

## DIALYSIS. EPIDEMIOLOGY, OUTCOME RESEARCH, HEALTH SERVICES 2

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### ASSOCIATIONS BETWEEN PSYCHIATRIC AND NEUROLOGICAL DISORDERS AND VASCULAR ACCESS INFECTIONS AMONG PATIENTS IN THE DIALYSIS OUTCOMES AND PRACTICE PATTERNS STUDY (DOPPS)

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**Introduction and Aims:** Psychiatric and neurological disorders are highly prevalent in the dialysis population. We postulated that because the presence of serious psychiatric and neurological disorders may have a negative impact on patient self-care, these conditions may be associated with higher rates of vascular access (VA) infections. **Methods:** DOPPS phase 4 (2009-2011) demographic, comorbid, hospitalization, and VA data were used from 367 facilities in 12 countries. Data on comorbid conditions including psychiatric and neurological disorders were collected by chart review at enrollment. Infection rates were modeled for each VA as time to first VA-related infection from the time of either VA placement or study enrollment, using Cox proportional hazards models containing these psychological and neurological covariates simultaneously and controlling for country, age, BMI, time on dialysis, and 12 comorbid factors; sandwich estimators were used to account for patient-level clustering. Models were run overall and separately for central venous catheter (CVC) patients (n=4,451) and for arteriovenous fistula (AVF) and arteriovenous graft (AVG) patients (n=12,425).

**Results:** The sampled population at study entry had the following characteristics: average follow-up time per patient 1.08 years, mean age 64 years; mean BMI 26.5, diabetes (47%), depression (13%), other psychiatric disorders (4%, includes bipolar, schizophrenia, and alcohol or substance abuse), cognitive impairment or dementia (7%), and other neurological disorders (4%, includes multiple sclerosis, seizure disorder, and Parkinson's disease). On average, the prevalence of these diagnoses was lowest in Japan and highest in Europe. Catheter use was higher among these patients, with total time during follow-up on a catheter exceeding 30 days for 27% of patients with depression, 30% for cognitive disorders or dementia, 25% for other psychiatric or neurological disorders, and 23% for patients with none of these diagnoses. Neurologic and psychiatric conditions were associated with overall hazard ratios (with 95% confidence limit) of infection as follows: depression 1.08 (0.84-1.38), other psych 1.53 (1.08-2.16), cognitive impairment/dementia 1.54 (1.06-2.22), and other neuro 0.77 (0.47-1.26). Results of separate models by vascular access type are shown (Figure). **Conclusions:** As postulated, certain serious neurological and psychiatric conditions are

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### SURVIVAL DURING THE FIRST YEAR ON HEMODIALYSIS (HD) IS ASSOCIATED WITH EARLY PREDICTORS

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**Introduction and Aims:** Mortality during first 90 days on HD has been marked as an indicator of predialysis care and patient status at HD initiation. We explored the association between early predictors i.e. factors captured in the first 30 days on HD and survival during first year in a large international sample of incident HD patients.

**Methods:** The MONITORING Dialysis Outcomes [MONDO] initiative is an international consortium of hemodialysis (HD) databases [Usvyat, Blood Purif 2013; von Gersdorff, Blood Purif 2014]. Databases from Renal Research Institute in the US and Fresenius Medical Care Europe [17 countries] were queried to identify all incident patients with in-center treatments [01/2006-12/2012] who survived at least 30 days on HD. Clinical and laboratory parameters were computed over the first 30 days (baseline), deaths were observed in days 31 to 365 (follow up period). Cox regression model was set up to analyze associations of baseline parameters and mortality in the follow up period.

**Results:** We studied 31,870 patients [RRI 8,330; FMC Europe 23,540]: 59% male, 88% white, mean age 64.0 years and 57% starting HD using a non-definitive vascular access. Factors increasing mortality risk during first year were (HR, 95CI) age [years] (1.03, 1.029-1.038), use of catheter (1.8, 1.5-2.04), preexisting cancer (1.33, 1.036-1.708), hospitalization during first 30 days (1.55, 1.39-1.72), preSBP below 100 mmHg (2.59, 1.95-3.44), interdialytic weight gain [IDWG%] (1.08, 1.034-1.128) and neutrophil to lymphocyte ratio [NLR] (1.015, 1.009-1.021) while preSBP above 140 mmHg (0.68, 0.59-0.77), Albumin [g/dL] (0.45, 0.41-0.50) and Serum Na [mmol/L] (0.97, 0.956-0.984) showed a protective effect during the same time window. Gender, race, DBT status or Hemoglobin level in first 30 days were not associated to first year mortality.

**Conclusions:** Several modifiable factors in the first 30 days of dialysis showed a marked effect on patient mortality during first year of dialysis. Efforts towards improved pre-dialysis care and planned dialysis start using fistulas as vascular access should be made to achieve better outcomes in this population.

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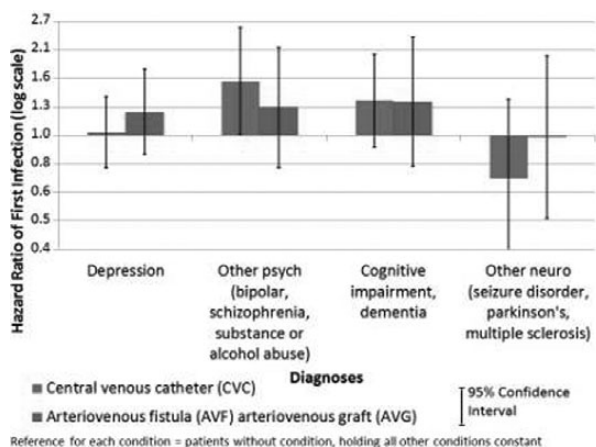
### EFFECT OF CUTS IN REIMBURSEMENT ON FIRST-YEAR MORTALITY IN INCIDENT ESRD DIALYSIS PATIENTS: A NATIONWIDE POPULATION-BASED STUDY OVER THE PERIOD 1999 TO 2007

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**Introduction and Aims:** Outpatient dialysis global budget payment (ODGB) under Taiwanese National Health Insurance was implemented in 2003 in order to cap the growing expenditure. The unit price was decreased from 1 NT dollar per point in 2003 to NT .94 per point in 2007. This may be as results of increasing market competition. The purpose of this study is to examine the association between the cuts of dialysis global budget payment, market competition and first-year mortality in incident ESRD Dialysis Patients.

**Methods:** This study used retrospective longitudinal data to examine the study question. The unit of analysis is at patient level. Study patients were incident end-stage renal disease (ESRD) patients (including HD and PD patients) between Jan 1st, 1999



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and Dec 31st, 2007. Data source was from the NHI population-based claim data. The dependent variable was incident ESRD patient first-year mortality. Market competition was measured by using Herfindahl-Hirschman Index (HHI). HHI was calculated based on predicated patient volume given the concern of endogenous issue. Quarterly mean monetary value per 100 points under outpatient dialysis global budgeting was used to measure cuts in reimbursement. In addition, we also include interaction terms between point value and market competition. Multi-level logistic regression model was used as the primary statistical analytical tool.

**Results:** During 1999 to 2007, number of dialysis facilities increased from 364 to 529 (45.33%) and the mean value of predicted HHI at zipcode level decreased about 7.08%, indicating markets became less concentration and more competitive. We then categorized markets into high, moderate and low competitive markets. Our results indicated that large reimbursement cuts were associated with higher mortality, in particular in a high competitive market. Specifically, for every NT\$1 decrease per 100 points, which corresponded to every 1% reduction in average dialysis facility revenue, the odds of first-year mortality rate were 98% higher in high competitive market. On the contrary, in low competitive market, the odds of mortality were about 3.1% higher. **Conclusions:** The first-year mortality of ESRD patients increased under increased financial constrain from cuts in reimbursement. In addition, the findings indicated dialysis facilities in a high competitive market confronted with more financial pressure as a result of payment reductions may reduce their quality of care because they have fewer resources compared to those in low competitive market. Policy makers and stakeholders often concern whether the global budgeting payment policy affect the patient quality in a positive or negative way, especially when dialysis markets became more competitive. It is important to continuously monitor ESRD patients' quality of care as cuts in reimbursement under global budget system are implemented.

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#### HAEMODIALYSIS PATIENTS MAKING GREATEST USE OF RENAL PATIENT VIEW HAVE LOWER SERUM PHOSPHATE LEVELS- A BENEFICIAL HEALTH OUTCOME FROM PATIENT ENGAGEMENT?

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**Introduction and Aims:** Renal Patient View (RPV) is an established patient-facing Electronic Health Record (EHR) that enables patients to access their test results and information about their condition. Evaluation has shown high patient satisfaction and that some patients feel empowered by fuller more current information, but it is not known if such patient engagement has health care benefits. Hyperphosphatemia and Urea Reduction Ratio (URR) are two measures of haemodialysis quality collected by the UK Renal Registry for all haemodialysis patients in the UK. Whereas effective serum phosphate control requires substantial patient action (principally through diet selection and consumption of phosphate binders), the URR is mostly managed by health care professionals. In this study we examined phosphate and URR control in haemodialysis patients with or without concomitant utilisation of RPV to test the hypothesis that more active users of RPV achieve better phosphate control.

**Methods:** The RPV user database extant on January 25th 2012 was linked by patient CHI / NHS number with the UK renal registry and anonymised data extracted for analysis. For the current study we identified patients that had registered for RPV during a period when their treatment with haemodialysis had been continuous extending at least 6 months before and 12 months after registration. To assess any impact of RPV on phosphate control we selected the subgroup with serum phosphate reported to the registry during the 6 months pre-registration as greater than the upper limit of the UK target range (1.1 - 1.7mmol/L). Similarly to assess URR we selected patients with URR < 65. Selected patients were stratified by frequency of RPV use assessed by the number of logons per month in the first year after registration. A comparable group of patients not involved with RPV was constructed from the UK Registry by matching for modality of treatment, age, sex, ethnicity, deprivation, renal centre and start date of RRT. Statistical analysis was by T- and Chi-squared tests as appropriate and utilised SAS v 9.3.

**Results:** All the patient groups had similarly elevated phosphate (2.10-2.18 mmol/L) and depressed URR (56.9-58.7) during the 6 month lead in period. As expected for patients with key outcome measures outside national targets, there were significant changes towards target in both measures and all groups. However, the greatest reduction of phosphate (0.93 mmol/L) occurred in the subgroup with most frequent login to RPV (>4 logins per month), significantly greater than that observed in the reference group (0.49 mmol/L, p<0.001) or group of RPV registrants that had never actually logged (0.52 mmol/L, p<0.001). In contrast, there was no significant difference in the elevation (towards target) of URR by RPV login groups.

**Conclusions:** The results demonstrate an association between greater utilisation of RPV and greater phosphate lowering but not URR elevation consistent with RPV enabling patients to more effectively modulate a measure largely within their control (diet, binder compliance) but not a measure largely outwith their control (URR). However we can not determine causation, and it may be cause for concern that a substantial fraction of the group with most frequent RPV login demonstrated reductions in phosphate to levels below the lower limit of the target range, suggesting a huge, possibly over zealous attention to one parameter of good dialysis.

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#### DETERMINATION OF OPTIMAL CONVECTIVE VOLUME FOR IMPROVED PATIENT OUTCOME IN A LARGE INCIDENT DIALYSIS COHORT TREATED WITH ONLINE HEMODIAFILTRATION

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**Introduction and Aims:** Online hemodiafiltration (HDF) is regarded as the most efficient renal replacement therapy enabling enhanced removal of uremic toxins by convection. Recent randomized controlled trials have shown improved patient survival with high-volume HDF. The aim of this study was to ascertain the optimal convective volume range at which the survival advantage is derived.

**Methods:** Data were extracted from a cohort of 57,765 incident adult patients receiving thrice-weekly HD or HDF in a large private dialysis network between 1.01.2005 and 31.05.2013. Selection criteria were: admission within 90 days of dialysis initiation; treatment interruption <60 days; 90% of follow-up on HDF; at least 10 dialysis treatments. 3,408 on HDF remained in the study and were used for the determination of the threshold range of convective dose by cubic spline analysis and support vector machine.

**Results:** Relative survival rate of HDF patients begins to increase at ~50 L/week of convective volume (~27 L/week/m<sup>2</sup> after adjustment by Body Surface Area) and reaching up to a plateau at ~75 L/week (~40 L/week/m<sup>2</sup> after adjustment by Body Surface Area). A similar analysis performed with pre-dialysis  $\beta_2$ -microglobulin concentrations confirmed the interval where increases of convective dose were associated with decreased  $\beta_2$ -microglobulin concentrations.

