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O-1

QUALITY OF LIFE IN OLDER PERITONEAL AND HAEMODIALYSIS PATIENTS: RESULTS FROM THE BOLDE STUDY

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Aim

Broadening Options for Long-term dialysis in the Elderly (BOLDE) is a three part study with the aim of quantifying and comparing the quality of life (QOL) in older people on PD and HD.

Methodology

Part 1 compares QOL outcomes on PD and HD. HD patients ≥65 years were matched to PD patients by age (± 2.5 years), gender, length of time on dialysis (± 1 year), ethnicity and socio-economic status (Index of Deprivation).

Results

70 pairs were obtained. The following characteristics were successfully matched for in the PD and HD groups respectively: age (73.1 ± 5.5 vs 73.4 ± 5.1 years), gender (70% male), ethnicity (96% vs 90% British or European White), time on dialysis (30.5 ± 28.3 vs 31.4 ± 26.5 months) and Index of Deprivation (13.7 ± 11.3 vs 13.7 ± 8.7). Co-morbidity score was higher in HD group (2.4 ± 1.6 vs 1.8 ± 1.3, p=0.025). QOL outcomes were adjusted for co-morbidities. No significant differences were found in SF12 scores (physical or mental components). PD patients performed significantly better (lower scores) in the Hospital Anxiety and Depression Scale for depression (4.2 vs 5.5, p=0.014) and anxiety (3.5 vs 5.1, p=0.006). 10% PD patients screened positive for depression compared to 25.7% on HD. PD experienced less intrusion due to renal disease and dialysis treatment (25.1 vs 30.2, p=0.012) as assessed by the Illness Intrusion Ratings Scale.

Conclusion

PD and HD patients were well matched. This study provides evidence that older patients on PD experience fewer depressive symptoms and less illness intrusion. This suggests that a higher proportion of older patients should receive appropriate education to enable them to choose PD. The cause for these findings remain to be explored in the next part of BOLDE.

O-2

ENGENDERING HOPE IN PATIENTS RECEIVING DIALYSIS TREATMENT. DIALYSIS PATIENT'S ILLUSTRATION OF HOPE, THE RELATED FACTORS AND HELPING METHODS

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The participants of the study were eight dialysis nurses from Finland. 16 patients at dialysis wards were in peritoneal dialysis treatment and in hemodialysis treatment. The data were gathered in 12/2005 and in 01/2006. The data received by the interviews were analyzed by qualitative content analysis.

Two characteristics related to the nature of hope came out in the study: hope is a positive condition and resource. There were three characteristics of hope: hope is individual, universal and dynamic. Factors related to hope included human relations, time dimension, treatment, welfare and death. Human relations include intimate relation, peer relation and nursing relation. Time dimension covers memories, the present and the future. Nursing covers dialysis treatment, personal treatment and kidney transplant. Welfare covers everyday life, health, and the quality of life.

14 features of helping methods engendering the dialysis patient's hope were revealed; Support of the dialysis patient's hope, appreciation of dialysis patient, support of dialysis patient towards individual care, supply of realistic information, support of the dialysis patient's coping, alleviation of patient's fears, support of the dialysis patient towards life as a dialysis patient, skills of the dialysis nurse towards living as a dialysis patient, dialysis nurse's skills to engender the patient's hope, dialysis nurse's presence engendering hope, planning of dialysis treatment shifts, consideration of comfortable dialysis treatment environment, appreciation of dialysis peer patient, benefiting the action of Kidney and Liver Association, engendering hope together with different professional groups and respect of the dialysis patient's family.

The results of this study can be benefited in training of dialysis nursing and in evidence based dialysis treatment work. The dialysis nurse shall actively use the hope engendering interactional situations in dialysis nursing. In the future, improvement of intervention studies of dialysis patient's experiences is needed as to which helping methods the dialysis nurse uses while engendering the dialysis patient's hope.

O-3

THE APD TREATMENT WITH A CYCLER PERSONALISED BREAKPOINTIMPROVES PERITONEAL DIALYTIC KT/V: A PILOT STUDY

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Introduction

The drain flow profile in APD is characterized by the break-point (a sudden drop of drain flow after few minutes). The gold standard should be an APD treatment adapted to the break-point profile, which shows inter and intra-individual variations. Durand showed increased peritoneal clearances of about 20% on APD with breakpoint automatically estimated by the cycler, compared to patients undergoing CCPD. Until now the advantage of APD treatment with personalized breakpoint versus fixed breakpoint has not been demonstrated.

