

Antibiotic consumption in nursing homes of the Canton of Vaud: trends over the years 2009 – 2014

C. Plüss-Suard¹, A. Niquille², D. Héquet^{1,3}, R. Pichon⁴, N. Widmer⁵, G. Zanetti¹, O. Bugnon^{2,6}, C. Petignat^{1,2}

Hospital Preventive Medicine¹, Lausanne University Hospital, Lausanne; Community pharmacy², Department of ambulatory care & community medicine, University of Lausanne; Unité cantonale HPCI Vaud³, Lausanne; Pharmacie des Hôpitaux du Nord Vaudois et de la Broye⁴, Yverdon-les-Bains; Pharmacie des Hôpitaux de l'Est lémanique⁵, Vevey; Community pharmacy⁶, School of pharmaceutical sciences, University of Geneva, University of Lausanne, Switzerland

Background

Excessive use of antibiotics in nursing homes was reported in several studies¹⁻³. Surveillance of their use in nursing homes is essential to plan interventions fostering an appropriate use and to measure the impact of these interventions.

Objectives

Primary outcome:

to describe the antibiotic consumption in nursing homes of the Canton of Vaud

Secondary outcome:

to examine whether the antibiotic consumption is correlated to methicillin-resistant *Staphylococcus aureus* (MRSA) colonization and to the urinary catheter use