**Conclusions:** Convective dose of HDF therapy is a strong determinant factor for improved patient outcome. Greater patient survival has been detected at ~69 L/week (~23 L/session) of total convective dose.

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#### RESPONSE TO ACTIVE HEPATITIS B VACCINATION IN INCIDENT HEMODIALYSIS PATIENTS AND ALL-CAUSE MORTALITY

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**Introduction and Aims:** All patients with advanced chronic kidney disease or on renal replacement therapy should receive active hepatitis B vaccination. The aim of this study was to investigate the association between the immune response to hepatitis B vaccination and all-cause, cardiovascular or infection-associated mortality in incident dialysis patients.

**Methods:** This retrospective cohort study in two Austrian dialysis centres evaluated the risk association between anti-HBs antibody titers after active hepatitis B vaccination and mortality in 426 incident dialysis patients starting dialysis between 2001 and 2008 using a multivariable adjusted Cox Proportional Hazards Model. Vaccination response was defined as follows: absent anti-HBs antibody titer or a titer <10 IU/L was classified as non-response, seroconversion (SC) was defined as a titer  $\geq 10$  IU/L, and seroprotection (SP) as a titer  $\geq 100$  IU/L.

**Results:** Of all patients 207 (48.6%) were non-responders, SC was observed in 219 (51.4%), SP in 118 (27.7%) patients. During a median follow-up of 51.2 months 228 (53.5%) patients died. Patients with SP showed a significantly lower all-cause mortality as compared to patients without SP (median survival time [95% CI] 112.1 [58.9-80.6] vs 56.2 [42.7-69.7] months; p<0.001). In a multivariable adjusted Cox regression analysis SP status was independently associated with a significant risk reduction for all-cause mortality (HR 0.71, 95% CI 0.51-0.99, p=0.04) and combined cardiovascular and infection-related mortality (HR 0.62, 95% CI 0.41-0.96, p=0.03). A trend to better survival was also observed in patients with SC as compared to non-responders (p=0.07).

**Conclusions:** Achieving seroprotection, defined as an anti-HBs antibody titer  $\geq 100$  IU/L, after active hepatitis B immunisation is associated with significantly reduced all-cause and cardiovascular mortality in incident dialysis patients. This simple and readily available tool allows patient survival to be predicted independently of other well-known key parameters such as age, gender or the presence of diabetes.

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#### GLOBAL YOUNG ADULT HEMODIALYSIS DIALYSIS EXPERIENCE: THE PICCOLO MONDO COHORT

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**Introduction and Aims:** Young adults on hemodialysis (HD) have unique morbidities. To describe the experience of young adult HD patients from the global PICCOLO MONDO (Pediatric Investigation and Collaboration to examine Ongoing Life Outcomes in the Monitoring Dialysis Outcomes) Consortium.

**Methods:** The MONDO consortium consists of dialysis facilities from Renal Research Institute in the US; Fresenius Medical Care (FMC) in Europe, Asia Pacific, Latin America; KfH (Germany); Imperial College (London, UK), Hadassah Medical Center (Jerusalem, Israel); Pontifical Catholic University of Parana (Curitiba, Brazil); and University of Maastricht (The Netherlands) (Gersdorff, Blood Purif 2014). These dialysis providers agreed to provide de-identified electronic health record data, representing ~1600 units from 41 countries. The PICCOLO MONDO cohort includes patients between 18 to 30 years of age with treatment information between 2000 and 2012.

**Results:** We identified 2876 patients, 371 from the Asia Pacific (62% males, age (std) 25.3 ± 3.4); 423 from the USA (52% males, age 25.2 ± 3.4); 993 from Latin America (52% males, age 25.2 ± 3.4) and 1039 from Europe (62% males, age 25.2 ± 3.2). For those with known etiology, the most common causes of ESRD were: glomerular diseases, "other", congenital anomalies and diabetes. The Asia-Pacific units had the most patients with diabetes as cause of ESRD (19.7%). The USA (51%) and South America (30%) cohorts had the greatest prevalence of hypertension and other cardiovascular disease (20% and 5% respectively). Table 1. The mean body mass index was lowest in the Asia-Pacific (21.3 ± 4.8), followed by South America (22.4 ± 7.7), Europe (22.7 ± 5.7) and the USA (28.1 ± 10.2, p < 0.001); in a linear regression with BMI as the outcome variable and age, gender, and geographic region as the predictors, North America patients still appeared to have the highest BMI. The use of HD catheters at HD initiation is greatest in the Americas (75-76%), followed by Europe (51%) and Asia Pacific (42%). HD catheters at one year was again greatest in the USA (63%) followed by Europe (26%) and Asia Pacific (21%). Table 2.

**Conclusions:** In this first global cohort of young adult HD patients, the Asia Pacific units have a greater number of diabetics and the youngest patients at the start of HD; no data on type I or II distinction was available. The units in the Americas have the greatest use of HD catheters and obesity. Further analysis is underway.

Table 1. Demographic information

Database	Number of patients	Age	Male (%)	White (%)	ESRD cause						Comorbidities			
					Known cause (%)	Of known: DM (%)	Of known: GU (%)	Of known: GL (%)	Of known: other (%)	CHF (%)	CVD (either than HTN, %)	DM (%)	HFV (%)	HTN (%)
ASIA PACIFIC	371	25.3 (4.4)	63.5%	63.3%	58.8%	19.7%	11.5%	41.7%	27.1%	0%	1.3%	11.4%	0%	8.1%
EUROPE	1039	25.3 (4.4)	62.2%	92.4%	53.2%	11.9%	26.4%	43.2%	18.4%	0.7%	2.1%	7.4%	0.6%	17%
NORTH AMERICA	423	25.2 (4.4)	51.8%	48.9%	83.5%	15.6%	14.4%	28.9%	41.1%	8.3%	13.5%	20.3%	1.7%	50.6%
SOUTH AMERICA	993	25.2 (4.4)	51.8%	70.9%	0%	N/A	N/A	N/A	N/A	2.8%	4.6%	5.6%	0.1%	30.4%

DM: diabetes; GU: genitourinary; GL: glomerular; CHF: congestive heart failure; CVD: cardiovascular disease; HTN: hypertension

Table 2. Outcome information

Database	Age	% with catheters at first tx	% with catheters at last tx
ASIA PACIFIC	25.3 (4.4)	42%	21.5%
EUROPE	22.7 (5.7)	53%	25.7%
NORTH AMERICA	28.1 (10.2)	75.2%	62.9%
SOUTH AMERICA	22.4 (7.7)	75.9%	N/A

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**IL28B SINGLE NUCLEOTIDE POLYMORPHISMS GENOTYPE INDEPENDENT PREDICTOR OF SUSTAINED VIRAL RESPONSE IN HEMODIALYSIS PATIENTS WITH CHRONIC HEPATITIS C**

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**Introduction and Aims:** The aim of the study was to determine the predictors of sustained viral response in hemodialysis patients with chronic hepatitis C treated with pegylated interferon alpha-2a.

**Methods:** Twenty eight hemodialysis (HD) patients with chronic hepatitis C virus infection (HCV) were treated with 135 µg of pegylated interferon alpha-2a (PEGIFN α-2a). The primary end point was sustained viral response (SVR), defined as an absence of detectable HCV RNA in the serum, 6 months after termination of the antiviral treatment. Gender, age, renal disease, HBV co-infection, HCV genotype, early viral response, end-treatment viral response, and single nucleotide polymorphisms (SNPs) near IL28B gene were evaluated as possible predictors of SVR in treated HD patients. The IL28B SNPs (rs12979860, rs8099917, rs12980275) were determined using SNP Genotyping Assays. Univariate logistic regression was used to identify the association between the different variables and SVR. The independent predictors of SVR were determined with the multiple logistic regression analysis.

**Results:** The mean age of the treated patients was 47.2 ± 11.0 years. Early viral response and end-treatment viral response were presented in 75% (21/28) and 71.4% (20/28) of

patients, respectively. The overall SVR rate was 42.8% (12/28). The IL28B SNPs genotype presented with CC genotype of rs12979860, TT genotype of rs8099917, and AA genotype of rs12980275 was significantly more frequent in patients with SVR than SNPs genotype presented with non CC genotype of rs12979860, non TT genotype of rs8099917, and non AA genotype of rs12980275, (75% vs. 25%, p=0.027). The predictors associated with SVR identified by univariate logistic regression were early viral response (OR=1.77, 95%CI: 1.21-2.59, p=0.006), end-treatment viral response (OR=1.82, 95%CI: 1.28-2.59, p=0.002) and IL28B SNPs genotype (OR=1.53, 95%CI: 1.08-2.16, p=0.021). Multiple logistic regression analysis determined that the independent predictor of SVR was IL28B SNPs genotype (OR 1.43, 95%CI: 1.06-1.92, p= 0.046).

**Conclusions:** The single nucleotide polymorphisms (SNPs) near IL28B gene are useful for prediction of the response to treatment with pegylated interferon alpha-2a in hemodialysis patients with chronic hepatitis C.

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**THE DIALYSIS OUTCOMES AND PRACTICE PATTERNS STUDY (DOPPS) IN TURKEY: STUDY DESIGN AND INITIAL COMPARISONS WITH TURKISH REGISTRY DATA**

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**Introduction and Aims:** Turkey (population 75 million) has a treated end stage renal disease (ESRD) prevalence of 816 ppm and incidence of 139 ppm as of 2012. The Turkish dialysis population has increased by 3.3 fold during the past 10 years (2002-2012). In 2012, 48,900 chronic hemodialysis (HD) patients (pts) were being treated at 832 HD units in Turkey with 4,777 patients receiving chronic peritoneal dialysis. In 2013, the international Dialysis Outcomes and Practice Patterns Study (DOPPS), a prospective cohort study of HD practices and outcomes ongoing since 1996, initiated data collection at a national sample of 20 HD units in Turkey. Here we describe the study design of DOPPS Turkey and provide initial comparisons to 2012 data from the Turkish Registry of Nephrology, Dialysis, & Transplantation.

**Methods:** Stratified Random Selection of Study Sites: DOPPS Turkey study sites were randomly selected from a list of all HD units in Turkey treating ≥ 25 in-center chronic HD patients, representing nearly all chronic HD pts in Turkey. HD units were chosen to represent 7 geographic regions across Turkey (Mediterranean, Aegean, Marmara, Black Sea, and Central, Eastern, and Southeastern Anatolia) and 3 HD unit types (7 ministry of health, 1 university, and 12 private units). As of Dec 2013, the target of 20 sites had agreed to study participation with data collection initiated thus far at 10 sites. **Data Collection and Comparison with Registry Data:** At each study site, data are collected from a random sample of 20-30 HD prevalent HD pts and up to 15 pts starting HD within 30 days before study entry. Detailed clinical and facility-level data will be collected until at least 2016 to relate HD practices with numerous longitudinal outcomes. Study surveys are the same as those used in 20 other DOPPS countries, but translated into Turkish.

**Results:** The table shows an initial good correspondence between Turkish Registry Data (2012) versus preliminary data from 8 of the 20 DOPPS-Turkey study sites for the selected variables. Extensive comparisons using data from all 20 study sites are planned to be shown at the time of the ERA-EDTA 2014 Annual Meeting.

**Conclusions:** The DOPPS-Turkey study is designed to provide numerous highly detailed descriptive and time trend statistics on HD practices in Turkey to complement data reported by the Turkish Dialysis Registry, to provide detailed data on variation in HD care in Turkey, and to provide benchmarking internationally. In addition, the contributions of the DOPPS Turkey study will help to further strengthen the ability of

Table: Comparison of Preliminary DOPPS-Turkey data with Turkish Registry Report data

Measurement	2012 Turkish DOPPS Data	2012 Turkish Registry Report
Patients, n	222	48,900
Age <sup>a</sup> , years		
18-45	15.0%	16.3%
45-64	44.3%	41.5%
≥ 65	40.8%	42.3%
Male <sup>a</sup> , %	55.8%	55.7%
HD frequency		
1x per week	0.0%	0.6%
2x per week	2.1%	6.4%
3x per week	97.9%	92.3%
> 3x per week	0.0%	0.7%
Vascular access use		
AV fistula	83.2%	85.7%
AV graft	2.1%	1.8%
Catheter	14.6%	10.3%

a. Data on age and sex were collected from 856 patients from the census of Turkey DOPPS patients at study start; other data are from 222 patients to date in the DOPPS sample.