Aim

To compare these two kinds of APD treatment.

Methods

Fifteen non diabetic patients, undergoing APD with Serena cycler (GAMBRO), were included (M/F = 9/6, mean age = 58.46 ± 9.23 years, mean dialytic age = 30.13 ± 7.83 months, treatment duration of 8-9 hours, dialysate amount > 15 l, fill volume of 2 l, RRF > 0.5 l). Follow-up was of 9 months. In the first three months the pts were dialyzed with a fixed breakpoint at 50% or 75%. This period was followed by three months of variable breakpoint finally returning to fixed break-point for the last three months. The RRF did not decrease significantly (1330 + 341 ml to 1206 + 488 ml, p= ns).

Results

Data shows an increasing of Kt/V when the pts were shifted from a fixed breakpoint to a cycler personalized breakpoint (3rd month vs. 6th month: 2.10 ± 0.47 vs. 2.32 ± 0.30, p = 0.039). The shift from the personalized breakpoint to the fixed one after 9 months produced a decrease in Kt/v (from 2.32 ± 0.30 to 2.06 ± 0.33, p= 0.001). We didn't find any variations of weekly creatinine clearances of the 3rd month and the 6th month (3rd month vs. 6th month: 70.20 ± 24.05 vs. 68.66 ± 18.17, p = ns.).

Conclusions

Our study demonstrates that APD treatment with a cycler that personalizes the TIDAL percentage according to patients' break-point improves dialytic clearances.

O-4

THE PATIENT PATHWAY- IMPROVING THE PATIENT'S TRANSITION FROM CKD TO PERITONEAL DIALYSIS

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Introduction

Clinical pathways can be used as a communication tool between professionals to manage and standardise outcome-oriented care. Pathways can be effective in reducing length of stay, as indicated by fewer intensive care days and lower mortality [1,2].

Within renal services, the management of pre-dialysis patient's has a major effect on outcomes. Late referral and late preparation for dialysis can result in poorer outcomes including increased hospitalization rates, reduced provision of adequate access, lower quality of life and poor early survival rate, particularly if dialysis initiation was unplanned [3].

Previously, no pathway had been established for the cohort of CKD pre-dialysis patients who had chosen peritoneal dialysis (PD) as their preferred modality. It was anticipated that by developing the pathway, patients would experience a smoother and safer admission process and seamless transition from CKD to peritoneal dialysis.

Design

Process mapping is a technique to identify all the steps and decisions in a process, providing a representation and identifying inefficiencies. Using this tool the existing CKD patient journey to commencing PD was mapped, from referral to the preparation for dialysis clinic, to the initiation of dialysis training. The process map demonstrated seven stages in the patient experience before training commenced.

Outcomes

The multi-disciplinary team reviewed each of the stages, identifying solutions to the bottlenecks, inefficiencies and safety concerns demonstrated. The team then reassessed the process map until it was felt that all the problems had been resolved. A single document to replace medical and nursing notes was designed to support the pathway.

Conclusion/Recommendations

The PD Pathway will shortly be introduced into clinical practice. Audit will be undertaken to review the impact on outcomes, such as increased quality of care and patient satisfaction, improved continuity of information, reduction in infection rates and the length of hospital stay.

O-5

ARE SURVIVAL CURVES IN PERITONEAL DIALYSIS FALSE? THE IMPORTANCE OF COMPETING RISKS IN SURVIVAL ANALYSIS

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Background
In peritoneal dialysis (PD), the use of standard methods for survival analysis, like the Kaplan Meier method, is subject to debate. In fact, competing risks must be taken into account because transfer to hemodialysis (HD) or kidney transplantation hinders the observation of death during PD.

Material and Methods
Firstly, the methods used in PD survival analyses reported in the literature from 1980 to 2008 were reviewed. Secondly, a survival analysis was performed on a prospective, single-center cohort of 383 PD patients. For each event, the cumulative incidence was estimated using the Kaplan-Meier and competing risks methods.

