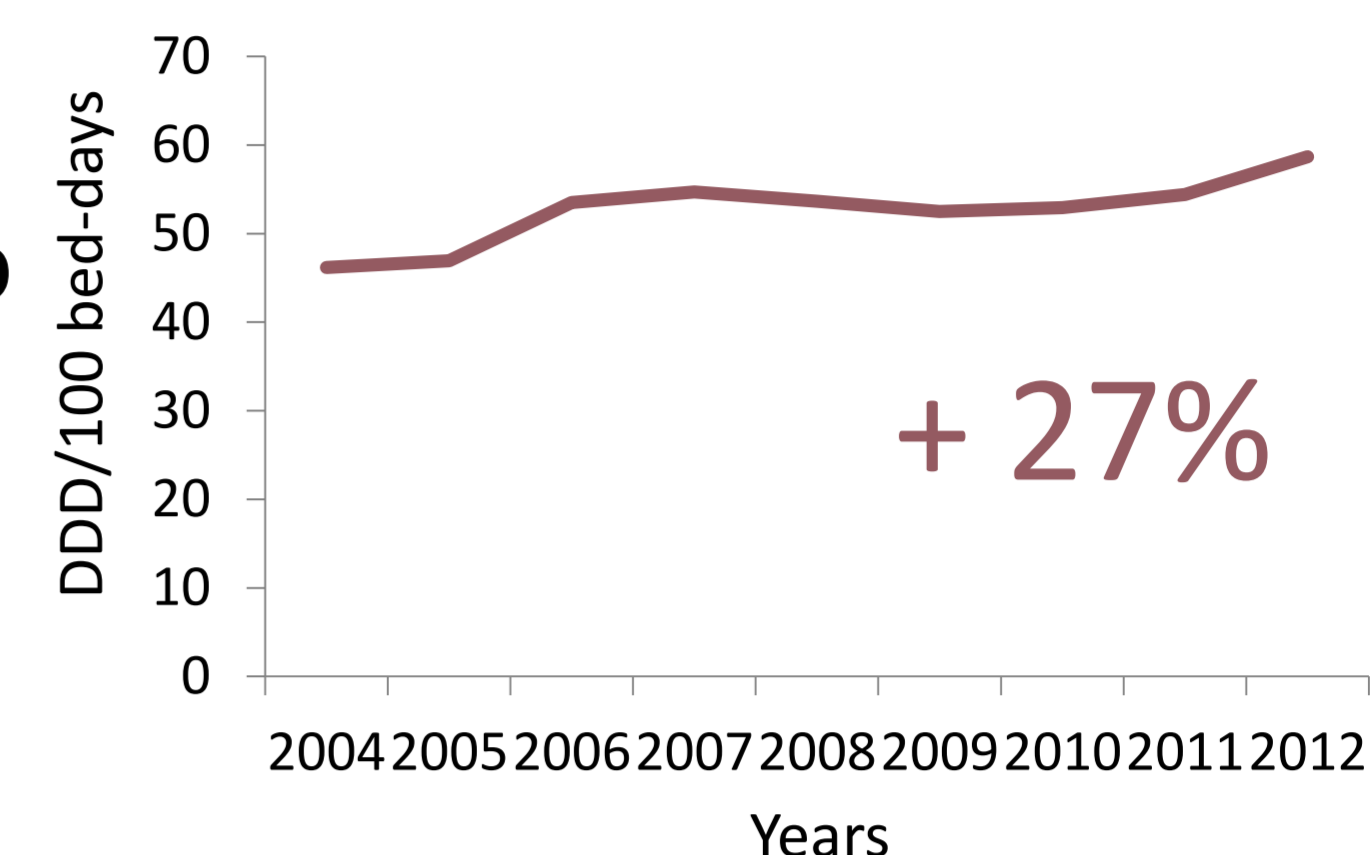
- Antibiotics for systemic use (class J01 of WHO Anatomical Therapeutic Chemical (ATC) system, 2013) were collected prospectively over the years 2004-2012 from 61 acute care hospitals accounting for 51% of the total number of bed-days in the country : 38 small-size hospitals (< 200 beds), 14 medium-size hospitals (200 – 500 beds), 9 large-size hospitals (> 500 beds).
- Aggregated data were converted into defined daily doses (DDD) and antibiotic use expressed in number of defined daily doses per 100 bed-days (DDD/100BD) or in DDD per 1000 inhabitants and per day (DDD/1000ID).
- A one-level mixed model for repeated measurements and regression analysis was used to compare antibiotic use over the years.

