**Title**: Online- Haemodialysis Arteriovenous Fistula Surveillance

**Introduction/objectives**: An arteriovenous fistula (AVF) is the preferred access for haemodialysis but subject to failure. Therefore advance surveillance techniques in established AVF may allow early detection of stenosis, prevent thrombosis, prolong patency, prevent inadequate dialysis treatment and reduces risk of dialysis venous catheters use. We describe the clinical utility of on-line haemodialysis AVF surveillance.

**Methods**: The blood temperature monitoring technology (BTM) in Fresenius 5008 machines can record online clearance monitoring (OCM) Kt/V and access recirculation (RC) at every dialysis session. Fresenius Therapy Data Management System (TDMS) and European Clinical Data (EuCliD) system allow capturing OCM Kt/V and RC of every dialysis treatment session. These can be used to generate Vascular Access (VASACC) reports allowing trend analysis for both of the above two parameters which can produce an effective surveillance tool. We reviewed VASACC report on 49 patients who were referred for fistulogram due to concerns of recirculation and inadequate dialysis with or without other signs of access dysfunction such as pain, needling difficulties and prolonged bleeding from the needle site after dialysis. Progressively worsening RC value of >10% and unexplained and persistent drop in OCM Kt/V of ≥ 0.2 units was used as threshold for referring patient for further access examination by specialist access nurse or clinician followed by referral for fistulogram if still clinically indicated. 14 patients were excluded due to: thrombosis (n=3), death (n=1), transplantation (n=1) or primary failure i.e. patients were dialysing via venous catheters (n=9). We analysed weekly average OCM Kt/V, RC, Effective Dialysis Time (EDT), Effective Blood Flow (Qb), and Blood Volume processed (BVP) from 3 months before and 3 months after fistulogram. Non-parametric Mann Whitney U teat was used to analyse the data.

**Results:** Male to female ratio was 1.5 with mean age of 66yrs (SD 15). The most common aetiology for end stage renal disease was diabetes mellitus (n= 15). There were 24 radio cephalic AVF, 10 brachio-cephalic AVF and 1 basilic vein transposition. The average waiting between requests to actual performed fistulogram was 5.7 weeks (SD 3.5). All patients had radiological significant inflow stenosis, outflow stenosis or both and all had successful angioplasties. Average OCM Kt/V and RC improved from 1.1 to 1.4 and 27.8% to 13.2% respectively (p=<0.01). There was a strong negative correlation between these measures(r = -0.9). There was statistically significant improvements in EDT (p= 0.0017), Qb (p= 0.0035) and BVP (p=0.00001).

**Conclusion**: This data shows that angioplasty referral using above surveillance methods resulted in a meaningful improvement in AVF function and dialysis adequacy. Future use of trend analysis of OCM Kt/V and recirculation on EuCliD in established access may provide an effective surveillance tool to pre-emptively arrange clinical review, corrective procedures and potentially improve longevity of vascular access.