European Respiratory Society
Annual Congress 2013

Abstract Number: 5254
Publication Number: P1885

Abstract Group: 10.1. Respiratory Infections
Keyword 1: Vaccination **Keyword 2:** Infections **Keyword 3:** Immunology

Title: Serial influenza-vaccination reveals impaired maintenance of specific T-cell memory in patients with end-stage renal failure

Dr. Urban 32637 Sester urban.sester@uks.eu MD [1], Dr. Tina 32638 Schmidt tina.schmidt@uks.eu [2], Prof. Dr Martin 32639 Kuhlmann Martin.Kuhlmann@vivantes.de MD [3], Prof. Dr Barbara 32640 Gärtner barbara.gaertner@uks.eu MD [4], Dr. Heike 32641 Uhlmann-Schiffler bchuhs@uks.eu [2] and Prof. Dr Martina 32642 Sester martina.sester@uks.eu [2]. [1] Department of Internal Medicine IV, Saarland University, Homburg, Germany, 66421 ; [2] Department of Transplant and Infection Immunology, Saarland University, Homburg, Germany, 66421 ; [3] Vivantes Klinikum, Nephrology, Berlin, Germany and [4] Department of Medical Microbiology and Hygiene, Saarland University, Homburg, Germany, 66421 .

Body: To investigate correlates for the well-known impaired response of hemodialysis-patients to a variety of recommended vaccinations, the induction of antigen-specific cellular and humoral immunity was characterised after influenza-vaccination in two following seasons where the identical vaccine-composition was used. Influenza-specific T-cells were flow-cytometrically characterised from whole blood of 24 healthy controls and 26 hemodialysis-patients by proliferation assays, induction of IFN-γ and TNF-α, and maturation markers. Antibody-titers were quantified using ELISA and hemagglutinaton inhibiton test. Influenza-specific T-cells significantly increased 1-2 weeks after primary vaccination in both controls (by 0.50±0.64%) and patients (by 0.55±0.71%). Thereafter, T-cell levels decreased within 7 weeks, whereas antibody-titers were more stable. By 6 months, patients had lower precursor-frequencies of proliferating influenza-specific memory T-cells (p=0.006). In the following season, controls showed a less pronounced increase in cellular immunity after re-vaccination (by only 0.12±0.09%, p=0.003), whereas the vaccine induced a strong increase in a 2nd group of vaccination-naïve controls. Of note, patients responded like vaccination-naïve individuals, as the T-cell increase after re-vaccination was as pronounced as in the year before. The less pronounced T-cell increase after re-vaccination in controls may indicate maintainance of sufficient immunological memory. In contrast, the more rapid loss of proliferating cells in hemodialysis-patients may contribute to an increased incidence of recurrent infectious complications.