Results
Methods that specifically take account of competing risks have never been used in PD survival analysis. All solutions proposed to take into account the multiple events were based on Kaplan Meier methods. Two types of survival were commonly used: patient and technical survival, with respectively eight and three different definitions of event and censor. In our survival analysis, the Kaplan Meier method showed systematic overestimation of the probabilities of events: 56% for death during PD, 46% for transfer to HD, 18% for kidney transplantation at 13 years.

Conclusion
These data suggest that methodological efforts have to be done to improve the validity of survival measurements in PD patients. The competing risks method appears to be an appropriate, reliable way of addressing this problem.

O-6

INDICES OF CARDIAC DYSFUNCTION IN PERITONEAL DIALYSIS PATIENTS ARE ASSOCIATED WITH RELATIVE INCREASES IN INTRAVASCULAR VOLUME RATHER THAN EXTRACELLULAR WATER RELATIVE TO TOTAL BODY WATER

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Introduction
Secondary analysis of the ADEMEX study demonstrated that BNP, inflammation and poor fluid removal are independent predictors of survival in PD. To explore possible mechanisms further, we undertook a detailed analysis of the relationships between cardiac function, inflammation, intravascular and extracellular fluid status.

Methods
24 stable PD patients (12 men) were studied. Plasma volume (PVc) was measured using ^{125}I-albumin and corrected for BSA; extracellular (ECW) and total body water (TBW) were determined by Bioimpedance analysis (Xitron Hydra), inflammation from high sensitivity CRP. Left ventricular mass index (LVMI) and Left atrial volume index (LAVI) were determined using standard full Doppler-2D-echocardiography and Tissue-Doppler-Imaging.

Results
LVMI correlated with systolic BP (0.49, P=0.035), PVc (r=0.63, P=0.006) and ECW: height (r=0.58, P=0.01) but not with ECW:TBW ratio or CRP. The LAVI also correlated with PVc (r=0.550, P<0.01) and BNP (r=0.66, P=0.004) but not with BP, ECW:height, ECW:TBW or CRP. A subgroup of 8 patients with heart failure and normal ejection fraction (HFNEF) according to European Society of Cardiology (ESC) guideline were identified. They had higher PVc than those without (1610 v 1381 ml, P=0.04) but similar CRP and ECW:TBW.

Conclusions
Echocardiographic abnormalities, especially increased LAVI and LVMI, were associated with a relatively expanded plasma volume. This is more marked in patients meeting HFNEF criteria. In contrast, these abnormalities were not related to the ECW:TBW ratio which is often elevated in PD patients and associated with worse survival. This suggests that there is more than one component to fluid excess in PD.

O-7

NUTRITIONAL ASSESSMENT USING BODY COMPOSITION MONITORING IN PERITONEAL DIALYSIS PATIENTS. VARIABLES DETERMINING BODY MASS, FAT TISSUE AND LEAN TISSUE INDEX

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Objective
Apart from adequate management of the fluid status in peritoneal dialysis (PD) patients the nutritional aspect of the therapy is equally important for the patient's morbidity and mortality. However, the effects of different therapy modalities and dialysis prescriptions on lean tissue mass and fat tissue mass are rarely measured and even less monitored in every day practice. In this cross-sectional study body composition data was obtained with the Body Composition Monitor (BCM, Fresenius Medical Care) to identify relevant variables for optimized nutritional outcomes.

Methods
We screened 973 PD patients from 28 centers in 6 European countries. 639 patients met the inclusion/exclusion criteria. Body composition, blood pressure (BP), dialysis modality and prescription, pre-existing diseases, comorbidities, and antihypertensive medication were documented and analyzed.

Results
Mean body mass index (26.3±5.1kg/m2) and fat tissue index (12.6±6.0kg/m2) were slightly above the normal range whereas mean lean tissue index (13.4±3.4 kg/m2, LTI) was within normal range at a mean weight of 72.2±15.4kg and height of 166±9.6cm. Patients on glucose PD solutions alone had a statistically significantly better outcome than those on polyglucose or amino acid solutions in regard of nutritional parameters like lean tissue index. Further, age, sex, PD solution, hemoglobin, NYHA stage, stage of hypertension, diabetes, urine output, and body mass index had significantly beneficial or adverse influence on LTI in the multivariate analysis, whereas ultrafiltration, transport status, glucose concentration, liver disease, and months on PD did not show any relevance in the model.