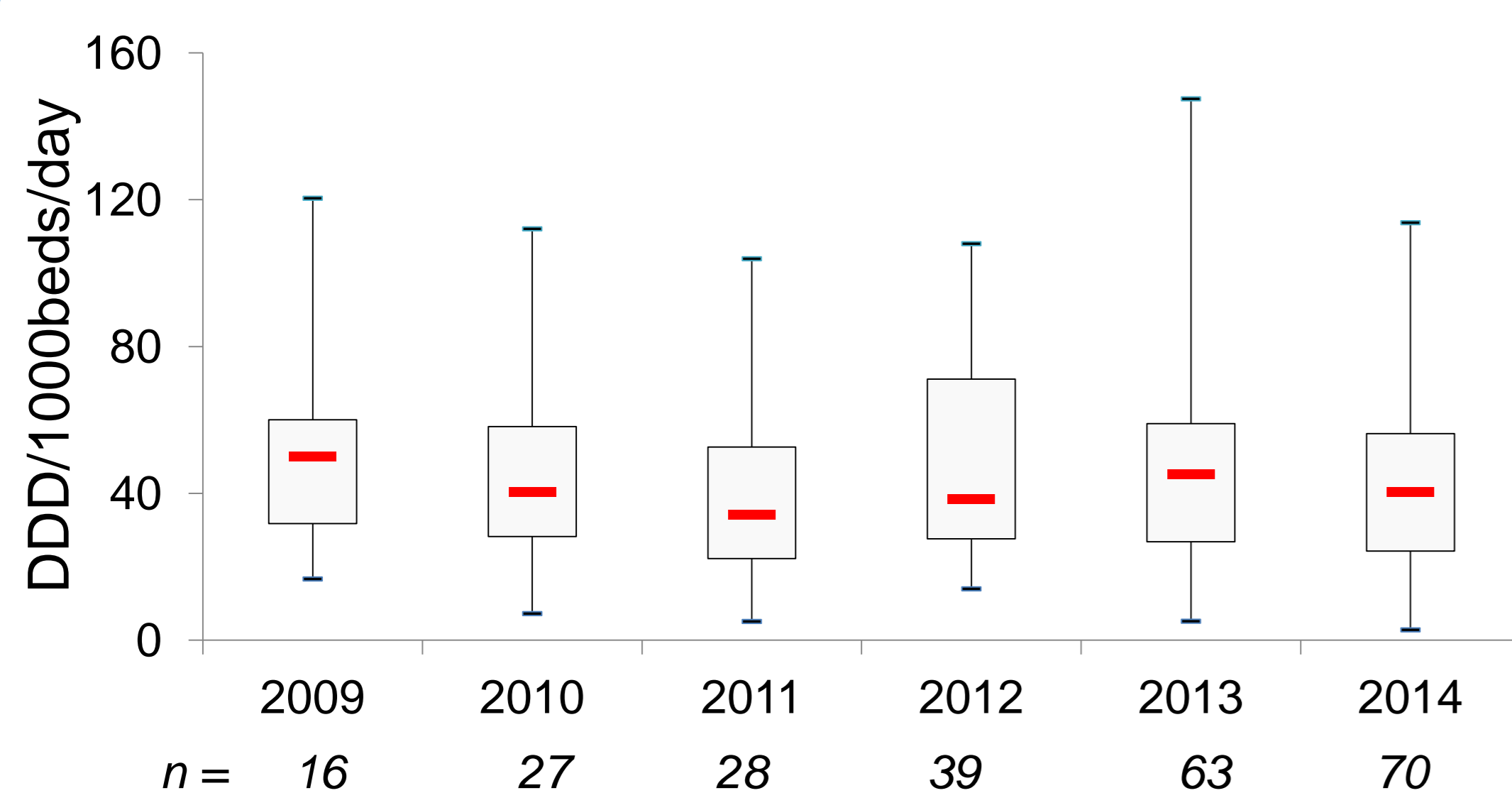
Methods

Data on the use of systemic antibiotics (class J01 of WHO Anatomical Therapeutic Chemical (ATC) system, 2015) were collected from the community pharmacies' annual invoice data including 16 nursing homes in 2009. The number of nursing homes in the database increased to 70 in 2014, representing 46% of all nursing homes of the Canton of Vaud and 54% of the available beds. Aggregated data were converted into defined daily doses (DDD) and antibiotic consumption expressed in number of defined daily doses per 1000 beds and per day. Proportion of urinary catheter use and MRSA carriage data were provided through a point prevalence study (2008, 2010, 2011 and 2015).

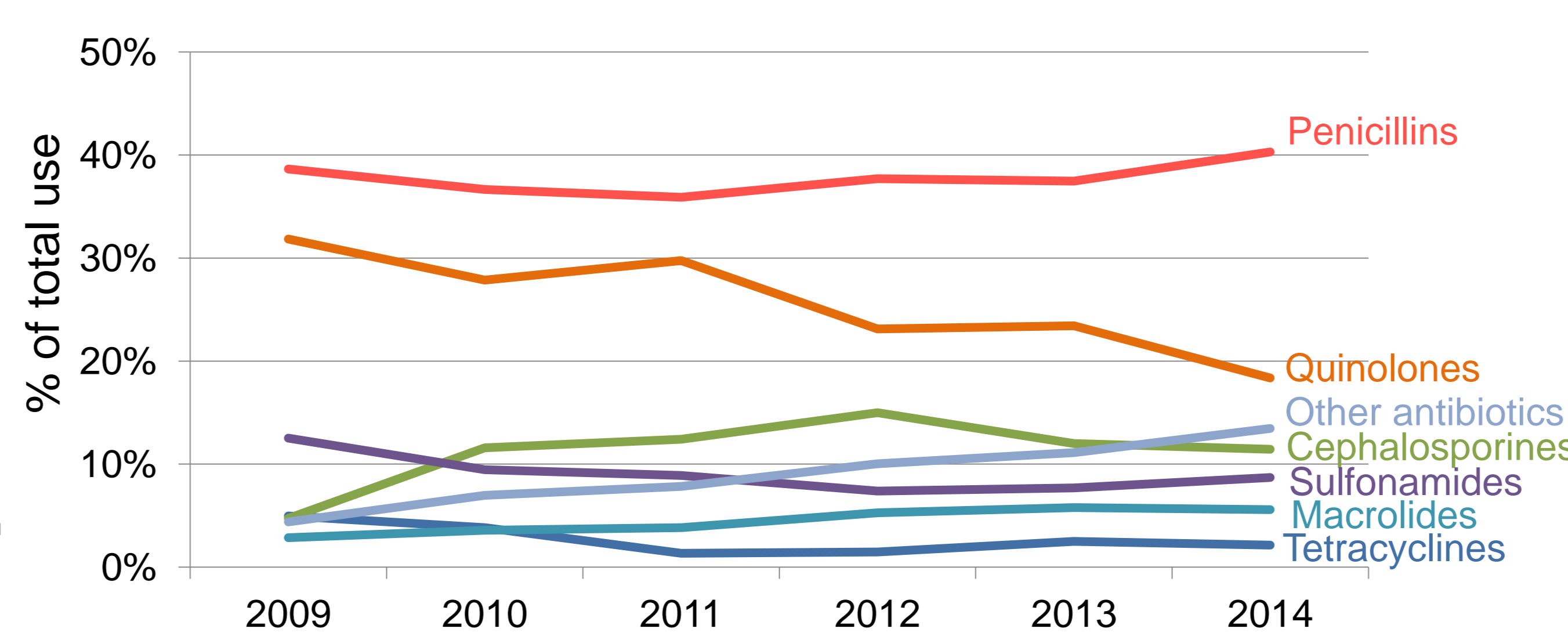
Results

Primary outcome:

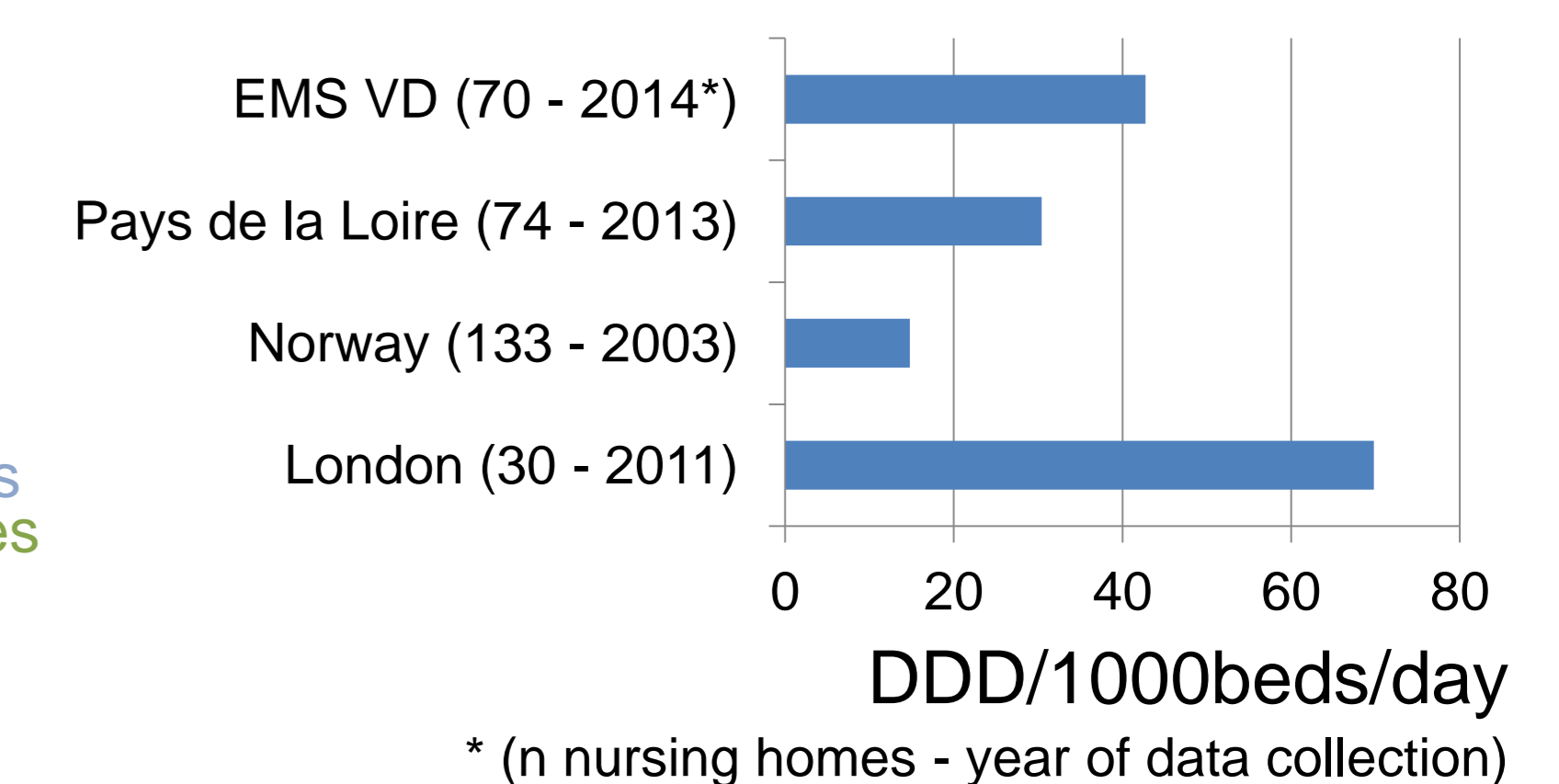
Total consumption of systemic antibiotics