MP561

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the international DOPPS study to provide important insights into the relationship of numerous HD practices with pt outcomes for the worldwide HD community.

**MP562 COST-EFFECTIVENESS OF HIGH DOSE HAEMODIALYSIS: A REVIEW OF THE LITERATURE**

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**Introduction and Aims:** There is increasing evidence that more frequent and/or longer haemodialysis (High Dose HD) is associated with better patient outcomes. This review was performed to identify the current knowledge on the cost-effectiveness of such regimen.

**Methods:** A search of PubMed, Embase, the Cochrane Library, University of York Center for Reviews and Dissemination databases as well as websites of health technology assessment agencies (Canada, UK, Australia) was performed (2000 to December 2013). Key words included: short daily dialysis, nocturnal dialysis, quotidian dialysis, intensive dialysis, in combination with cost-effectiveness analysis, cost-utility analysis, and economic evaluation. All cost-effectiveness/cost-utility analyses published in English language were reviewed for methods and results.

**Results:** Seven analyses were identified (Canada=4; USA=1; UK=2), including 2 health technology assessments (HTA) where High Dose HD was evaluated in the sensitivity analyses only. High dose HD (in-center=1; home=6) was compared to conventional in-center HD. Models included: decision-tree (1), microsimulation (1), and Markov chain (5). Peritoneal dialysis was included in the two HTAs only. Complications and transport were in all models; transplant in all but two. Costs were collected in a small sample of patients in 3 analyses. Time horizons varied from 14-18 months (n=2), 10 years (n=2) and lifetime (n=3). High dose HD at home was found either cost-saving (n=5) or cost-effective (n=1), while high dose HD in-center was not found cost-effective (although the willingness-to-pay threshold used by the authors was somewhat low for the USA). The most important cost drivers were: technique failure, dialysis costs and utility scores. Limitation to previously published analyses include: lack of inclusion of most recent clinical evidence on High Dose HD; using data from small short-term clinical trials; using a time horizon largely superior to the usual expected survival in the target population; not including all renal replacement therapies (e.g., peritoneal dialysis); not considering the extended survival observed with High Dose HD. These could all have a significant impact on healthcare costs.

**Conclusions:** Although High Dose HD appears cost effective or cost savings, there is a need to develop a new model to reflect recent scientific evidence. Such a model should also be flexible to meet the needs of various healthcare jurisdictions.

**MP563 THE DIALYSIS OUTCOMES AND PRACTICE PATTERNS STUDY (DOPPS) IN RUSSIA: STUDY DESIGN AND INITIAL COMPARISONS WITH THE RUSSIAN RRT REGISTRY**

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**Introduction and Aims:** Russia (population 143.1 million) has a treated ESRD prevalence of 199.6 ppm and incidence of 41.8 ppm as of 2011. The Russian hemodialysis (HD) population has increased by 3.6 fold from 1998 to 2011. In 2011, 20,694 chronic HD and 1922 peritoneal dialysis patients (pts) were being treated at 342 units in Russia. In 2013 the international DOPPS, a prospective cohort study of in-center HD practices and outcomes ongoing since 1996, initiated data collection in a national sample of 20 HD units in Russia, applying the same surveys used in 20 other countries. Here we describe the study design of the Russia DOPPS study and provide initial comparisons of Russia DOPPS data with 2011 Russian RRT Registry data.

**Methods:** Russia DOPPS study sites were randomly selected from 211 HD units treating  $\geq 25$  in-center adult chronic HD pts (represents 58% of all Russian HD centers and 91% of pts). Selection was stratified to represent private vs non-private HD units and 6 regions as far east as Novosibirsk (Central, Volga, North-West, Siberian, Ural, South). At each study site, data are collected from a random sample of 20-30 prevalent HD pts and up to 15 pts newly initiating HD within 30 days before study entry. As of Dec 2013, 20 sites agreed to participate in Russia DOPPS, with study initiated at 13. Here, data from adult HD pts in the Russian Registry were compared to initial data from 282 pts at 9 Russia DOPPS sites. Registry data were available ranging from 5,812 pts (for total cholesterol) to 7,841 pts (for hemoglobin) in Dec 2011.

**Results:** The 2011 Russian Registry data and preliminary Russia DOPPS data for selected measurements were generally consistent (table). There were no significant differences for sex ratio, fistula use, or mean hemoglobin, calcium, albumin, total cholesterol, or systolic blood pressure levels. Differences in mean age, spKt/V, s. phosphorus and parathyroid hormone were somewhat more prominent.

**Conclusions:** Russia DOPPS will serve to provide important insights into numerous HD practices/variation in hemodialysis/HD care in Russia, and their relationship of

numerous HD practices with pt outcomes within Russia to complement the Russian RRT Registry, but also add to the breadth of the international DOPPS when combined with data from the 20 other DOPPS countries. To assess the generalizability of DOPPS in Russia, these preliminary comparisons show a good initial correspondence between Russia DOPPS and the Russian Registry for some key measures. The few observed differences seen thus far could be due in part to the more recent data of the DOPPS and the current exclusion of the Russian Far Eastern Federal District from DOPPS. Moreover, the current abstract includes data from only 9 of the sampled 20 Russia DOPPS sites. More complete comparisons using data from all 20 study sites will be shown available for presentations shown at the time of the ERA-EDTA 2014 Annual Meeting.

**Table:** Comparison of Preliminary Russia DOPPS data with 2011 Russian Registry Report data.

Measurement	2012 Russia DOPPS Data	2011 Russian Registry Report
Age, years <sup>a</sup>	53.3(13.2)	51.1(13.4)
< 45	25.8%	29.9%
45-64	55.6%	55.6%
$\geq 65$	18.6%	14.5%
Male <sup>a</sup> , %	51.5%	52.4%
AV Fistula use	92.6%	88.6%
Single pool Kt/V $\geq 1.2$	78.8%	84.9%
Systolic blood pressure, mmHg		
< 140	40.1%	42.4%
140-159	43.6%	38.9%
$\geq 160$	16.3%	18.7%
Hemoglobin, g/L	108(30)	110(22)
Total calcium, mmol/L	2.20(0.43)	2.24(0.25)
Serum albumin, g/L	39.4(9.4)	39.7(5.0)
Serum phosphorus, mmol/L	1.74(1.06)	1.86(0.62)
Parathyroid hormone, pg/mL	413[203,745]	322[155,659]
Total cholesterol, mmol/L	4.7(2.2)	4.7(1.1)

Data are shown as mean(standard deviation), %, or median(interquartile range); DOPPS data are weighted for the facility sampling fraction

a. Age and sex were collected from 1150 patients from the census of Russia DOPPS patients at study start; other data were from 282 patients to date in the Russia DOPPS sample

MP563

**MP564 IMPACT OF INITIAL DIALYSIS MODALITY AND MODALITY SWITCHES ON PATIENT SURVIVAL: A COHORT STUDY**

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**Introduction and Aims:** Survival of dialysis patients depends on many factors. We investigated how the initial dialysis modality and modality switches influence patients survival.

**Methods:** We performed an analysis of the Moscow City Nephrology Registry with inclusion of 11,021 incident hemodialysis (HD) and peritoneal dialysis (PD) patients started treatment from 1/1/1995 to 31/12/2012. We identified 4 groups according to initial modality and long-term transfer (duration>30 days) to another modality: HD only, PD only, HD->PD, PD->HD. Survival was calculated by Kaplan-Meier method with intent-to-treat approach (censoring at end of study period, kidney transplantation, or loss of follow-up). Deaths occurred in the first 30 days after modality switch were attributed to the initial dialysis modality. P values were adjusted by Benjamini-Hochberg-Yekutieli procedure for controlling false discovery rate in multiple comparisons.

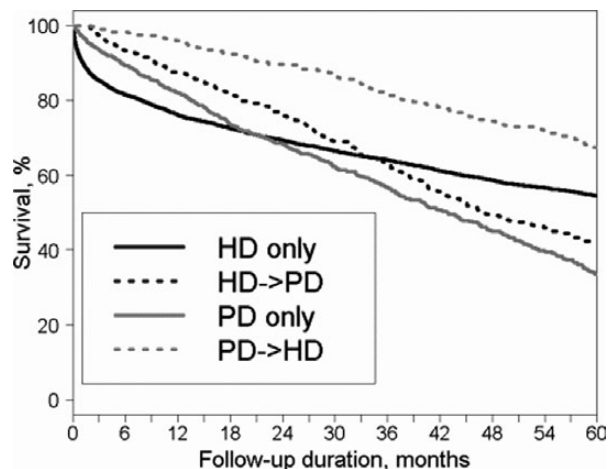
**Results:** We found the highest survival during all 5 years of follow-up in patients switched from PD to HD (P<0.00005) in comparison to all other groups (table 1 and 2, figure). Survival in PD only was higher than in HD only group in the first year of treatment, there were no statistically significant differences from 2 to 4 years, and 5 year survival was significantly lower in PD only patients. Possibility to switch modality from

MP564 Table 1. Patients survival based on initial dialysis modality and modality switch

Group	Survival, %				
	1-year	2-years	3-years	4-years	5-years
HD only (n=8718)	76.1(95%CI 75.1-77.0)	69.4(95%CI 68.3-70.5)	64.1(95%CI 62.9-65.3)	58.6(95%CI 57.4-60.0)	54.5(95%CI 53.2-55.9)
HD->PD (n=661)	87.7(95%CI 85.1-90.3)	75.9(95%CI 72.4-79.5)	63.0(95%CI 58.9-67.4)	49.3(95%CI 44.8-54.2)	42.0(95%CI 37.4-47.2)
PD only (n=1223)	82.0(95%CI 79.7-84.4)	68.4(95%CI 65.5-71.6)	56.7(95%CI 53.3-60.3)	45.0(95%CI 41.3-49.0)	33.7(95%CI 29.9-37.9)
PD->HD (n=419)	96.0(95%CI 94.2-98.0)	89.7(95%CI 86.7-92.8)	82.0(95%CI 78.1-86.0)	74.6(95%CI 70.2-79.3)	67.5(95%CI 62.6-72.7)

MP564 Table 2. Statistical significance of differences in survival rates between groups of patients

Comparison groups	Statistical significance (P)				
	1-year	2-years	3-years	4-years	5-years
HD vs PD	<0.00005	NS	NS	NS	<0.001
HD vs HD->PD	<0.00005	<0.00005	0.06	NS	NS
HD vs PD->HD	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
PD vs PD->HD	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
PD vs HD->PD	<0.005	<0.0001	<0.01	<0.05	<0.05
HD->PD vs PD->HD	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005



MP564

PD to HD was beneficial at the 5 years of follow-up ( $P < 0.00005$  in comparison to PD only), while switching from HD to PD gives advantage only during first 2 years of treatment ( $P < 0.00005$  in comparison to HD only). 95%CI - 95% confidence interval NS - non-significant. Figure. Patients survival based on initial dialysis modality and modality switch

**Conclusions:** The highest survival was found in patients switched from PD to HD in all time points among 4 groups. Possibility to switch from HD to PD provided benefits only in the first two years of dialysis treatment. PD only patients had better survival than HD only patients at the first year of dialysis, but worse survival at the fifth year of follow-up. Our results suggest that PD was the preferable initial dialysis modality that could be later switched to HD.

**MP565 OUTCOME AND PROGNOSIS FACTORS OF PREGNANCIES IN HEMODIALYSIS PATIENTS**

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**Introduction and Aims:** Pregnancies in hemodialysis (HD) patients are rare and often associated with maternal and foetal complications. We aimed to determine pregnancies outcome in HD patients and to identify factors influencing maternal and foetal prognosis.

**Methods:** This is a descriptive retrospective epidemiologic study. Pregnant women while on HD and women with chronic kidney disease who begin HD during pregnancy were included from 1985 to 2013 in the South-Eastern of France.

**Results:** We identified 26 pregnancies in HD patients. Mean maternal age was  $28.5 \pm 4$  yr. Time on dialysis before pregnancy was  $60 \pm 60$  months and two patients began HD after conception. Mean urea concentration was  $15.1 \pm 0.9$  mmol/L and mean weekly dialysis time was  $17.7 \pm 4$  hours. Ninety six percent of patients performed daily dialysis. Foetal survival was 81% with a mean gestational age of  $33.8 \pm 0.8$  weeks and a mean birth weight of  $1951 \pm 157$  g. A better foetal outcome (birth weight and gestational age) was associated with an earlier initiation of daily dialysis, a lower urea concentration and a higher hemoglobin concentration.

