



We prospectively followed a cohort of 86 hemodialysis patients from an outpatient dialysis center over 25 months analyzing *S. aureus* carrier status, *S. aureus* infection rates and mortality” Scheuch et al (2019).

Abstract:

BACKGROUND: Dialysis patients are frequently exposed to *Staphylococcus aureus* due to stays in dialysis centers, hospitals or rest homes. The hemodialysis vascular access is a potential entry site for *S. aureus*, in particular when using a central venous catheter (CVC) which increases the risk of sepsis compared to arteriovenous (AV) fistula. We prospectively followed a cohort of 86 hemodialysis patients from an outpatient dialysis center over 25 months analyzing *S. aureus* carrier status, *S. aureus* infection rates and mortality.

METHODS: Demographic data and patients’ medical histories were collected and followed from all hemodialysis patients. Blood samples, nasal swabs and swabs from the hemodialysis vascular access site were taken every six months for a period of 25 months and tested for *S. aureus*. Strains were cultured and further characterized by spa PCR and microarray-based genotyping. Resulting data were compared with those from the general population.

RESULTS: In cross-sectional analyses, an average of 40% of hemodialysis patients were *S. aureus* carriers compared to 27% in the general population. Longitudinally, a total of 65% were *S. aureus* carriers: 16% were persistent carriers, 43% were intermittently colonized. The

most common *S. aureus* lineage in the dialysis patient cohort was the clonal complex (CC) 8 and the spa type t008, while in the general population, the clonal complex CC30 dominates. During the study period, we observed six *S. aureus*-associated blood stream infections with one *S. aureus* attributable death. *S. aureus* carriers with an AV fistula were more densely colonized in the nasal mucosa compared to patients with a CVC. Overall mortality was lower for hemodialysis patients with a positive *S. aureus* carrier status compared to non-carriers (hazard ratio of 0.19).

CONCLUSIONS: Compared to the general population, hemodialysis patients were more frequently colonized with *S. aureus* and displayed both different *S. aureus* colonization densities as well as lineages, possibly explained by more frequent exposure to health care environments. The lower overall mortality in carriers compared to non-carriers is intriguing and will be investigated in detail in the future.

TRIAL REGISTRATION: ISRCTN 14385893 , 2. October 2018, retrospectively registered.

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Reference:

Scheuch, M., Freiin von Rheinbaben, S., Kabisch, A., Engeßer, J., Ahrendt, S., Dabers, T., Kohler, C., Holtfreter, S., Bröker, B.M. and Stracke, S. (2019) *Staphylococcus aureus* colonization in hemodialysis patients: a prospective 25 months observational study. *BMC Nephrology*. 20(1), p.153. doi: 10.1186/s12882-019-1332-z.