Conclusions
The study provides essential information on nutritional status in a large representative cohort of European PD patients. It identifies patient inherent and treatment dependent nutritional outcome predictors. BCM measurement enables clinicians to obtain objective data on patient's body composition regarding fat tissue, lean tissue, and fluid status in routine clinical practice to optimize PD therapy and patient outcomes.

O-8

TWENTY-FOUR-HOUR ULTRAFILTRATION EFFICIENCY OF COMBINED GLUCOSE AND ICODEXTRIN PERITONEAL DIALYSIS (PD) SOLUTIONS

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Recent clinical studies by Freida et al (PDI 2007 & KI 2008) have shown that use of low-sodium bimodal PD solutions (glucose & icodextrin combination) can be used to increase 24-hr sodium removal and ultrafiltration (UF) efficiency (UF volume per gram of carbohydrate or CHO absorbed) during automated PD (APD) therapy. We used computer simulations to evaluate whether higher UF efficiency could be achieved by (A) using bimodal solutions during the long dwell or (B) increasing glucose concentrations during short dwells, when all solutions contained sodium at conventional concentrations (132 mEq/L).

The three-pore model has been shown to accurately predict peritoneal transport for bimodal PD solutions (Galach et al, PDI 2009) and was used here to calculate 24-hr UF volume and CHO absorption for high, high-average, and low-average transport APD patients. Night-time therapy consisted either of (A) only 1.36% glucose (G) or (B) 1.36% / 2.27% G solutions, and day-time therapy consisted either of (A) a bimodal solution (2.27% G + 7.5% icodextrin) or (B) Extraneal®.

As expected, addition of G either to the long dwell or short dwells resulted in increased UF volume (mean increase of three patient types, A: 380 & B: 331 ml) and G absorption (mean increase, A: 37.2 & B: 24.6 g). However, 24-hr UF efficiency for all patient types was higher when high G concentrations were used during short dwell exchanges than when using bimodal PD solutions (mean increase, A: 0.5 vs. B: 1.1 ml/g). These modelling studies suggest that APD therapies using bimodal PD solutions do not provide higher 24-hr UF efficiency beyond that achievable with conventional PD solutions. Disparities between these simulations and previous clinical findings may be due to relatively less known kinetics of solutions with low dialysate sodium concentrations or atypical patient characteristics.

O-9

THE EXTRACELLULAR WATER CORRECTED FOR HEIGHT PREDICTS TECHNIQUE SURVIVAL IN PERITONEAL DIALYSIS PATIENTS

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Chronic fluid overload (FO) is frequently present in peritoneal dialysis (PD) patients and often together with technique failure. In the present study, we investigated whether an increased extracellular water (corrected for height) predicted technique survival (TS) in PD patients.

Patients and Methods

Ninety-five prevalent PD patients from one center (mean age 50±13 years, 10 of them diabetic) were studied. Extracellular water(ECW), total body water and intracellular water were measured by multi-frequency bioimpedance analysis (m-BIA). Echocardiography was performed in all patients.Volume status was also evaluated by measuring left atrium diameter(LAD) and left ventricular end-diastolic diameter(LVEDD). Demographical, biochemical analyses (serum albumin and C-reactive protein), Peritoneal equilibration test (PET), weekly total Kt/V urea and weekly total creatinine clearance (CCr) results were obtained from patient charts. We identified a cut-off value for ECW/height by drawing ROC curves which discriminate patients with FO and those without, using LAD and LVEDD measured by echocardiography as confirmatory parameters. Mean follow-up was 19±9 months. Technique survival was assessed at the end of the follow-up and significant predictors of TS were investigated.

Results

In correlation analysis, the ratio of ECW/height was positively correlated with age, cardiothoracic index, systolic blood pressure, diastolic blood pressure, serum C-reactive protein, LAD and left ventricular mass index and negatively correlated with weekly total Kt/Urea. In ROC analysis, we found a cut-off value for ECW/height of 10.48 liters/m with 78% specificity for the diagnosis of FO. At follow-up ,24 patients had transferred to hemodialysis.Patients with the ratio of ECW/height values were above the cut-off values(n=31) had a 30-month TS of 58.1% compared to 82.8% in patients with below the cut-off value(n=64) (p=0.04). In multivariate analysis, only two factors- serum C-reactive protein and ECW/height ratio- were significant predictors of TS.