**Conclusions:** Pregnancies outcome in hemodialysis has improved but remain at risk. Therefore, we should reconsider our preconception counseling policy for hemodialysis patients, as the outcome in HD patients was similar to recent studies in transplanted patients. Indeed, pregnancy must be supported with an early adaptation of dialysis care.

**MP566 LONG TERM OUTCOME OF HEMODIALYSIS VERSUS PERITONEAL DIALYSIS PATIENTS: 20-YEAR EXPERIENCE FROM A SINGLE CENTER**

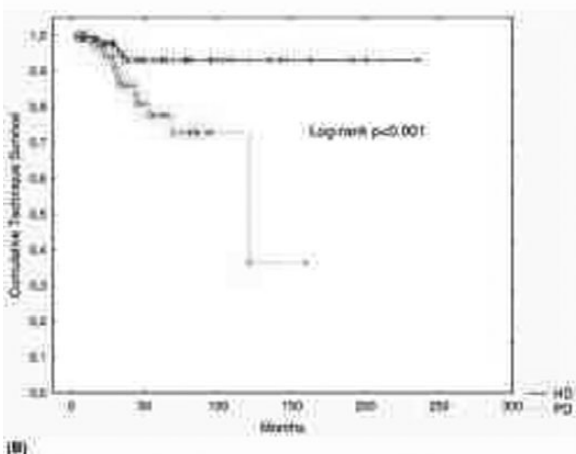
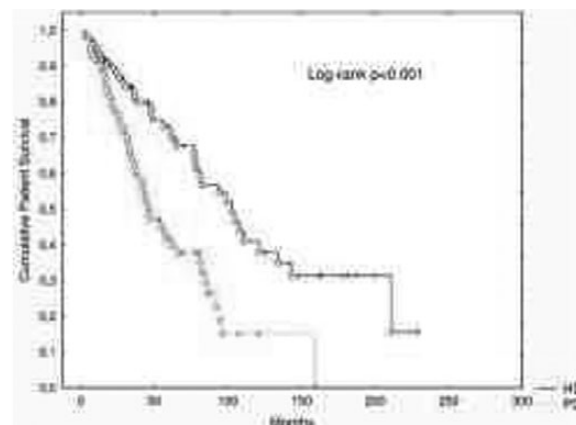
Vassilis Filiopoulos<sup>1</sup>, Dimitrios Hadjiyannakos<sup>1</sup>, Aggeliki Papakostoula<sup>1</sup>, Lambri Takouli<sup>1</sup>, Dimitra Biblaki<sup>1</sup>, Alexandros Dounavis<sup>1</sup> and Dimosthenis Vlassopoulos<sup>1</sup>

<sup>1</sup>"Sismanogleion-Amalia Fleming" General Hospital, Athens, Greece

**Introduction and Aims:** Survival in patients with end-stage renal disease (ESRD) on renal replacement therapy (RRT) remains an issue of vital importance and comparative studies between haemodialysis (HD) and peritoneal dialysis (PD) have often shown conflicting results. The present study was designed to retrospectively evaluate the 20-year outcome of HD versus PD patients in our single-center dialysis program.

**Methods:** One hundred and seven HD patients, 71 males and 36 females and 86 PD patients, 59 males and 27 females, with at least 3 months of follow-up, starting HD or PD between January 1993 and November 2013, at a median age of 59 years (range: 17-91) for HD and 64.5 years (range: 21-91) for PD patients were included. Among them, 17 (16.3%) HD and 20 (23.2%) PD patients were diabetics. Patients were followed until death, renal transplantation, transfer to other dialysis modality or to another renal center. Survival curves were generated according to the Kaplan Meier method and were compared using the log-rank test.

**Results:** The baseline demographics including age, presence of diabetes and other major co-morbidities were similar between HD and PD patients. Among HD patients, 40 deaths were observed, 3 were transferred to PD, 20 to another HD unit and 13 were transplanted. Among PD patients, there were 50 deaths. 13 were transferred to HD, 3 to another PD center and 9 received a kidney transplant. Median follow-up on HD was 39 months (range: 3-229) and on PD 33 (4-159). Both patient and technique survival were better in HD versus PD (log-rank test,  $p < 0.001$  for both comparisons). Kaplan-Meier curves for patient (A) and technique survival (B) for both groups are shown in the figure. Twenty-three patients (26.7%) on PD and 40 (38.4%) on HD survived more than 60 months. The 5-, 10-, and 20-year overall patient survival rates were 73%, 40% and 16.5% for HD patients and 45%, 17.5% and 0% for PD patients, respectively. Technique survival was 93% at all three time points for HD and 78%, 35%



MP566

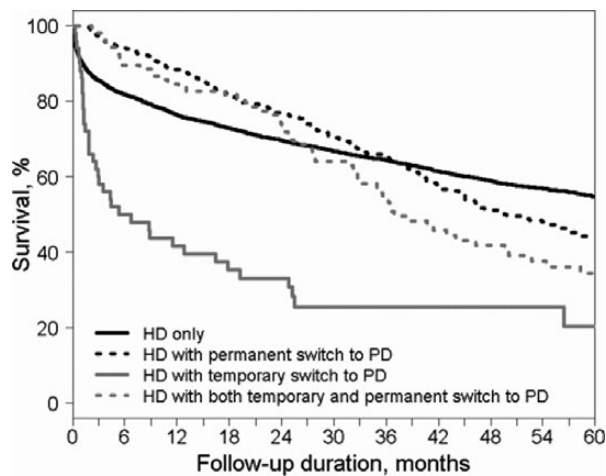
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and 0% for PD patients, respectively, at the same intervals. Subgroup analysis showed better overall patient survival for non-diabetics versus diabetics (log-rank test, p=0.05). **Conclusions:** Patient and technique survival were better in ESRD patients on HD as compared to those on PD over a 20-year period in our single-center dialysis program. This survival advantage of HD over PD existed despite similar co-morbidities between the two groups.

**MP567 IMPACT OF HEMODIALYSIS PERMANENT AND TEMPORARY SWITCH TO PERITONEAL DIALYSIS ON PATIENT SURVIVAL: A COHORT STUDY**

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**Introduction and Aims:** Survival of hemodialysis (HD) patients could vary based on availability to switch to peritoneal dialysis (PD) in case of vascular access problems. We studied how permanent and temporary switch from HD to PD influence patients survival.



MP567

MP567 Table 1. Hemodialysis patient survival based on history of temporary or permanent switch to peritoneal dialysis

Group	Survival, %				
	1-year	2-years	3-years	4-years	5-years
HD only (n=8668)	76.3%(95%CI 75.3-77.3)	69.6%(95%CI 68.5-70.7)	64.4%(95%CI 63.2-65.6)	58.9%(95%CI 57.6-60.2)	54.7%(95%CI 53.4-56.1)
HD with permanent switch to PD (n=556)	88.3%(95%CI 85.5-91.2)	76.5%(95%CI 72.7-80.5)	65%(95%CI 60.5-69.8)	51.1%(95%CI 46.1-56.6)	43.8%(95%CI 38.7-49.6)
HD with temporary switch to PD (n=50)	41.7%(95%CI 30.0-58.0)	33.1%(95%CI 22.2-49.4)	25.5%(95%CI 15.5-42.0)	25.5%(95%CI 15.5-42.0)	20.4%(95%CI 10.5-39.7)
HD with both temporary and permanent switch to PD (n=105)	84.6%(95%CI 78.0-91.9)	73%(95%CI 64.7-82.3)	54.5%(95%CI 45.1-65.7)	41.8%(95%CI 32.6-53.7)	34.5%(95%CI 25.5-46.6)

MP567 Table 2. Statistical significance of differences in survival rates between groups of patients

Comparison groups	Statistical significance (P)				
	1-year	2-years	3-years	4-years	5-years
HD only vs permanent switch	<0.00005	<0.00005	<0.03	NS	NS
HD only vs temporary switch	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
HD only vs both temporary and permanent switch	NS	NS	NS	NS	NS
Permanent switch vs temporary switch	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Permanent switch vs both temporary and permanent switch	NS	NS	NS	NS	NS
Temporary switch vs both temporary and permanent switch	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005

NS - non-significant

**Methods:** We performed an analysis of the Moscow City Nephrology Registry with inclusion of 9,379 incident HD patients initiated treatment from 1/1/1995 to 31/12/2012. We identified 4 groups according to presence of permanent (duration ≥31 days) and temporary (duration <30 days) switch to PD: HD only, HD with permanent switch to PD, HD with temporary switch to PD, HD with both temporary and permanent switch to PD (the last group had a history of several modality switches with duration both more and less than 30 days). Survival was calculated by Kaplan-Meier method with intent-to-treat approach (censoring at end study period, kidney transplantation, or lost of follow-up). P values were adjusted by Benjamini-Hochberg-Yekutieli procedure for controlling false discovery rate in multiply comparisons.

**Results:** Survival rates were the lowest in patients that had a possibility of only temporary switch from HD to PD (P<0.00005) in comparison to all other groups (table 1 and 2, figure). Survival didn't differ between patients switched to PD only permanently or both permanently and temporary. Survival in patients permanently switched to PD was significantly higher than in patients treated only by HD in the first 3 years of treatment, but no differences observed after 4 years of follow-up. Figure. Hemodialysis patients survival based on history of temporary or permanent switch to peritoneal dialysis

**Conclusions:** Possibility to permanently switch patients from HD to PD was related to better survival in the first 3 years of follow-up. Survival of patients that could be switched to PD only temporary was the lowest, probably indicating the failure of both vascular access and peritoneal access. While patients that were temporary switched to PD, returned to HD, and then transferred to PD permanently had rather high survival rates comparable to permanent switch to PD.

**MP568 HEMODIALYSIS (HD) PRACTICES AND DIALYSIS DOSE ACHIEVEMENT IN THE GULF COOPERATION COUNCIL (GCC) COUNTRIES: RESULTS FROM THE DOPPS**

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**Introduction and Aims:** The prospective observational Dialysis Outcomes and Practice Patterns Study (DOPPS) was initiated in late 2012 in national samples of HD units (N= 40 study sites) in all 6 GCC countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates). For many years, guidelines have recommended single pool Kt/V ≥ 1.2 as the minimum adequate dose for chronic HD patients (pts). Here we report initial DOPPS results regarding HD practices related to dialysis dose achievement in the GCC.

**Methods:** 40 HD facilities treating at least 23 HD pts were randomly selected from a comprehensive list of HD units representing >95% of GCC HD pts. Descriptive results for the GCC, based upon a random sample of 20-30 HD pts in each study facility, are

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compared to 3 other DOPPS regions in DOPPS 5 (2012-13). Initial results for the GCC are from 833 HD pts treated at 34 HD units. Results are restricted to pts dialyzing 3x/week (90% of all pts). Adjusted treatment effects for facility blood flow rate (BFR) < 295 mL/min, facility treatment time (TT) < 220 minutes, and patient catheter (CATH) use on the odds of low Kt/V (<1.2) were estimated with logistic regression adjusting for age, dialysis vintage, body mass index, and diabetes while accounting for facility clustering. **Results:** The mean age of HD patients in the GCC was 54 yrs versus 63-66 yrs in the 3 other DOPPS regions; 56% of patients were male, with a mean body weight (wgt) and BMI similar to that in EUR-ANZ (Table). Mean Kt/V was 1.38 and 1.40 in Japan (Jpn), versus 1.57-1.58 in EUR-ANZ and North Am. Mean TT was the shortest in the GCC region (213 min) while mean BFR was between that of Jpn and EUR-ANZ. CATH use was the highest in the GCC region (39% vs. 0.5-25%), with substantial variation across GCC countries. Volume of blood filtered per HD session per kg body wgt was similar in the GCC and Jpn, but significantly lower than in EUR-ANZ and North Am. Within the GCC, pt odds of Kt/V < 1.2 was significantly (p<0.05) higher for males vs females (OR=2.7, 95%CI=1.7-4.2), pts with higher BMI (OR=1.2, 95% CI=1.1-1.3 per kg/m<sup>2</sup>), dialyzing with a CATH (OR=1.7, 95% CI=1.1-2.6) or if treated in a facility with mean BFR below the region median (295 mL/min; OR=7.1, 95% CI=2.6-18.9). In HD units with mean BFR < 295 mL/min, 61% of pts had Kt/V < 1.2 versus 24% of pts in HD units with mean BFR ≥ 295 mL/min. Mean BFR was similar for GCC pts dialyzing with a CATH vs an AV access. **Conclusions:** Achievement of Kt/V in the GCC, although lower than in EUR-ANZ and North Am, was similar to that in Japan. Japan and the GCC also share the practice of having a lower blood volume filtered per HD session per kg body wgt. These findings suggest that increasing mean BFR and treatment time in the GCC, along with reducing catheter use, likely would substantially increase overall achievement of Kt/V ≥ 1.2 in the GCC.