Consumption of antibiotic families



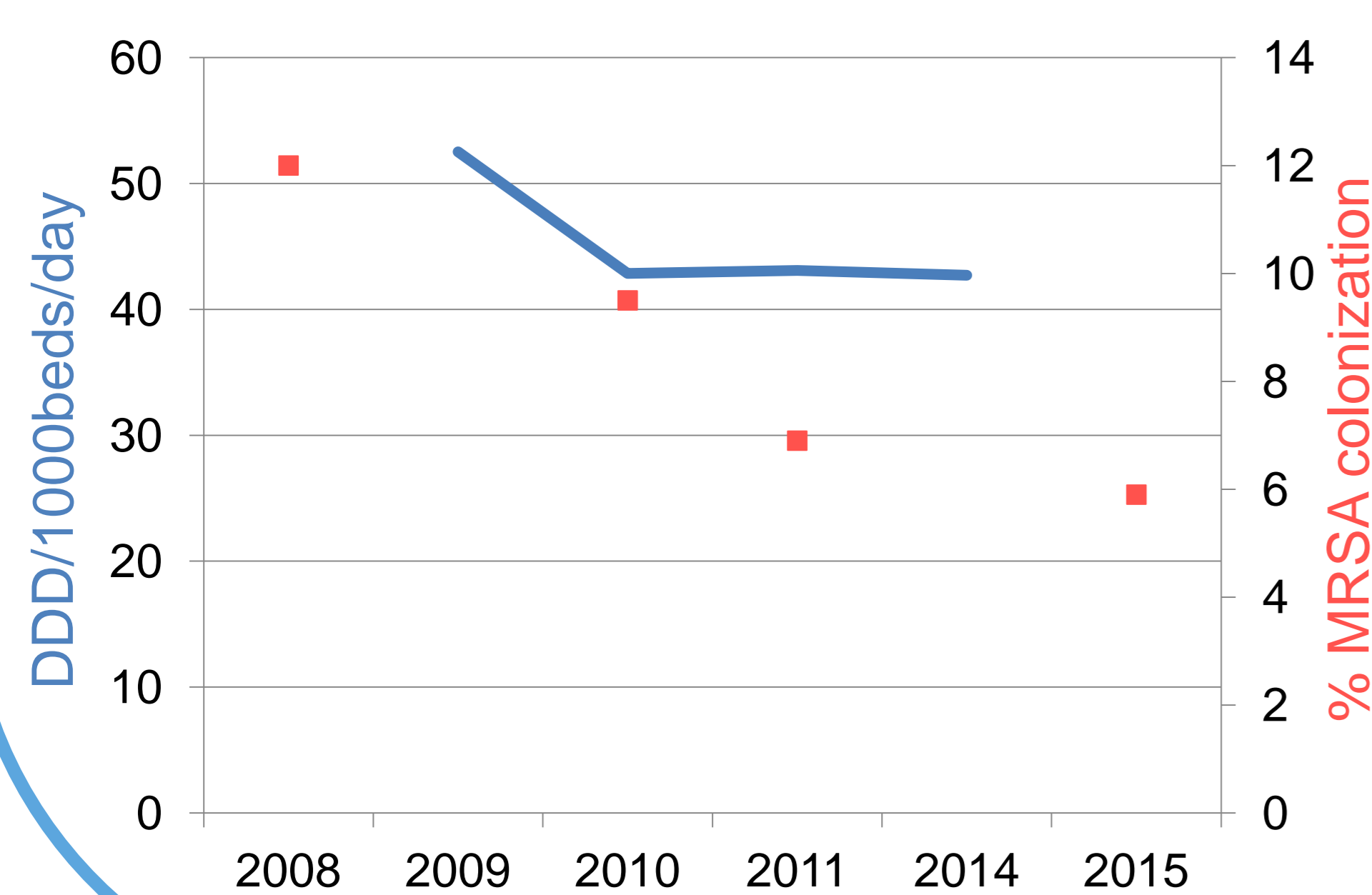