Conclusion

Increased extracellular water corrected for height as a hypervolemia marker is associated with decreased TS in PD patients.

O-10

LONGITUDINAL ANALYSIS OF SOLUTE AND FLUID TRANSPORT IN PERITONEAL DIALYSIS PATIENTS: THE CONVENTIONAL VERSUS A MORE BIOCOMPATIBLE PD SOLUTION

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Introduction

In long-term PD alterations of the peritoneum can occur, like diabetic neovascularisation and fibrosis, resulting in UF failure (UFF) and peritoneal sclerosis. These alterations are mainly determined by PD treatment. High glucose levels, glucose degradation products (GDP)s, and lactate buffer can influence the magnitude of the local response to peritoneal injury by PD and affect transport characteristics. Therefore, more "biocompatible" solutions with a higher pH and less GDPs have been developed. The aim was to analyze the relative importance of bio-incompatible PD solutions during follow-up.

Methods

We studied a single-center cohort of consecutive incident PD patients who started with PD from 1994 until censoring in 2007. Patients had at least one and a maximum of five modified 4-hour 3.86% peritoneal function tests (SPAs) available, done once yearly. The design was longitudinal with repeated measures over time. Patients were prescribed (intention-to-treat ≥3 months) either conventional (Dianeal® n=138) or more biocompatible dialysis fluids (Physioneal® n=64). There was a gradual transition from Dianeal® to Physioneal® between 2000 and 2004. A linear mixed model for repeated measurements was used to analyze the data on solute and fluid transport.

Results

Fluid transport by means of transcapillary ultrafiltration, free water transport and solute coupled water transport showed a gradual decrease in both groups, but all remained more stable using Physioneal®. MTAC creatinine showed a U-shaped trend in the Dianeal® group. A gradual decrease was present with Physioneal®. The time-course of the two groups was different (p=0.01). Effluent CA125 decreased gradually, but remained at a higher level in the Physioneal® group.

Conclusion

Most likely, Physioneal® shows a better preservation of the peritoneal membrane, as judged from the decreasing trend in solute transport, suggesting less development of neoangiogenesis, and the higher levels of effluent CA125. The similar results for fluid transport underline its similar osmotic efficacy.

O-11

FREE WATER TRANSPORT IN CHILDREN ON PERITONEAL DIALYSIS VARIES WITH DIFFERENT TYPES OF DIALYSIS SOLUTION AND WITH TIME ON PERITONEAL DIALYSIS

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Background

Water transport in peritoneal dialysis (PD) occurs through small pores and waterchannels. Free water transport (FWT) occurs through waterchannels only. In this study FWT in children is quantified under different circumstances for the first time using the magnitude of the dip in the dialysate/plasma ratio (D/P) of sodium.

Aim

To directly calculate FWT in children, comparing different settings.

Methods

93 peritoneal equilibrium tests (PETs) were analyzed in 3 groups: group 1A (n=32) consisted of the PETs performed in patients the first half year on dialysis, group 1B (n=34) consisted of PETs performed in the 2nd year on dialysis and the PETs in group1C (n=27) were performed in the 3rd year on dialysis or thereafter. In each group lactate buffered glucose-solution (Dianeal® 3.86%) was compared with lactate/bicarbonate buffered glucose-solution (Physioneal® 3.86%). Sixteen patients using Physioneal 3.86% were followed longitudinally for at least three years (group 2). Total fluid transport, lymphatic absorption, sodium transport, D/P of sodium and FWT were calculated.

Results

In group 1B the contribution of FWT in was significantly higher in patients using Physioneal compared to Dianeal (median 55% versus 40%). In group 1A and C this trend was also seen but did not reach significance. Transcapillary ultrafiltration was also significantly higher in the Physionealgroups compared to the Dianealgroups. In the longitudinal group FWT increased from 47% at start to 63% in the first year, and then declined again to 48% by the end of the third year.

Conclusions

The contribution of FWT is significantly higher when Physioneal is used compared to Dianeal, with the greatest difference in the second year. This can reflect a better preservation of aquaporins. Longitudinally an increase of the contribution of FWT in the first year is shown with Physioneal, and then a slow decline in the next years.