Conclusions

- Detailed information about trends in antibiotic use is provided by the program anresis.ch from a large sample of Swiss acute care hospitals.
- We observed a significant increase in antibiotics for systemic use over the study period, while the European median did not differ significantly¹.
- Moreover, carbapenem use increased over the study period. This could be explained by the rise of ESBL-producing strains worldwide, towards which carbapenems remain the treatment of choice in case of severe infections². The proportion of carbapenem use was higher than the European median and this could be a cause of concern regarding the evolution of carbapenem-resistant enterobacteriaceae.

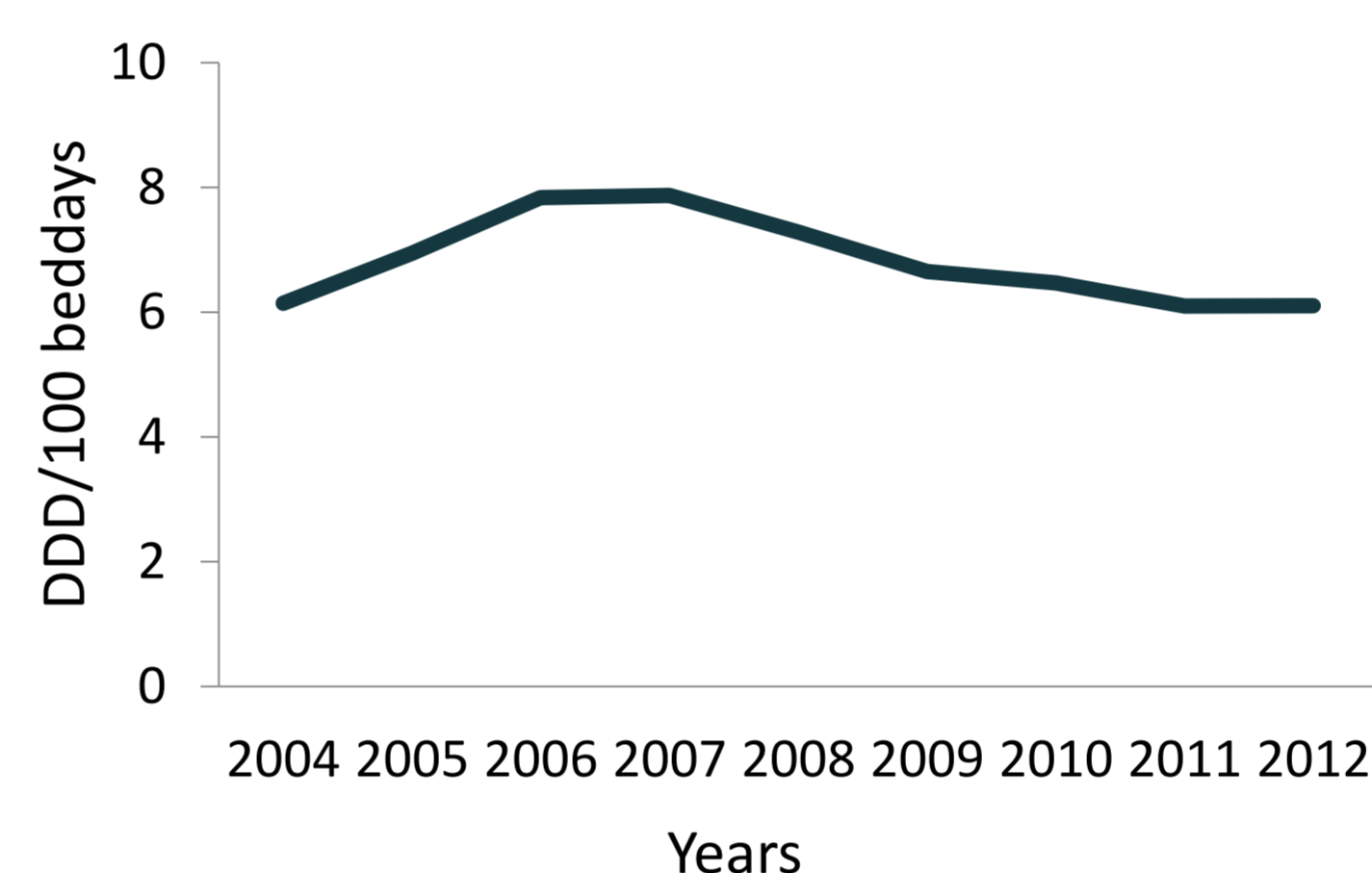
Results

1. Antibiotic use rose from 45.4 DDD/100BD in 2004 to 57.8 in 2012 ($p < 0.001$).



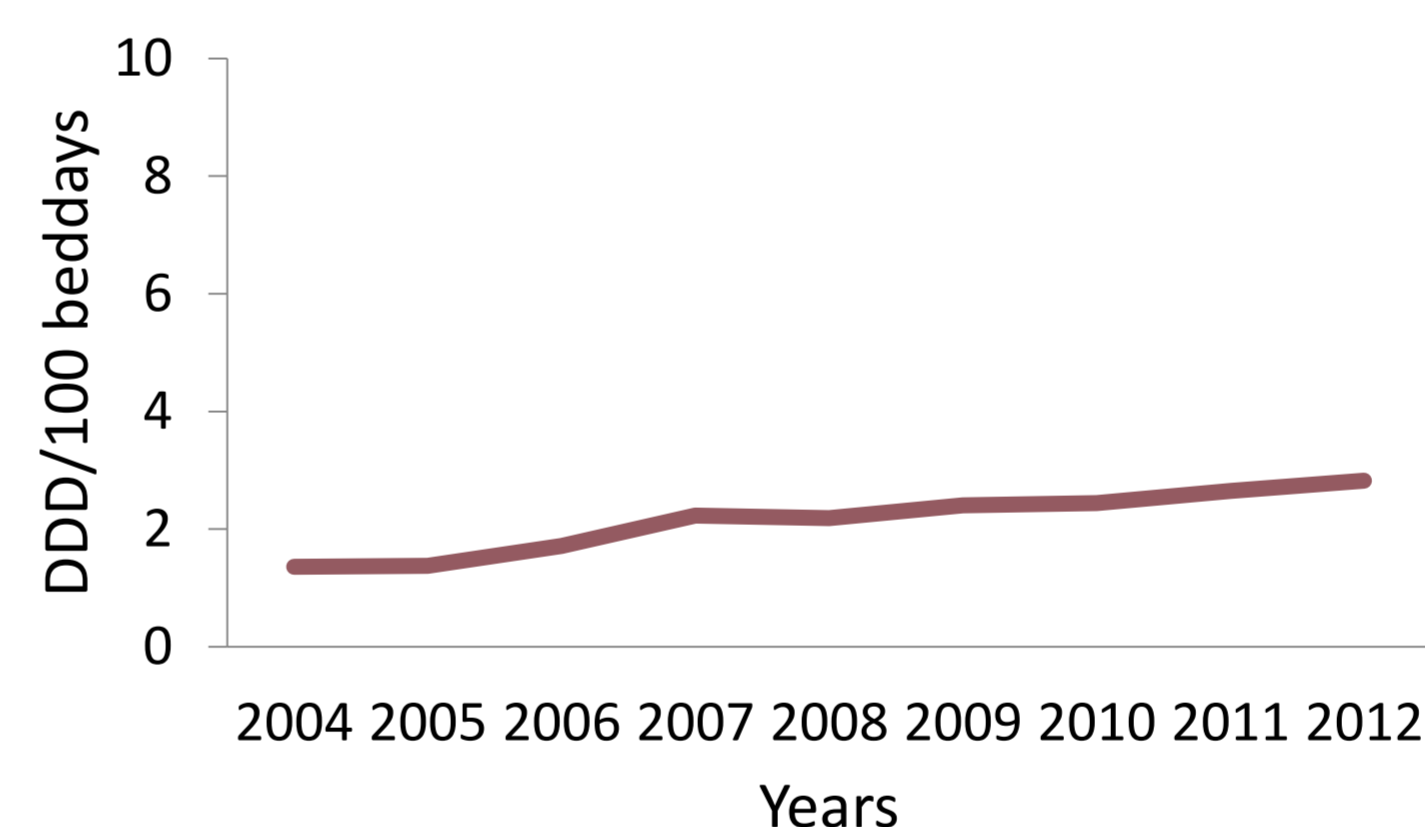
2. Amoxicillin-clavulanic acid was the most used antibiotic (18.4 DDD/100BD in 2012, 32% of J01 use).

3. While quinolone use initially increased since 2004, it has been decreasing since 2007 (8.0 in 2007 to 6.1 DDD/100BD in 2012, $p < 0.001$).