**Table:** Patient characteristics and dialysis adequacy measures by region

Measure	GCC	Europe-A/NZ	Japan	North America
Patients, n	708	3025	1544	3528
Age <sup>a</sup> , years	54.5(15.8)	66.3(15.1)	65.8(12.7)	63.2(15.2)
Male <sup>a</sup> , %	56.1	61.1	64.1	56.6
Diabetes, %	50.1	36.4	36.4	58.6
Body weight, kg	70.6(45.6)	73.6(29.2)	55.9(21.4)	80.6(32.2)
Body mass index, kg/m <sup>2</sup>	26.8(15.9)	26.3(9.1)	21.5(6.3)	28.5(10.1)
Urea reduction ratio, %	67.9(26.6)	73.7(13.8)	68.4(13.6)	73.2(15.2)
Single Pool Kt/V	1.38(0.82)	1.58(0.54)	1.40(0.51)	1.57(0.43)
Kt/V < 1.2, %	32.6	10.9	22.9	9.5
HD treatment time, min	213(60)	248(66)	239(47)	222(55)
Blood flow rate, mL/min	294(90)	328(93)	207(69)	409(110)
Blood volume filtered per HD session, L	63.5(28.1)	81.5(29.1)	49.7(19.7)	91.4(29.0)
Blood volume filtered per HD session/body weight, L/kg	0.96(0.65)	1.15(0.53)	0.92(0.44)	1.19(0.47)
Catheter use, %	39.3	23.3	0.5	25.1

Restricted to patients dialyzing 3x/week; Values reported as mean (standard deviation) or percent and weighted to account for the sampling fraction in each unit  
 a. Data from census of all patients in DOPPS facilities at initiation of DOPPS phase 5 (unweighted and not restricted to patients dialyzing 3x/week)

MP568

**MP569 THE MULTIDIMENSIONAL PROGNOSTIC INDEX (MPI) PREDICTS SHORT AND LONG-TERM MORTALITY IN OLDER PATIENTS ON HEMODIALYSIS**

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**Introduction and Aims:** Recent study demonstrated that the Multidimensional Prognostic Index (MPI), a validated predictive instrument for mortality based on a standardized Comprehensive Geriatric Assessment (CGA), was a feasible tool that may identify older Chronic Kidney Disease (CKD) patients on haemodialysis at different risk of mortality. Aim of the study was to evaluate the accuracy of the MPI in predicting short- and long-term mortality in older haemodialysis patients. **Methods:** This is a multicenter study carried-out in two Haemodialysis Centers in Italy. At baseline, all patients aged ≥65 years and older underwent a standardized CGA that included information on basal and instrumental activities of daily living (ADL, IADL), cognitive status (Short Portable Mental Status Questionnaire, SPMSQ) nutritional status (Mini Nutritional Assessment, MNA), the risk of pressure sores (Exton-Smith Scale, ESS), comorbidity (Cumulative Illness Rating Scale, CIRS), number of medications taken and co-habitation status (alone, institution, in family). These information were used to calculate the MPI, according to a previously validated algorithm, and the MPI was expressed as 0.0 to 1.0 value; for clinical purposes, moreover, a three-grade scale of risk was used according to validated cut-off values (MPI-1 0.0-0.33=low-risk; MPI-2 0.34-0.66=moderate risk; MPI-3 0.67-1.0=severe risk

of mortality). All patients were followed for up two years and survival/mortality status recorded. **Results:** 166 patients (mean age 76.50±7.00; range=65-96 years). 43 subjects (25.9%) were in MPI-1 grade, 100 subjects (60.2%) were in MPI-2 grade and 23 subjects (13.9%) were in MPI-3 grade group. Stratifying the study population in low/moderate-risk (MPI-1 and MPI-2 groups) and high-risk (MPI-3 grade group), a statistically significant difference was observed in mean values of ADL (5,11±1.35 vs. 1,30±0.80 p<0,0001), IADL (5,33±2,60 vs. 1,13±0,81, p<0,0001), MNA (21,75±4,01 vs. 14,90±4,00, p<0,0001) and ESS (18,10±2,00 vs. 13,50±2,10, p<0,0001) but not of CIRS (4,15±2,00 vs. 4,30±2,13, p=0,82), SPMSQ (5,33±3,90 vs. 4,82±3,35, p=0,55) and number of drugs (5,75±2,91 vs. 6,20±3,70, p=0,49). Mortality rates were significantly different between patients with MPI-3 grade vs. MPI-1 and MPI-2 grades both at 1 month (8,6% vs. 0,7% p=0,008) and at two years (39,1% vs. 17,5% p=0,017) of follow-up. Receiver Operating Characteristics (ROC) curves were 0,77 (95%CI 0,47-1,0) and 0,64 (05%CI 0,51-0,76) at one month and two-year of follow-up, respectively. **Conclusions:** The CGA-based MPI demonstrated good accuracy to predict short- and long-term mortality in older end-stage CKD patients on haemodialysis.

**MP570 THE PERFORMANCE OF "LINK MUSICIANS" IN A HEMODIALYSIS CENTRE: A HUMANIZING EXPERIENCE THAT IMPROVES QUALITY OF LIFE AND SYMPTOMS OF DEPRESSION**

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**Introduction and Aims:** Individuals with Chronic Kidney Disease (CKD), besides having to submit treatment by haemodialysis (HD) for four hours, three times a week, also undergo important changes in their way of life, in family and social relationships that culminate with the impairment of their quality of life (QoL), being also under higher risk of depression. Similar to what is already being done in several countries in Europe, we believe that the intervention of musicians, specially trained to work in hospitals and other health care areas (Link Musicians) would be a humanizing strategy for the individuals with CKD in HD which could result in improvement of these adverse conditions. Objective: To identify the possible influence that the performance of the "Link Musicians" during HD sessions would produce in QoL, in parameters of depression and in the subjective sense of well-being of patients undergoing HD at a haemodialysis centre in Brazil. **Methods:** The study included 24 patients (18 years or older) on haemodialysis for more than 6 months. Of these, 12 patients formed the control group (no intervention) and 12 patients underwent the intervention of the "Link Musicians" for five months on regular HD sessions on Saturdays. We evaluated the QoL by the questionnaire Kidney Disease and Quality of Life - Short Form (SF-KDQOL™) - v.1.3 and the state of depression by the Hamilton scale - The Hamilton Rating Scale for Depression (HAM-D). Also, it was applied to the patients an open questionnaire to assess how they accepted and how the intervention affected their lives. The speeches of the interviewees were submitted to thematic analysis and then to the technical analysis of the Collective Subject Discourse (Lefèvre). **Results:** We observed favourable changes in QoL in the intervention group, particularly in those emotional/psychological domains. Markers of depression were high in both groups (21 out of 24 patients had moderate to severe depression scores), with a significant improvement in the intervention group only (pre-intervention 10/12 patients had moderate to severe depression scores and after intervention 6/12 patients had moderate to severe depression scores; Qui-square=0.02). Patients fully approved and expressed positive feelings during and after the intervention (attention, favourable interaction with health care team, family ties, pleasant memories). **Conclusions:** We conclude therefore, that the humanizing intervention proposed by "Link Musicians" brought improvements to the environment and to the QoL, the subjective sense of well-being and to the state of depression of patients with chronic renal failure on haemodialysis. An example of the musicians performance may be watched at: <http://vimeo.com/43105902>.

**MP571 USEFULNESS OF THE MULTIDIMENSIONAL PROGNOSTIC INDEX (MPI) IN OLDER PATIENTS ON HEMODIALYSIS : A MULTICENTER STUDY**

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**Introduction and Aims:** The Multidimensional Prognosis Index (MPI), a validated Comprehensive Geriatric Assessment (CGA)-based prognostic index for mortality, has

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been recently demonstrated to be clinically useful in predicting mortality in older subjects with Chronic Kidney Disease (CKD); no data exists on the use of the MPI in older patients with end-stage CKD on haemodialysis.

**Methods:** This is a multicenter study carried-out in four Haemodialysis Centers in Italy. All older patients ( $\geq 65$  years) underwent a standardized CGA that included information on basal and instrumental activities of daily living (ADL, IADL), cognitive status (Short Portable Mental Status Questionnaire, SPMSQ) nutritional status (Mini Nutritional Assessment, MNA), the risk of pressure sores (Exton-Smith Scale, ESS), comorbidity (Cumulative Illness Rating Scale, CIRS), number of medications taken and co-habitation status (alone, institution, in family). These information were used to calculate the MPI, according to a previously validated algorithm, and the MPI was expressed as 0.0 to 1.0 value; for clinical purposes, moreover, a three-grade scale of risk was used according to well validated cut-off values (MPI-1 0.0-0.33=low-risk; MPI-2 0.34-0.66=moderate risk; MPI-3 0.67-1.0=severe risk of mortality).

**Results:** 309 older patients with end-stage CKD on haemodialysis (men=193, 62.46%; women=116, 37.54%; mean age  $76.40 \pm 6.53$  years; range=65-96 years). 114 subjects (36.9%) were in MPI-1 grade, 164 subjects (53.1%) were in MPI-2 grade and 31 subjects (10.0%) were in MPI-3 grade group. A statistically significant difference among the three MPI groups was observed in ADL ( $5.70 \pm 0.82$  vs.  $4.84 \pm 1.53$  vs.  $1.54 \pm 1.17$ ,  $p < 0.0001$ ), IADL ( $6.16 \pm 2.15$  vs.  $4.70 \pm 2.64$  vs.  $1.32 \pm 1.20$ ,  $p < 0.0001$ ), SPMSQ ( $2.30 \pm 3.51$  vs.  $4.40 \pm 3.82$  vs.  $4.64 \pm 3.30$ ,  $p < 0.0001$ ), MNA ( $23.02 \pm 3.52$  vs.  $21.24 \pm 3.70$  vs.  $15.10 \pm 4.00$ ,  $p < 0.0001$ ), ESS ( $18.9 \pm 1.7$  vs.  $17.6 \pm 2.4$  vs.  $13.4 \pm 2.1$ ,  $p < 0.0001$ ) and CIRS ( $3.40 \pm 1.7$  vs.  $4.41 \pm 1.62$  vs.  $4.40 \pm 2.0$ ,  $p < 0.0001$ ).

**Conclusions:** The CGA-based MPI is a feasible tool that may identify older haemodialysis patients at different risk of mortality. Further studies are needed to evaluate the potential usefulness of the MPI in clinical decision making.

#### MP572 INCREASING DEPRESSION, ANXIETY AND QUALITY OF LIFE IN HEMODIALYSIS

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**Introduction and Aims:** Depression and anxiety prevalence is high in chronic kidney disease (CKD) patients, leading to poor quality of life (QOL). We evaluated the changes that occur with time, regarding depression, anxiety and QOL in HD patients and explored possible correlations with clinical-laboratory variables and Charlson Comorbidity Index (CCI).

**Methods:** We administered questionnaires regarding depression, anxiety and QOL in 52 patients from a single HD centre in Greece. Within a year we applied the same questionnaires to evaluate an increasing or decreasing tendency and find possible correlations. Each patient completed voluntarily the following: 21 item Beck Depression Inventory (BDI), Geriatric Depression Scale (GDS), Hospital Anxiety and Depression Scale (HADS), Generalized Anxiety Disorder (GAD-7) and Short Form (SF36) health survey questionnaire. Additionally, we tried to find possible correlations with clinical-laboratory parameters.