O-12

ENCAPSULATING PERITONEAL SCLEROSIS IN PATIENTS ON PERITONEAL DIALYSIS: A SINGLE-CENTER EXPERIENCE

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Introduction

Encapsulating Peritoneal Sclerosis (EPS) is a life-threatening complication of peritoneal dialysis (PD). The pathogenesis is not clear but it is suggested as multifactorial: PD fluids incompatibility, time on PD, peritonitis episodes, beta-blockers.

Methods

Analysis of the whole population treated on PD in one Center from 1979 to 2009.

Results

EPS was diagnosed in 22 out of 925 patients (15 men, 7 women. Prevalence: 2.4%. Incidence: 1 episode/104 patient-years). The mean age was 60±11 years (range 20-73), 8 were on APD, 9 on CAPD, 2 on HD and 3 transplanted. The median time on PD was 54 months (I&IIIQ: 39, 55). Eight patients (36%) were on PD for more than 84 months (I&IIIQ: 127, 203) and 4 patients (18%) for 36 months or less. Diagnosis was done in 3 patients 6, 6 and 48 months after the kidney transplant. Eleven patients had used beta-blockers; all the three transplanted patients were on immunosuppressive therapy with calcineurin inhibitors. Therapy: in 13 patients steroid and in 2 steroid+Tamoxifen (10-20 mg q.d.). At the end of follow-up: 5 patients have a functioning transplanted kidney, 2 are on HD (time from diagnosis of EPS: 21 and 135 months), 15 were dead at a mean age of 68±7 years with a median time lag from the diagnosis of EPS of 19 months (I&IIIQ: 4, 50; range 0-77). The median patient survival was 27 months after diagnosis of EPS. A better survival, but not-significant, was seen in those patients treated by steroid (median survival time 50 months vs. 7.5 of those not treated; p=0.104).

Conclusions

Incidence of EPS is low. However, it must be considered in the differential diagnosis of abdominal complications in all PD patients and in transplanted or on HD patients, coming from PD. Therapy with steroids seems play a positive role on patient survival.

O-13

DEVELOPMENT OF A UREMIC PERITONEAL INFUSION RAT MODEL FOR ENCAPSULATING PERITONEAL SCLEROSIS

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Background
Encapsulating peritoneal sclerosis (EPS) is a severe complication of long-term peritoneal dialysis (PD). Currently available rodent models for EPS are based on chemical irritation of the peritoneum, in stead of clinically relevant factors such as uremia and exposure to PD fluids. The aim of this study was to develop a uremic rat model for EPS based on exposure to PD fluids.

Methods
18 male Wistar rats received a peritoneal catheter and underwent a 70% nephrectomy. Because long-term peritoneal exposure to a dialysis solution alone does not induce EPS in rats, a low concentration of chlorhexidine gluconate / ethanol (CHGE; 0.025% / 3.6%) was added. The rats were randomly divided into three groups. Group 1 was infused with Dianeal (3.86%) + CHGE (n=6). Group 2 received Buffer (Physioneal without glucose) + CHGE (n=6) and group 3 received Dianeal alone (n=6). All rats were infused daily with 20 ml for 8 weeks. Afterwards a peritoneal permeability test was performed and omental tissue was obtained for morphometrics.

Results
The peritoneal permeability tests of both CHGE groups showed high glucose absorption (95-97%), ultrafiltration failure, impaired free water transport, severe fibrosis and high vessel counts. No differences were present between these two groups. The group that was infused with Dianeal alone showed normal glucose absorption (69%), normal ultrafiltration and free water transport, and significantly lower fibrosis scores and vessel counts.

Conclusion
Fast peritoneal transport, ultrafiltration failure, impaired free water transport, severe fibrosis and high vessel counts are abnormalities seen in EPS that can be induced in a uremic peritoneal infusion rat model. However, there was no difference between the Dianeal + CHGE group and Buffer + CHGE group, meaning that the addition of a conventional dialysis solution had no contributing role. This is probably due to the CHGE that overrules the effects of the dialysis solution. Therefore the dose of CHGE will be reduced in future studies.

