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Section **Fields (of activity)**

Effect of the implementation of infection prevention and control concepts and hand hygiene campaigns in companion animal clinics in Switzerland

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Key words
Antimicrobial resistance, antimicrobial resistant pathogens, companion animal clinic, pet, infection prevention and control, hygiene, hand hygiene, campaign, One Health

Aim of the study
The objectives of this study were to assess IPC standards, hand hygiene compliance, hand contamination, quality of cleaning and environmental contamination with antimicrobial resistant microorganisms (ARM) of public health importance before and after implementation of comprehensive infection prevention and control (IPC) concepts and multimodal hand hygiene campaigns in four companion animal clinics. Additionally, this study was performed to assess the effect of IPC implementation in an outbreak situation.

Material and methods
Five medium- to large-sized clinics located in different parts of Switzerland were recruited. Data collection was completed in 4 clinics. A one-day IPC audit was conducted covering 15 areas of IPC and a written report was provided to each clinic with a list of deficiencies that need to be addressed during the intervention. Hand hygiene compliance was assessed by direct observation of approximately 500 hand hygiene events per clinic using the CleanHands application (Swissnoso). Cleaning efficiency was assessed by marking 90 high-touch surfaces in each clinic with fluorescent markers (DAZO ® Fluorescent Marking Gel, ECOLAB). Lastly, environmental contamination with methicillin-resistant *Staphylococcus aureus* (MRSA) und *Staphylococcus pseudintermedius* (MRSP), extended-spectrum beta-lactamase- and carpapenemase-producing Enterobacterales (ESBL-E and CPE) and vancomycin resistant Enterococci (VRE) was assessed in the clinics by sampling 200 pre-defined surfaces and 20 hand swabs per clinic over the course of four sampling days. A comprehensive IPC concept was implemented and a multimodal hand hygiene campaign was conducted in each clinic. The same parameters were re-assessed one and five months after intervention.

Results and significance
The present study identified closely related ARM, including CPE and ESBL-E in the clinical environment and on the hands of healthcare workers in one clinic. This is the second report of a massive CPE contamination in a veterinary facility in Switzerland. The importance of the clinical environment as a reservoir for ARM could be clearly demonstrated in this study. Companion animal clinics can thus contribute significantly to the dissemination of highly resistant bacteria. The conducted IPC implementation and hand hygiene campaigns were generally successful measures to improve IPC standards and environmental contamination. The applied measures significantly improved hand hygiene compliance, the most important intervention measure in the clinical envi-

ronment, in all participating clinics. Hand hygiene compliance remained higher than during the baseline evaluation even five months after implementation and teaching. These results could lay the basis for an IPC accreditation system for companion animal clinics in Switzerland as part of national strategies to combat the spread of ARM at the companion animal – veterinary clinic – human interface.

Publications, posters and presentations

Oral abstract presentation: 31st annual ECVIM-CA congress 2021, 1–4 September 2021, online congress.
Dissemination of *bla*OXA-48 carbapenemase- and extended-spectrum beta-lactamase-producing *Enterobacteriaceae* in a Swiss companion animal clinic, K. Schmitt, R. Stephan, B. Willi; award for the 2nd best oral presentation, International Society of Companion Animal Infectious Diseases, ISCAID

Schmitt K, Biggel M, Stephan R, Willi B. (2022). Massive spread of OXA-48 carbapenemase-producing *Enterobacteriaceae* in the environment of a Swiss companion animal clinic. Antibiotics, 11(2):213. doi: 10.3390/antibiotics11020213.

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