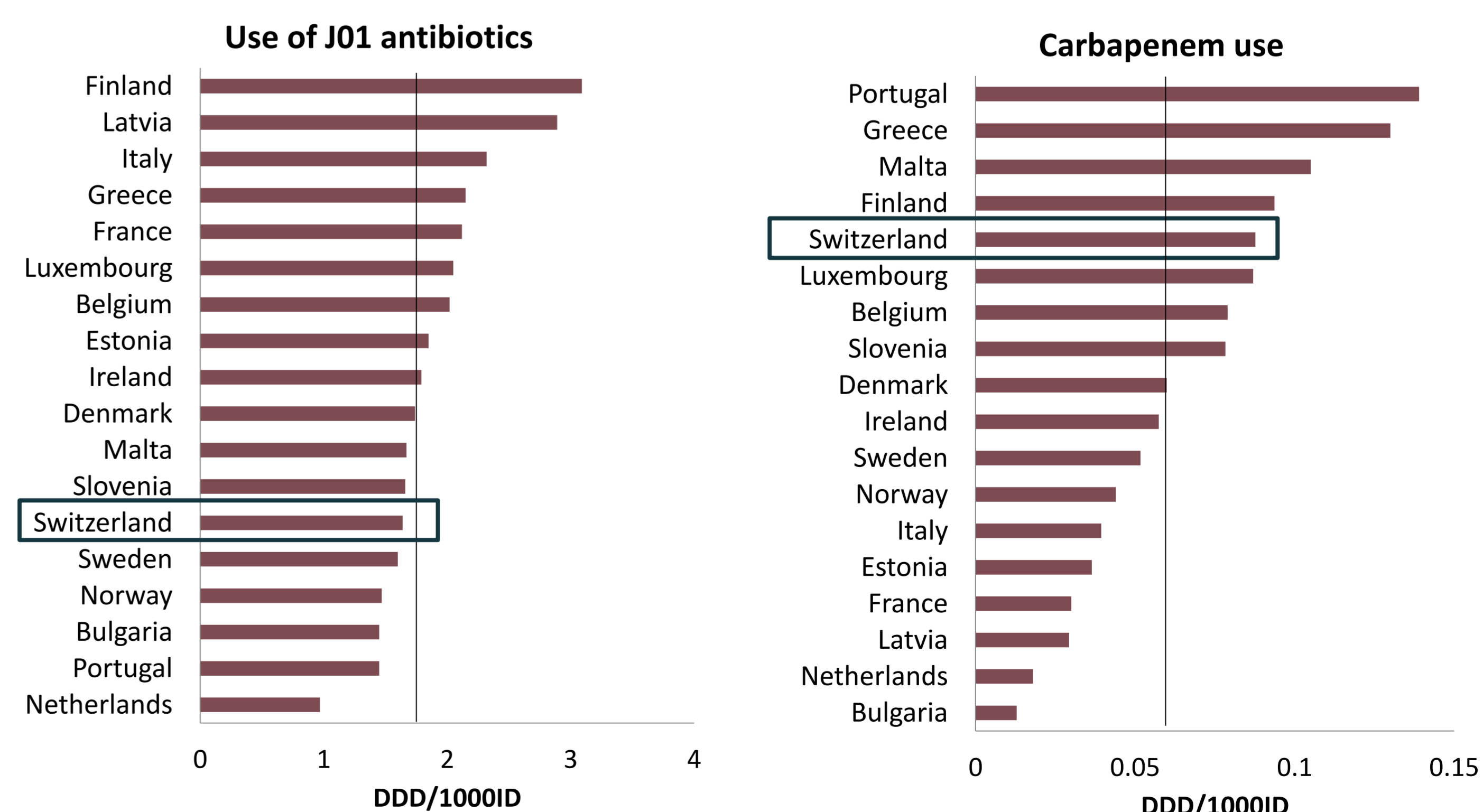
71% of participating hospitals decreased their quinolone use between 2007 and 2012.

4. We noticed an increase in carbapenem use between 2004 and 2012 in the 3 categories of hospital size (overall, + 113%, $p < 0.001$).



63% of participating hospitals increased at least by 2 their carbapenem use between 2004 and 2012.

5. In 2011 the Swiss antibiotic consumption density was close to the European median (1.6 versus 1.8 DDD/1000ID), but with 5% the proportion of carbapenem use was higher than the European median (3.2%)¹.



References

¹ European Centre for Disease Prevention and Control. Surveillance of consumption in Europe 2011. Stockholm: ECDC; 2014.

² Kronenberg A et al. Euro Surveill. 2013;18(21):pii=20484.

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