O-14

CHARACTERIZATION OF PERITONEAL ALTERNATIVELY ACTIVATED MACROPHAGES (AAM): IMPLICATIONS FOR A ROLE IN PERITONEAL MEMBRANE FIBROSIS

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Introduction and Aims
Peritoneal dialysis may lead to peritoneal fibrosis, which ultimately determines the functional status of the peritoneum. Peritoneal infections and dialysate composition are among the determinants of peritoneal outcome. Peritoneal macrophages have not been definitively associated with defensive capacities against infections in peritoneal dialysis treated patients. This suggests that peritoneal macrophages might have developed other functions such as those presented by alternatively activated macrophages (M2/AAM), whose ability to participate in organ fibrosis has been demonstrated.

Methods
We used flow cytometry, RT-PCR and qRT-PCR to analyze the phenotype of peritoneal effluent macrophages in peritoneal dialysis patients, and tested their ability to stimulate the proliferation of the human fibroblast cell line IRM90 as well as primary human fibroblasts. We have compared peritoneal macrophages from non-infected patients with those from patients with active peritonitis.

Results
The results are consistent with the presence of M2/AAM in the peritoneum and suggest that different subpopulations of M2/AAM may participate in peritoneal fibrosis through the production of profibrogenic cytokines and chemokines and to stimulate fibroblast cell growth. In this sense, high concentrations of CCL18, a hallmark of M2/AAM, were associated to functional deficiency and fibrosis of the peritoneal membrane. CCL18 protein levels correlated with D/P of creatinine. These data were consistent with significantly increased levels of CCL18 in patients with ultrafiltration failure. Moreover, CCL18 concentration was found to be further increased in effluents from those patients that latterly developed encapsulating peritoneal sclerosis.

Conclusions
Alternatively activated macrophages are present in peritoneal efluent in PD patiens and may participate in peritoneal fibrosis. High concentrations of CCL18 were associated to functional deficiency and fibrosis of the peritoneal membrane in these patients.

O-15

REDUCED RESIDUAL RENAL FUNCTION IS ASSOCIATED WITH ENDOTHELIAL DYSFUNCTION IN PATIENTS UNDERGOING PERITONEAL DIALYSIS

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Background
Endothelial dysfunction is a key contributor to the development of atherosclerosis and is common in patients with chronic kidney disease (CKD). Traditional and non-traditional risk factors can adversely influence endothelial function in this population. However, the effect of residual renal function (RRF) on endothelial dysfunction has not been explored. This study aimed to elucidate whether endothelial function is affected by RRF in patients on peritoneal dialysis (PD).

Methods
This study is a cross-sectional study with 72 patients undergoing PD. To identify factors associated with endothelial function, demographic and clinical data were recorded and residual GFR, Kt/V, high sensitive CRP (hsCRP), IL-6, and 8-isoprostane were measured. Endothelial function was assessed by brachial artery endothelium-dependent vasodilation [flow mediated dilation (FMD)] to reactive hyperemia following 5 min of forearm ischemia.

Results
The mean age was 48.5±11.3 years and male were 44.4%. The mean PD duration was 79.0±51.4 months and residual GFR and Kt/V were 0.83±1.79 ml/min/1.73mm^2 and 2.08±0.39 respectively. In patients with FMD level above median value (FMD>2.45%), PD duration was significantly shorter (64.9±50.6 vs. 93.1±48.8 months, p<0.01) and residual GFR was significantly higher (1.4±2.3 vs. 0.3±0.7 ml/min/1.73mm^2, p<0.05). However, patients with higher FMD levels showed a trend for lower levels of hsCRP, IL-6 and 8-isoprostane without statistical significance. In addition, residual GFR (r=0.402, p<0.01) and Kt/V (r=0.249, p<0.05), were positively correlated with FMD levels whereas PD duration (r=-0.346, p<0.01) and age (r=-0.409, p<0.01) were negatively correlated. After adjustment of age, residual GFR, Kt/V, PD duration, residual GFR was identified as a significant determinant of FMD (β=0.393, p<0.01).

Conclusion
In conclusion, this study revealed that RRF was independently associated with endothelial function in patients receiving PD. Our finding provides a rationale for the preservation of RRF as a strategy of reducing cardiovascular morbidity and mortality in patients with ESRD.

O-16

EFFECTS OF BICAVERA® DIALYSATE FOR PERITONEAL DIALYSIS ON THE EPITHELIAL-TO-MESENCHYMAL TRANSITION (EMT) OF THE MESOTHELIAL CELL (MC)

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Bv has less impact on EMT of MC in vitro. We have hypothesized that Bv may also reduce the manifestations of EMT of MC from peritoneal effluents grown ex vivo.