Comparison with other studies



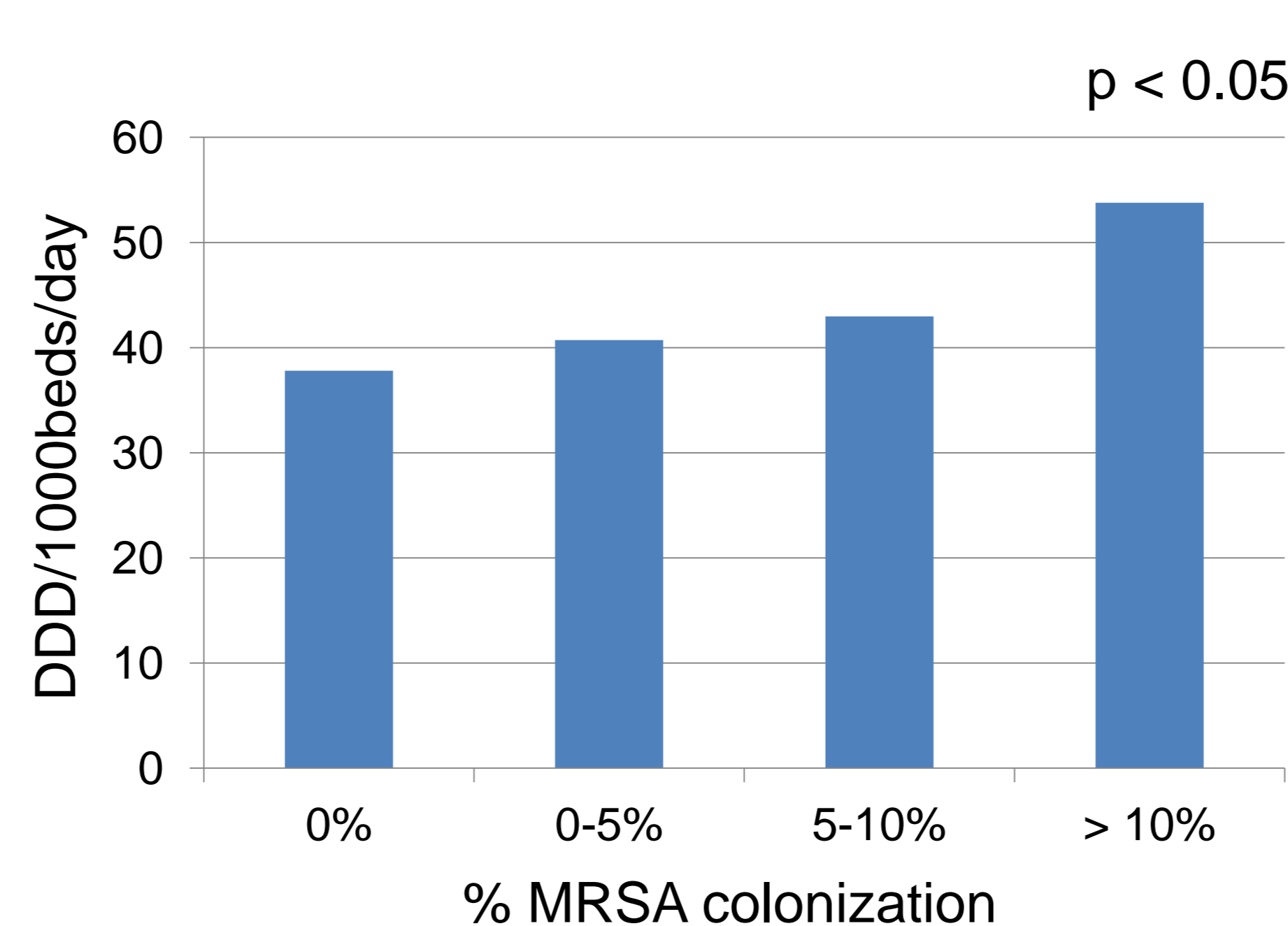
Secondary outcome:

Antibiotic consumption and proportion of MRSA colonization

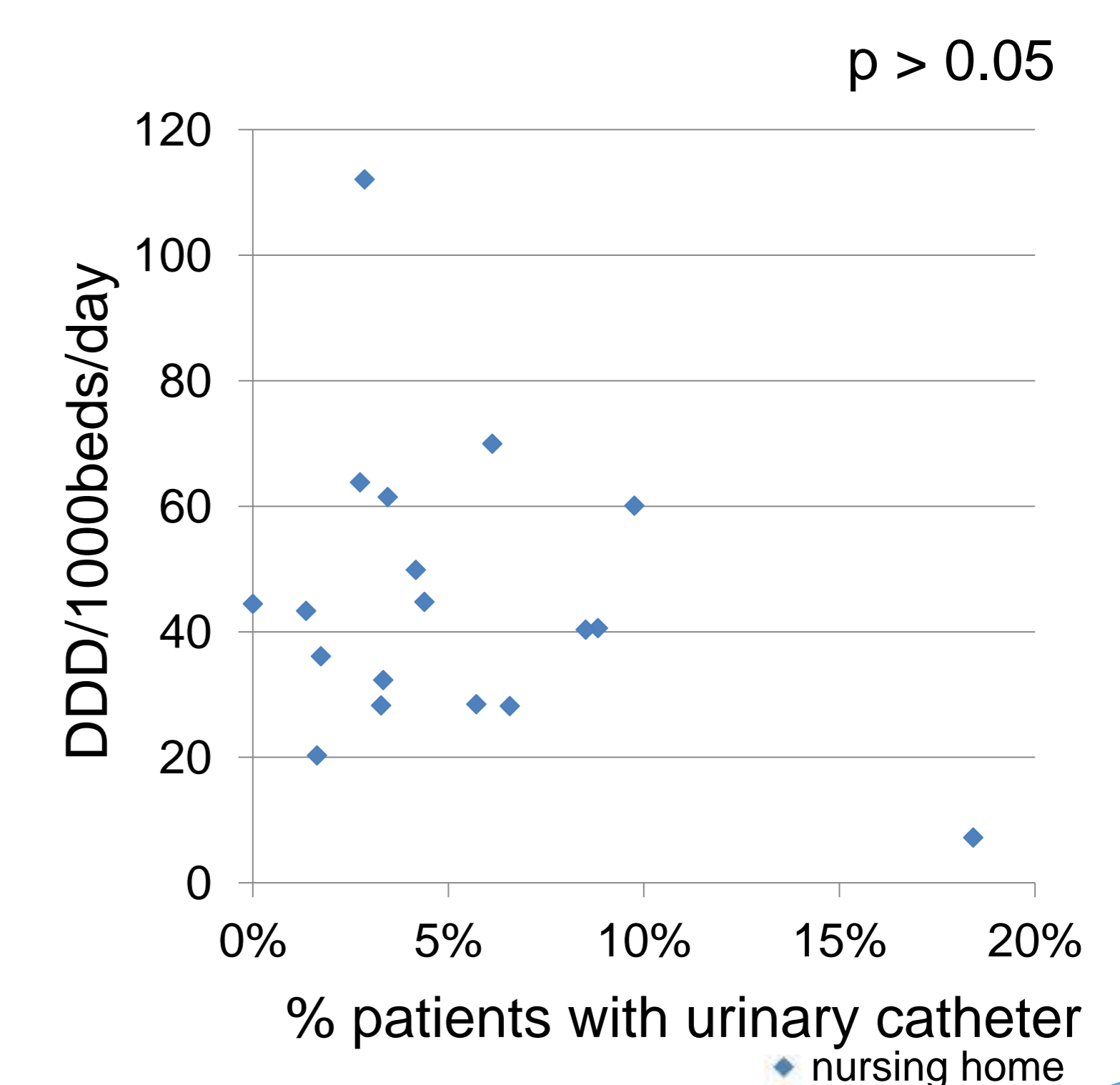
(A) trends over the years



(B) by MRSA colonization proportion in nursing homes - 2014



Correlation between global antibiotic use and urinary catheter use - 2010



Discussion

This study is the first that analyzes longitudinal data of antibiotic consumption in nursing homes of the Canton of Vaud. The findings suggest that a large variation in antibiotic consumption exists among nursing homes. We found a statistically significant correlation between global antibiotic use (2014) and proportion of MRSA colonization (2015). No correlation was found in 2010 and 2011 probably due to a small sample size. Thus, antibiotic stewardship programs should be implemented to promote a more accurate use.

References

- Lim CJ et al. Clin Interv Aging. 2014; 13: 165-77.
- Nicolle LE et al. Infect Control Hosp Epidemiol. 2000; 21: 537-545.
- Van Buul LW et al. JAMDA. 2012; 13: 568.e1-568.e13

Acknowledgements

We thank Christophe Rossier, Laetitia Qalla Widmer, Monica Attinger for their helpful contribution.



hygiène, prévention et contrôle de l'infection



Centre hospitalier universitaire vaudois



Policlinique Médicale Universitaire CH-Lausanne



pharmacie des hôpitaux du nord vaudois



Ecole de Pharmacie EPGL Genève - Lausanne