

# Decrease in Antibacterial Use and Facility-Level Variability After the Introduction of Guidelines and Implementation of Physician-Pharmacist-Nurse Quality Circles in Swiss Long-term Care Facilities.

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## Abstract

**Objectives:** The objective of this study is to describe antibacterial use in long-term care facilities and to investigate the determinants of use.

**Design:** This study is a quality improvement study conducted from January 2011 to December 2016.

**Setting:** Long-term care facilities in the canton of Vaud, Western Switzerland, were investigated.

**Participants:** Twenty-three long-term care facilities were included in this study.

**Intervention:** The intervention included the publication of local guidelines on empirical antibacterial therapy and the implementation of physician-pharmacist-nurse quality circles.

**Measures:** The main outcome was antibacterial use, expressed as defined daily doses (DDD) per 1000 beds per day. Statistical analyses were performed through a 1-level mixed model for repeated measurements.

**Results:** Antibacterial use decreased from 45.6 to 35.5 DDD per 1000 beds per day (-22%,  $P < .01$ ) over the 6-year study period, which was mostly explained by reduced fluoroquinolone use (-59%,  $P < .001$ ). A decrease in range of use among LTCFs was observed during the study period, and 27% of antibacterial use was related to the WATCH group (antibiotics with higher toxicity concerns and/or resistance potential) according to the AWaRe categorization of the WHO, decreasing from 17.3 DDD per 1000 beds per day to 9.5 (-45%) over the study period. The use of antibacterials from the RESERVE group ("last-resort" treatment options) was very low.

**Conclusion and implications:** A reduction in facility-level antibacterial use and in variability across LTCFs was observed over the study period. The dissemination of empirical antibacterial prescription guidelines and the implementation of physician-pharmacist-nurse quality circles in all LTCFs of the canton of Vaud likely contributed to this reduction.

Antibacterials from the WATCH group still represented 27% of the total use, providing targets for future antibiotic stewardship activities.

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