**Results:** BDI test results were divided into: low, moderate and significant. HADS in: non case, borderline case and case. GAD-7 in mild, moderate, severe. GDS in: normal, mild, severe. Regarding SF-36, the lower the score the more the disability. All patients increased HADS, but in tandem improved BDI (63.46%), GAD-7, GDS and following QOL parameters: physical function (PF), role physical (RP), bodily pain (BP), vitality (VT), social function (SF), mental health (MH), physical component summary (PCS). To verify where the differences were mainly due the sample was divided: according to age ( $\leq 65$  vs  $> 65$  years), gender and diabetes or not. Patients 65 years increased BDI, HADS, GDS and improved PF, RP, Males (65%), increased BDI, HADS, GDS, and PF, RP, general health (GH), VT, SF, RE, MH. Women increased: BDI (not statistically significant=ns), HADS-A, HADS-D (ns), and PF, BP, GH, SF, RE. Diabetics (28.8%), increased: HADS-D (ns) and in parallel PF, RP, VT, SF, RE, MH. Non-diabetics increased anxiety (HADS-A), and: PF, RP, GH, VT, SF, RE, MH. Increased depression scores and anxiety burden might be due to an increased percentage (35.1%) of patients, who received psychiatric drugs compared to previous year, and due to increased comorbidities (78.6% increased CCI). We found no correlation with underlying kidney disease, HD duration, vascular access, cardio-vascular disease, COPD, HD shifts, being active on transplantation list, laboratory parameters regarding anemia, renal osteodystrophy, albumin, cholesterol, inter-dialytic weight gain, number of total administered drugs and number of days spent in hospital during the last year.

**Conclusions:** High degree of depression and anxiety in HD patients was found. Advanced age, psychiatric drug use and comorbidities were predisposing factors. Proper evaluation and individualized therapy succeeded in improving BDI, GAD-7 and GDS with time. However, older HD patients reported worsening of depression. Tendency of increasing depression was associated with increased use of psychiatric drugs and more common in elderly patients with comorbidities. A variety of QOL parameters improved independently associated with depression or anxiety. By targeting depression and anxiety, we achieved better QOL parameter outcomes, especially in younger HD patients ( $< 65$  years old), women and diabetics.

#### MP573 SEROCONVERSION AFTER HEPATITIS B VACCINATION IN HAEMODIALYSIS PATIENTS: RESULTS OF TWO DIFFERENT VACCINATION SCHEDULE

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**Introduction and Aims:** HBV infection is actually a worldwide disease among chronic hemodialysis patients, as a result of a cross-reaction contamination and high HBV-DNA serum prevalence in HBsAg+ patients. As long as all the primary prevention programs have been carried out, vaccination becomes the leading treatment in order to decrease HBV-morbidity, so frequent in this group of patients. Clinical trials regarding uremic patients undergoing HBV vaccination, have shown, comparing to general population, lower seroconversion rates (50-64% vs 90%).

This delayed and weak response could be caused by malnutrition, anemia, uremic syndrome and immunological disorders, so that we can consider these patients as immunosuppressed. The aim of the study was to evaluate the seroconversion among two groups of hemodialysis patients exposed to two different HBV-vaccine schedules and to investigate if there were differences between patients who had and had not an effective response.

**Methods:** The first group (A Group), included 99 patient, 63 males and 36 females, undergoing hemodialysis between 2003 and 2009; middle age was  $56 \pm 17$  years. This patients underwent a three times intramuscular injection (IM) (at 0-1-6 months from dialysis beginning) of HBVAXPRO 20 mg (Sanofi Pateur SMSD) during hemodialysis sessions. The second group included 46 patients (B Group), starting hemodialysis in 2010, whose age was  $60 \pm 10$  years, 34 Males and 12 Females, who received also a three times injection of HBVAXPRO, with the same schedule, but with an intradermal (ID) dose of 40 mg, at the end of the dialysis sessions. None of the patients was vaccinated before, nor treated with steroid or other drugs. All patients had good nutritional parameters according to albumin and fats serum levels. The vaccine was a recombinant Saccharomyces cerevisiae-derived HBV surface antigen adsorbed on aluminum hydroxyphosphate sulfate. Levels of anti-HBV antibodies were determined every 3 months, for at least 12 months.

**Results:** Antibodies levels determined at 3,6 and 12 months after the vaccine schedule demonstrated a good response in 39 patients (41%), with anti-HBs titre between 10 and 1000 IU/L and no response in 56 patients (59%), with anti-HB titre  $< 10$  IU/L. No differences between responders and non responders patients were found in age, sex, diabetes, inflammation markers, nutritional status and dialysis efficiency. In B group sufficient anti-HBs antibodies levels, i.e. between 13 and 139 IU/L, were achieved in 20 patients (43.3%) after 6 months. No response was achieved (anti-HBs titre  $< 10$  IU/L) in 26 patients (56.6%). No differences between A and B group patients were found in age, sex, diabetes, inflammation markers, nutritional status and dialysis efficiency. There were no differences in immunophenotyping of blood lymphocytes between R and R1 group patients and NR and NR1 group patients. A younger age alone seems to be related to a better response to vaccine schedule ( $p < 0.052$ ).

**Conclusions:** The poor response to the vaccine schedule in dialysis seems to be independent from doses, timing, site of injection, type of dialysis and lymphocytes T subsets. A protective response to vaccine schedule in this population could be achieved before starting dialysis, when patients are still in 3/4 CKD stage. Also using a vaccine with an adjuvant leads to a better response. The stage of the CK disease and the vaccine schedule seem important, both for the efficacy and the long-term immune response. The sooner the vaccine is given (first stages of CKD), the more it will be effective.

#### MP574 MORTALITY RISK FACTORS AMONG INCIDENT OCTOGENARIAN DIALYSIS PATIENTS

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**Introduction and Aims:** Dialysis population is getting older and more and more patients nowadays start dialysis at extreme ages. We tried to evaluate predictors of survival in a population of incident hemodialysis (HD) patients older than 80 years.

**Methods:** We retrospectively enrolled 63 CKD patients who started HD at 80 years of age or older and dialyzed for more than 1 month. We divided our population into 2 groups: A) patients who survived 2 or more years on HD (n=31) and B) patients who died within 2 years (n=32). We analyzed patient-related parameters, such as laboratory tests and the Cumulative Illness Rating Scale (CIRS), and treatment-related features.

**Results:** Average survival was  $48.00 \pm 19.26$  vs  $7.53 \pm 5.68$  months (group A vs B,  $p < 0.0001$ ). We didn't find any differences between the 2 groups in respect to the average age of initiation of dialysis ( $84.02 \pm 2.38$  vs  $84.52 \pm 2.43$  years), serum calcium, phosphates, PTH, CRP for the entire period analyzed. Average hemoglobin was higher in group A than group B ( $11.01 \pm 0.60$  vs  $10.21 \pm 1.18$  g/dl,  $p < 0.01$ ), as well as total serum proteins ( $6.48 \pm 0.53$  vs  $6.13 \pm 0.64$  mg/dl,  $p < 0.05$ ), albumin ( $3.61 \pm 0.27$  vs  $3.22 \pm 0.54$  mg/dl,  $p < 0.01$ ), K+ ( $4.90 \pm 0.46$  vs  $4.63 \pm 0.57$  mg/dl,  $p < 0.05$ ). Moreover, hemoglobin directly correlated with survival ( $p < 0.001$ ) as well as K+ ( $p < 0.01$  for values between 3.8 and 6.3 mEq/l). Instead, we found a reverse correlation between survival and CRP ( $p < 0.0001$ ). CIRS index, at initiation of HD, was greater in group B than A both for comorbidity ( $5.56 \pm 1.16$  vs  $4.48 \pm 1.48$ ,  $p < 0.01$ ) and severity score ( $2.39 \pm 0.26$  vs  $2.19 \pm 0.37$ ,  $p < 0.001$ ) and directly correlated with mortality ( $p < 0.01$ ). Group A had less vascular ( $p < 0.001$ ),



neurological ( $p < 0.05$ ) and endocrine or metabolic ( $p < 0.01$ ) disease score than B. Dialysis adequacy was not different between the groups [KT/V  $1.38 \pm 0.17$  (A) vs  $1.27 \pm 0.29$  (B)] and did not correlate with survival.

**Conclusions:** Our study shows that a better nutritional status as well as maintaining higher levels of hemoglobin are associated with a longer survival among octogenarian patients entering dialysis. Comorbidities and high inflammatory indexes, instead, are unfavorable prognostic markers and might contraindicate the initiation of dialysis in the elderly.

#### MP575 TIME DURATION FROM THE BEGINNING OF HEMODIALYSIS IS THE MAIN DETERMINANT OF SEXUAL DYSFUNCTION IN CHRONIC HEMODIALYZED WOMEN AGED 15 TO 45 YEARS

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**Introduction and Aims:** Sexual dysfunction (SD) is a common problem in end-stage renal disease (ESRD). In contrast to basic and clinical research in the field of male SD, relatively little work has been done in the field of female sexual dysfunction.

**Methods:** One hundred forty chronic hemodialyzed female patients aged 15 to 45 years were selected as cases. The controls were selected from the healthy relatives of the patients and matched for age, level of education, marital status and income. Both cases and controls were interviewed by the same female interviewer. Arizona Sexual Experiences Scale (ASEX) was used as questionnaire

**Results:** None of patients with sexual dysfunction had discussed this problem with gynecologist, nephrologist, primary provider or hemodialysis nurses. Significant negative correlation was found between total Arizona Sexual Experiences Scale (ASEX) score and age, time duration from the beginning of hemodialysis ( $r = -0.597$ ,  $p$ -value =  $0.004$  and  $r = -0.473$ ,  $p$ -value =  $0.048$  respectively). We found no correlation between serum; hemoglobin, PTH, creatinine, iron, calcium, phosphor and ASEX score, also correlation between this score and urea reduction ratio was non significant (all  $p$ -values  $> 0.1$ ). There was a significant difference in ASEX total score between cases; hemodialyzed patients and controls; their healthy matched relatives ( $9.80 \pm 4.21$  versus  $16.31 \pm 2.50$ ,  $p$ -value  $< 0.001$ ). All 5 items of sexual function were equally disturbed in hemodialyzed women ( $p$ -value  $> 0.1$ ). Multivariate analysis showed that duration of hemodialysis is the only factor that significantly impact the sexual function in chronic hemodialyzed female patients.

**Conclusions:** Sexual function in chronic hemodialyzed female patients is mainly impacted by the time duration from the beginning of hemodialysis

#### MP576 LONG-TERM OUTCOME OF HEMODIALYSIS PATIENTS: 30 YEARS' EXPERIENCE IN A SINGLE CENTER

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**Introduction and Aims:** The clinical demographics of chronic dialysis patients are changing according to time periods. We investigated long-term outcome of hemodialysis patients in our center.

**Methods:** We reviewed the medical records of the patients starting hemodialysis (HD) between 1979 and 2004. A total of 736 patients (457 male, 279 female) were included. 274 patients started HD between 1979 to 1989, 257 patients between 1990 to 1994, 141 patients between 1995 to 1999 and 64 patients between 2000 to 2004. The numbers of patients who transferred to peritoneal dialysis (PD) or kidney transplantation (KT) were 117 (15.9%) and 297 (40.4%). Patient survival rates were compared according to the transferred to PD or KT and the time period of starting HD.

**Results:** During mean follow-up of  $116.5 \pm 97.1$  months, 342 patients were died and the 5-, 10-, 20- and 30-year survival rate was 72%, 56%, 44% and 34% in overall patients. The 10- and 20-year survival rate for the patients transferred to KT was 86% and 76%. However 10- and 20-year survival rate of HD only patients was 32% and 16% and that of transferred to PD patients was 34% and 19%, respectively. The survival rate of transferred to KT patients was significantly higher than those of HD only or PD patients ( $p < 0.000$ ). There was a trend toward older age at the time of starting HD over three decades and the survival rate of patients was not significantly different according to time period.

**Conclusions:** In this study, the survival benefit associated with KT was observed. However, a trend of patient survival was not changed over three decades, although the improvement in performance of membrane and quality of water.

#### MP577 INVESTIGATION OF POSSIBLE EFFECT MODIFICATION OF VINTAGE AND AGE ON GENDER COMPARISONS OF HEALTH RELATED QUALITY OF LIFE IN MAINTENANCE HEMODIALYSIS PATIENTS

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**Introduction and Aims:** Previous studies in maintenance hemodialysis patients (MHD) showed that women, in general, have a poorer health related quality of life (HRQOL) but it is not clear if the reported gender differences in HRQOL vary by dialysis vintage (length of time on dialysis treatment) and age groups. Objective: By using data of a large sample of MHD patients, the present study compared scores of different components of HRQOL between women and men. Additionally it was investigated if gender differences in HRQOL scores varied by dialysis vintage ( $< 6$  months versus  $\geq 6$  months on dialysis) and age ( $< 60$  versus  $\geq 60$  years).

