

# 8<sup>th</sup> CLINICAL MICROBIOLOGY CONFERENCE

October 26-28, 2017 | Paris, France

## Changes of the microbiome in critically ill patients

Horvath Lena, Gorkiewicz G, Halwachs B, Koskinen K, Moissl Eichinger C, Mora M and Krause R and Hogenauer C  
Medical University of Graz, Austria

The human microbiome of multiple body sites is affected by critical illness and clinical interventions. When and how microbes change in intensive care unit (ICU) patients is not fully understood. This study investigated the short and long-term changes of microbiota composition in pharynx, feces, tracheobronchial and gastric secretion of 6 ICU patients. The association of clinical factors (medication, infections, mechanical ventilation) was studied for each case. The microbiota of clinical samples was phylogenetically characterized by 16S rRNA sequencing. All samples were divided into 3 groups (early, mid, late), depending on sampling day. Overall, the microbiome of both respiratory and gastrointestinal tract showed a clear loss of species-richness over the course of hospitalisation (seen by decreasing Chao1 indices). Low-diversity communities (one genus comprising over 75%) were detected in all patients, especially in pharyngeal, tracheobronchial and gastric samples, the majority after longer ICU stays. Microbial composition showed great interpatient differences, but *Staphylococcus* and *Enterococcus* were pathogens frequently observed in several patients. We found that patients with an infection showed the infecting pathogen in at least one sample before (3 of 5 patients) or after (all patients) the clinical diagnosis of the infection. In most of these cases, the same pathogen was detected simultaneously in multiple sample areas, suggesting colonization of different body habitats. Other clinical factors were not directly related to microbial changes in this study. Assessing the clinical influence of microbiota diversity-loss in relation to the abundance of nosocomial pathogens in critically ill patients is of great interest for the future.

### Biography

Lena Horvath is in her final year of Medical School at the Medical University of Graz, Austria. This study was performed as part of her diploma thesis, written at the department on Internal Medicine. Her interest lies in the field of gastroenterology and hepatology, especially in microbiome research, where she wishes to specify in the future.

lena.horvath@stud.medunigraz.at

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