**Methods:** Cross-sectional analysis of baseline data of 1166 patients enrolled in the "Prospective Study of the Prognosis of Chronic Hemodialysis Patients (PROHEMO)" developed in 4 clinics in Salvador, BA, Brazil, since 2006. The Kidney Disease Quality of Life Short Form (KDQOL-SF) was used to generate scores of the Physical Component Summary (PCS), Mental Component Summary (MCS) and the Symptoms/Problems component of HRQOL, with higher scores indicating better HRQOL. The comparisons of HRQOL scores between women and men were stratified by dialysis vintage and age. Linear regression was used to estimate differences in scores adjusted for age, sociodemographics, months on dialysis as continuous variable, Kt/V, laboratory variables and comorbid conditions.

**Results:** The means of HRQOL scores were lower in women than in men by approximately 2 points for PCS ( $39.2 \pm 10.3$  vs  $41.1 \pm 9.8$ ,  $P = 0.001$ ), 2.5 points for MCS ( $46.2 \pm 12.6$  vs  $48.6 \pm 12.2$ ,  $P = 0.001$ ) and 6.5 points for Symptoms/Problems ( $74.5 \pm 17.9$  vs  $81.0 \pm 15.8$ ,  $P < 0.001$ ). Variations by vintage and age groups in the gender comparisons of HRQOL scores were observed. In general, the gender gap indicating lower scores in women were larger for patients with longer vintage and patients aged  $\geq 60$  yr. For PCS, the gender adjusted difference was larger than 4 points (difference = 4.4 points,  $P = 0.001$ ) in patients aged  $\geq 60$  yr and only 1.3 points ( $P = 0.06$ ) for those aged  $< 60$  yr;  $P$  value for sex\*age interaction =  $0.042$ . For MCS, the gender adjusted difference was about 3.6 points ( $P < 0.001$ ) in those with  $\geq 6$  months on MHD but virtually no gender difference in MCS was observed in patients with  $< 6$  months on dialysis;  $P$  value for interaction sex\*vintage =  $0.061$ . For Symptoms/Problems, the gender differences in scores were also larger for patients aged  $\geq 60$  yr than for those  $< 60$  yr (difference of 7.3 vs 5.3 points) and for patients with vintage  $\geq 6$  months than for those less than 6 months (difference of 7.1 vs 3.5 points), but the  $P$  values for the coefficient of interaction were greater than 0.1.

**Conclusions:** The results call attention to variations by age and dialysis vintage in the gender comparisons of HRQOL components. The potential effect modification of vintage and age should be taken into account in studies designed to investigate differences in HRQOL between women and men on MHD.

#### MP578 BELGIAN AND IMMIGRANT RENAL PATIENTS, STARTING DIALYSIS: IS THERE A DIFFERENCE?

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**Introduction and Aims:** The ZNA Renal Clinic offers renal care in a large industrialized city with a high percentage of immigrants. The immigrant renal patients (IRP) represent 20 to 25% of our dialysis population. We investigated if the characteristics of both populations are different at the start of dialysis.

**Methods:** The characteristics of Belgian patients starting dialysis in the period 2007-2013 were compared to the characteristics of IRP. All patients received renal care in a multidisciplinary predialysis clinic (MPC). Clinical parameters were registered at start and after 1 year of dialysis.

**Results:** 222 patients started dialysis, 181 of Belgian origin and 41 immigrants. The IRP were significantly younger (51.7 years [28-74]) than the Belgian patients (70.4 years [27-93]) ( $p < 0.001$ ). A remarkable high percentage of IRP were illiterate (19.4% versus 1.2%,  $p < 0.001$ ), their education level was significantly lower than the indigenous population ( $p < 0.001$ ) and in 55% of our IRP translation was needed to communicate with the healthcare professionals. More IRP had a renal biopsy at presentation (48.6% versus 17.8%,  $p < 0.001$ ). The renal diagnosis of the immigrant population was significantly different from the Belgian population with more glomerulonephritis (29.3% versus 9.2%) and more "other" systemic diseases (29.3% versus 22.4%) ( $p < 0.006$ ). The Belgian renal patients had a significantly more frequent follow up in the MPC (35.9% versus 17.1%,  $p = 0.015$ ). The IRP presented more frequently as late referral (58.5% versus 35.4%,  $p = 0.015$ ), and dialysis was more often started urgently (62.5% versus 47.3%,  $p = 0.085$ ). Significantly more of the IRP were transplanted in the first year after dialysis (17.1% versus 2.2%,  $p < 0.001$ ).

**Conclusions:** Immigrant renal patients starting on dialysis differ from Belgian patients. In general they have less favorable conditions and need more intense and specific attention from the renal team.

#### MP579 MOLECULAR EPIDEMIOLOGICAL STUDY AND HOMOLOGICAL ANALYSIS OF THE HEPATITIS C VIRUS IN MAINTENANCE HEMODIALYSIS PATIENTS

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**Introduction and Aims:** Maintenance hemodialysis (MHD) patients have a high risk of hepatitis C virus (HCV) infection in China. To research the genotype distribution and homology of HCV infection in MHD patients in our hospital, and to analyze their molecular epidemiology in order to provide a basis for preventing and treating HCV infection in hemodialysis centers.

**Methods:** For the 183 MHD patients enrolled in this study, HCV-RNA quantification was performed with quantitative fluorescence polymerization chain reaction (PCR). Two fragments, 5'UTR and NS5B, were used to perform a phylogenetic analysis of the nucleic acid sequences in order to determine the HCV genotypes and subtypes in the MHD patients, and HCV homology and clinical epidemiological analyses was performed to determine the HCV transmission mode in dialysis centers.

**Results:** (1) Of the 183 patients, 13 were anti-HCV-positive cases, with an anti-HCV-positive rate of 7.1% (13/183); 10 were positive by HCV-RNA quantification (range,  $9.80 \times 10^2$  to  $2.01 \times 10^7$  IU/mL; average,  $3.62 \times 10^6 \pm 7.29 \times 10^6$  IU/mL), and three were negative. For nine cases, the HCV-RNA quantification was  $\geq 1 \times 10^3$  IU/mL. (2) The nine patients' specimens were typed with the 5'UTR and NS5B fragments, and the typing results were consistent and divided into type 1b. Among the positive-HCV patients, 78% (7/9) were type 1b, while 22% (2/9) were type 6a; among the anti-HCV-positive patients, type 1b accounted for 54% (7/13), while 15% (2/13) were type 6a. (3) The electrophoretogram showed the total length of the NS5B fragment amplification end product was 360 bp (8260-8620), and the total length of the 5'UTR fragment PCR amplification product was 240 bp (60-300), without nonspecific strip amplification. (4) The analysis of the NS5B fragment with a phylogenetic tree demonstrated the following: in type 1b, the genetic distances between PC1 and PC2, PBC17 and PC2, PC29 and PBC31, and PC32 and PBC34 were 0.000, 0.008, 0.035, and 0.102, respectively. In type 6a, the genetic distance between PC11 and PC20 was 0.068. The homologies of PC1 and PC2, PC2 and PBC17, PC29 and PBC31, PC32 and PBC34, and PC11 and PC20 were 100%, 99.23%, 96.63%, 90.64%, and 93.63%, respectively. (5) According to an epidemiological analysis, PC2 was the imported infection source. During a 1.5-year period, before PC1 was diagnosed with HCV, six records indicated that PC1 and PC2 had received dialysis treatment by the same nurse, in neighboring dialysis chairs, and during the same shift. In fact, during a 1-year period, several records indicated that PC2 and PC17, as well as PC1 and PC17, had the above-mentioned commonalities. No evidence existed regarding an HCV infection in any staff member of the dialysis center.

**Conclusions:** There was an HCV infection rate of 7.1% in our dialysis center. The main genotype are 1b and 6a. By the epidemiological study, one patient was determined to be the infection source. Possible transmission routes included: no specific HCV-treatment areas, and one nurse simultaneously treated HCV-positive and HCV-negative patients, without proper hand or glove hygiene, and used the same heparin ampoule for different patients. This study provides important scientific evidence for preventing and treating iatrogenic HCV infections in hemodialysis centers.

**MP580** **PROTEOMIC PROFILE OF RETAINED PROTEINS FROM HEMODIAFILTRATION WITH ON-LINE ENDOGENOUS REINFUSION (SUPRA) CARTRIDGE**

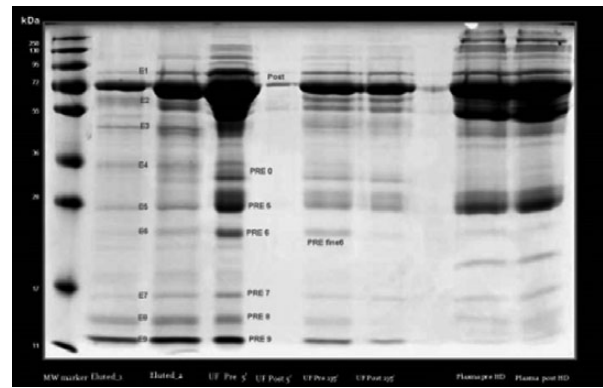
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**Introduction and Aims:** Hemodiafiltration with on-line endogenous reinfusion (SUPRA) is a dialytic method, which combines the processes of diffusion, convection and adsorption. The performance of this system is linked to the optimal combination of the membrane permeability and cartridge resin bed. Lupus nephritis (LN) is one of the most severe manifestation of systemic lupus erythematosus (SLE), associated with considerable morbidity and mortality. Cytokine plays a key role in disease initiation and progression, in fact in the kidney immunocomplexes (ICs) deposition activate mesangial cells. Once activated, by ICs and/or autoantibodies, renal resident cell secrete the cytokines which may further amplify inflammatory processes. In this preliminary study, ESI-QTOF-MS (Electrospray Ionization with Quadrupole Time-of-flight Mass Spectrometer) was used for protein identification of ultrafiltrate (UF) and for the protein captured by resin bed, obtained from one dialysed patient with LN.

**Methods:** Plasma, UF (pre and post cartridge) of one patient with LN treated with SUPRA, were collected at the 15 min and at 235 min of the dialytic session. The cartridge utilized during treatment, containing styrenic resin, was opened and the proteins kept by the resin were eluted by incubation O/N with 60% ACN and 1% TFA. Samples were desalted and separated by SDS-page, interesting band were picked and "in-gel" tryptic digested before ESI-QTOF-MS analysis.

**Results:** ESI-QTOF analysis of eluted proteins resulted in the identification of several biomarker of kidney injury in LN, such as Retinol binding protein 4, Neutrophil gelatinase-associated lipocain, Prostaglandin-H2 D-isomerase, Cystatin-C, Serotransferrin, Alpha-1-acid glycoprotein and Transthyretin. Moreover we identified several fragments of Immunoglobulin, that are implicated in the etiopathogenesis of LES. Another important protein in pathophysiology of LES is beta-2-glycoprotein 1, protein involved in antiphospholipid syndrome, associated to arterial and venous thrombosis, characterized by up to 30 different autoantibodies. In fact McNeil et al. identified beta-2-glycoprotein 1 as a cofactor required for antiphospholipid antibodies (APA) to bind to cardiolipin.



significantly longer in HD group compared to controls ( $31.6 \pm 7.2$  vs  $18.0 \pm 2.6$ ,  $19.8 \pm 7.9$  vs  $10.9 \pm 2.7$ ,  $11.8 \pm 5.1$  vs  $7.1 \pm 1.2$ , respectively; all  $p < 0.01$ ). Measurements of left atrial diameter, maximum, minimum and before atrial systole, volumes and passive-active emptying volumes were both elevated in hemodialysis group compared to controls (all  $p < 0.01$ ). LA passive ( $p < 0.01$ ) and active ( $p < 0.01$ ) emptying fractions were significantly lower in HD group than the control group.

**Conclusions:** This is the first study enlightening deterioration in atrial mechanical and electromechanical functions in nondiabetic, non-hypertensive HD population. Results of the present study reflect not only negative effects of structural remodeling, which has been mentioned in previous studies in literature, but also negative effects of electrical remodeling. Prolonged inter- and intra-atrial electromechanical delay intervals should be the underlying pathophysiological factors increasing the rate of atrial fibrillation in hemodialysis population.

MP582

**RELATIONSHIP BETWEEN LENGTH OF HOSPITAL STAY AND READMISSION RATES AMONG HEMODIALYSIS PATIENTS: AN UPDATED ANALYSIS OF THE DIALYSIS OUTCOMES AND PRACTICE PATTERNS STUDY (DOPPS)**

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**Introduction and Aims:** Recent attention has focused on the burden of hospital readmissions. Using data from the DOPPS Phase 2,3, and 4 (n=18,391, 2002-11), we sought to determine the relationship between length of hospital stay (LOS) and readmission rates.

**Methods:** The analysis consisted of two stages. At Stage 1, we used a generalized estimating equations (GEE) linear model to estimate covariate-adjusted center effects on mean LOS. The center effects from Stage 1 were used as the covariate of interest at Stage 2; used to estimate the covariate-adjusted effect of center-level mean LOS on readmission rates.

**Results:** At the patient level, overall readmission rates increased by 0.5% per day increase in LOS (RR = 1.005;  $p < 0.001$ ). This finding likely reflects CBI, motivating the center-level approach. At the center level, overall readmission rates decreased by approximately 2% per day increase in center mean LOS (RR=0.981;  $p < 0.001$ ). The strongest effects were observed in Canada (-4.7% per day LOS;  $p < 0.05$ ) and Japan (-4.8%;  $p < 0.001$ ). The effect was in the opposite direction in the U.S. (+5.1%;  $p < 0.001$ ). At the patient level, readmission rates increased by 0.5% per day increase in LOS (RR=1.005;  $p < 0.001$ ), which likely reflects confounding by indication; a phenomenon we attempted to avoid through the instrumental variables type approach used in Stage 2.

**Conclusions:** In most countries, facilities with longer LOS tended to have lower readmission rates. Further investigation, such as cause-specific admission analyses, may explain the different effects found in different countries.

MP582 Table. Rate Ratios (RR) for readmission

Region	Center-level	Patient-level
Australia-New Zealand	0.974	1.002
Europe	0.994	1.004*
Canada	0.953*	1.012*
Japan	0.952**	0.999
United States	1.051**	1.011**
All Regions	0.981**	1.005**

MP583

**HYONATRAEMIA IS A RISK FACTOR FOR INCREASED CARDIOVASCULAR AND NON-CARDIOVASCULAR MORTALITY IN INCIDENT DIALYSIS PATIENTS**

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**Introduction and Aims:** Hyponatraemia is associated with increased mortality in hospitalized patients and in the general population. Recent studies suggest that hyponatraemia is also associated with increased mortality in dialysis patients, but it remains unclear if this is due to cardiovascular mortality. Dialysis patients form a unique population to study hyponatraemia and mortality, because the underlying disease can no longer cause hyponatraemia. Therefore, we studied the effect of hyponatraemia on cardiovascular (CV) and non-cardiovascular (non-CV) mortality in incident dialysis patients.

**Table: Effect of hyponatraemia and serum sodium on CV and non-CV mortality.**

	Hyponatraemia (< 135 mmol/L)	Serum Sodium (per mmol/L)
<b>Cardiovascular mortality</b>		
HR (95% CI)	1.57 (1.16 – 2.11)	0.95 (0.93 – 0.99)
HR <sub>Adj</sub> * (95% CI)	1.52 (1.12 – 2.07)	0.96 (0.93 – 0.99)
Time-dependent HR (95% CI)	1.85 (1.45 – 2.38)	0.93 (0.90 – 0.95)
Time-dependent HR <sub>Adj</sub> (95% CI)	1.92 (1.49 – 2.48)	0.92 (0.89 – 0.95)
<b>Non-cardiovascular mortality</b>		
HR (95% CI)	1.64 (1.25 – 2.17)	0.95 (0.92 – 0.98)
HR <sub>Adj</sub> * (95% CI)	1.66 (1.25 – 2.21)	0.95 (0.93 – 0.98)
Time-dependent HR (95% CI)	1.85 (1.47 – 2.34)	0.91 (0.89 – 0.94)
Time-dependent HR <sub>Adj</sub> (95% CI)	2.02 (1.57 – 2.60)	0.90 (0.87 – 0.92)

\*Adjusted for age, sex, ethnicity, cardiovascular disease, diabetes, hypertension, primary renal disease, BMI, blood pressure, and cholesterol.

MP583

**Methods:** The NECOSAD study is a Dutch prospective multi-center cohort study of incident dialysis patients. All patients with measured serum sodium 90 days after the start of dialysis were investigated (n = 1719, mean serum sodium [SD] = 138.6 [3.5]). Multivariable Cox proportional hazards models were used to estimate the effect of hyponatraemia and serum sodium (per mmol/L) on CV and non-CV mortality. In addition, time-dependent Cox proportional hazards models were used to estimate the short-term effect of hyponatraemia and serum sodium updated over time on CV and non-CV mortality. Missing values for confounders were imputed with multiple imputation.

**Results:** The adjusted hazard ratio (HR) for hyponatraemia on CV mortality was 1.52. In the time-dependent analysis, the short-term effect was even stronger with a HR of 1.92. The adjusted and short-term HRs for non-CV mortality were similar. The effects of serum sodium on CV and non-CV mortality were comparable to those of hyponatraemia (see Table).

**Conclusions:** Hyponatraemia is a strong and independent risk factor for both CV and non-CV mortality in incident dialysis patients. These results raise the possibility that hyponatraemia plays a more direct role in increasing mortality risk.

MP584

**ESRD PATIENTS HEALTH-RELATED QUALITY OF LIFE. A COMPARATIVE ANALYSIS ACCORDING TO THE PATTERNS OF CARE**

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**Introduction and Aims:** We aimed to describe and compare main medical and healthcare characteristics and the health-related quality of life (HRQoL) of dialysis patients and renal transplant recipients (RTRs).

**Methods:** A cross-sectional study by mailed self-administrated questionnaire, was performed on a ESRD representative sample constituted with 3386 dialysis patients and 3555 RTRs, aged of 18 years and more, treated for at least one year, included in one of the 21 (over 23) regions taking part in the French registry REIN in 2010. HRQoL was assessed using SF36 which provides 8 scores (0-100 scale) and 2 component summaries : Physical (PCS) and Mental (MCS). Socio-demographic and clinical characteristics were extracted from the REIN and CRISTAL databases for dialysis patients and RTRs respectively. HRQoL scores were compared using analysis of variance and linear regression.

**Results:** Among eligible patients, 1251 (47%) dialysis patients (with 183 patients on waiting list) and 1658 (33%) RTRs (with 157 pre-emptive RTRs) answered. SF36 scores were higher among RTRs than among dialysis patients with scores differences varying from 9.7 points (mental health) up to 32.3 points (role physical). Dialysis patients registered on the transplantation waiting-list had a significant better HRQoL compared to those who were not registered on the waiting-list (scores differences varying from 6.5 (General Health) up to 16.7 points (Physical Functioning)). Scores were higher among the pre-emptive RTRs than among those having undergone dialysis before their renal transplantation with scores differences varying from 4.1 (Vitality) up to 12.4 points (Role physical limitations).

**Conclusions:** This second HRQoL survey involving a national representative sample of ESRD patients evidence the interest of monitoring HRQoL, not only in a globally but in regards of the patterns of care of patient. It highlights that the best way of improving quality of life among ESRD patients is to promote transplantation and shorten the waiting list time.

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MP585 **BURDEN OF END-STAGE RENAL DISEASE IN NOMADIC POPULATION: MONGOLIAN STUDY**

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**Introduction and Aims:** Mongolia has only one center for hemodialysis, which located at capital of the country. It makes very challenging for people who lives in rural area. Especially patients with end-stage renal disease (ESRD) in nomadic population is never explored and basically no data available. Therefore the study was aimed to find out the demographic and clinical data of patients having ESRD in forgotten population of Mongolia.

**Methods:** A questionnaire interview was conducted at local clinics of rural 3 provinces. Total 102 patients interviewed from 2011 to 2013, who were registered at local hospital with ESRD.

**Results:** Out of 102 patients with 42 were males. The ages was 42±3. Only 36% were on medication, and 12% were enrolled hemodialysis previously and only 5% are on regular time hemodialysis. 52% were never attended follow-up checkup. None of them were advised for renal transplantation. 76% of them having co-morbidity. 80% of them preferred to see local healer or natural herbal alternatives.

**Conclusions:** Lack of financial resources, access to health services and nomadic life style make them very difficult to keep up with treatment and follow-up checkups. Most of the patients do not want to go to central hospital for further treatment and rather willing to accept their faith. Majority of the patients are seen by general practitioners at local clinics who have little knowledge about the disease. The study found that under-diagnosis of ESRD is common due to lack of diagnostic knowledge and no long term availability of treatment, patient education is lacking severely. Multidisciplinary actions and further studies should address these issues, especially on health education and guidelines of local health centers

MP586 **EFFECT OF A QUALITY MANAGEMENT SYSTEM (ISO 9001:2008 CERTIFICATION) ON SATISFACTION OF PATIENTS AND CO-WORKERS IN A DIALYSIS UNIT**

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**Introduction and Aims:** Does implementation of a quality management system (ISO 9001:2008) result, after 2 years, in an improvement of patient and co-worker satisfaction?

**Methods:** A survey of patients and co-workers was performed (in 2011 before acquisition of an ISO 9001:2008 certification and repeated in 2013) based on standardized and validated questionnaires: CQ-Index (Consumer Quality Index) for patients and a combination of JCQ (Job Content Questionnaire) and COPSOQ

(Copenhagen Psychosocial Questionnaire) for co-workers.

**Results:** 140 patients (48 % of our dialysis patients) and 55 co-workers (60 % of our co-workers) returned the questionnaire. After ISO acquisition patient satisfaction increased from 87% to 90% (hemodialysis: 84 %->84 %, peritoneal dialysis: 90 % ->96 %). Satisfaction of co-workers decreased from 77% to 68%, due to 'Too much ISO' (too much change in a short period, imperfect communication and feed-back, increased work load). 40 % of the co-workers experienced their job as a 'high strain job'.

**Conclusions:** Acquisition and implementation of a quality management system (ISO 9001:2008) resulted, after 2 years, in an improvement of patient satisfaction but in a decrease of co-workers satisfaction.

MP587 **CARDIAC AUTONOMIC TONE AS AN INDICATOR OF EXERCISE CAPACITY AND AEROBIC FITNESS IN HEMODIALYSIS PATIENTS: CORRELATION WITH THE DUKE ACTIVITY STATUS INDEX QUESTIONNAIRE**

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**Introduction and Aims:** Cardiac autonomic tone (CAT) is associated with increased cardiovascular risk in chronic kidney disease patients. The Duke Activity Status Index (DASI) questionnaire is a reliable and accurate tool for measuring exercise capacity and aerobic fitness in end-stage kidney disease (ESKD). We sought to examine whether CAT parameters correlated with DASI scores in stable ESKD subjects on thrice weekly hemodialysis.

**Methods:** 11 subjects (70±5years, 73% male) with no history of cardiovascular event or hospitalization in the previous 6 months were studied on the first day of their weekly dialysis schedule. Ambulatory Holter monitors were applied to each subject at the initiation of the dialysis run and worn for up to 24hrs. DASI questionnaires were completed by each subject in the dialysis unit no more than 4 weeks prior to the study day. Cardiac sympathetic (LF), vagal (HF), and overall sympathovagal balance (LF:HF) were quantified in normalized units (nu) by power spectral analysis of electrocardiogram data within the first 12hr period of the Holter recording.

**Results:** The 12hr measures of CAT were suggestive of increased cardiosympathetic activity relative to cardioprotective vagal activity in all subjects (LF:HF, 1.44±0.2; LF, 56 ±6nu; HF, 30±3nu). The mean DASI score was 48.5±3.6 (range 18.0-58.2), consistent with a low exercise capacity. Overall, no significant linear correlation between measures of CAT and DASI scores was observed. However, a trend was observed in terms of increasing DASI score with a more favourable CAT profile (decline in LF:HF; r= -0.53, p=0.17).

**Conclusions:** Measurements of CAT within the first 12 hours of initiation of dialysis did not directly correlate with the DASI score, a measure of exercise capacity and aerobic fitness in ESKD patients.