Patients and Methods
After being randomly selected, patients were treated with conventional PD fluid (C; n=20) or BicaVera® (BV; n=11; both solutions from Fresenius Medical Care on CAPD. C vs. BV follow up: baseline 20/11, 6 months 20/11, 12 months 18/11, 18 months 11/11, 24 months 3/5. Small solute and water transport capacities were determined during a 4-hour dwell (4.25% glucose dialysate). MCs from overnight effluent were seeded and grown ex vivo until confluence was reached. VEGF, IL-8 and TGF-β levels in the supernatant (pg/mg cell protein) and fibronectin and procollagen levels (ng/mg cell protein) in cell extracts were measured by ELISA. ICAM-1 expression was used as a marker for mesothelial nature of cells. EMT of MCs was defined by non- epitheloid morphology and higher content of fibronectin.

Results
BV was associated with increased small solute transport (p<0.0001) and lower initial UF (p<0.0001). Furthermore, Bv use was associated with a trend to better preservation of residual renal function (only first semester). The frequency of non- epitheloid phenotype at long-term (18-24 month) was significantly lower in BV (p<0.0001). Non-epitheloid phenotype was associated with higher VEGF (p<0.04) and fibronectin (p<0.001) levels. C but not BV showed a progressive increase of VEGF (p<0,001) and IL-8 (p<0.0001) over time. MC-EMT parameter (phenotype) and IL-8 levels were favorably different for BV fluid relative to C at medium-term. There was no difference in procollagen, fibronectin and TGF-β levels between groups.

Conclusion
BicaVera® showed better biocompatibility than high-GDPs fluid ex vivo in terms of EMT of MCs, consistent with data obtained previously in vitro. Further studies including more patients are required to confirm these results.

O-17

FUNCTIONAL RELEVANCE OF VEGF (VASCULAR ENDOTHELIAL GROWTH FACTOR) AND VEGF RECEPTORS (VEGFRS) SWITCH DURING PERITONEAL DIALYSIS-INDUCED EPITHELIAL MESENCHYMAL TRANSITION (EMT) OF MESOTHELIAL CELLS

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Objectives
Peritoneal dialysis (PD) induces EMT of mesothelial cells (MCs), which is associated with upregulation of VEGF. The switch of VEGF and VEGFRs during EMT of MCs are unknown. Our hypothesis is that EMT induces changes in VEGFRs expression pattern in MCs that will determine their behaviour in terms of proliferation and invasion in response to VEGF.

Methods
We included 34 patients on PD therapy and 50 samples of MCs from their effluents with fibroblast-like phenotype (25) and epithelial phenotype (25). As control cells we used human peritoneal MCs from omentum (10 samples) from health donors in which EMT was induced or not with rh-TGF-beta and IL-1beta. We analyzed VEGFRs (VEGFR-1, 2, 3), correceptors (neuropilin-1, 2) and semaphorin-3A mRNA expression by qPCR. Neuropilin-1 expression in biopsy samples by immunohistochemistry and supernatant VEGF production by ELISA. Invasion assays were performed on collagen I coated transwells and proliferation assays by ^{3}H timidine incorporation.

Results
During EMT ex vivo and in vitro MCs showed an upregulated expression of VEGF and a downregulation of semaphorin3A, a negative regulator of VEGF signaling. In addition, during transdifferentiation of MCs there was a decreased expression of VEGFR-1, VEGFR-2 and an increase of neuropilin-1. We confirmed increased expression of Neuropilin-1 in biopsies by immunohistochemistry. The VEGFR-3 and neuropilin-2 did not change significantly. Supernatant VEGF levels correlated with VEGFRs mRNA levels. As a result, MCs showed an enhanced invasion capacity during EMT in vitro and ex vivo, which was blocked by rh-Sema3A, anti-VEGF and anti-neuropilin-1 antibodies. Furthermore, anti-VEGF antibodies reduced proliferation of control MCs and epithelioid MCs but had no effect on fibroblast-like MCs.

Discussion
Our results demonstrate that EMT changes the expression pattern of VEGFRs and correceptors. This alters MCs capability to proliferate and to invade submesothelial stroma. These findings open new therapeutic targets to block EMT- induced fibrosis.

O-18

RELATIONSHIP BETWEEN SOLUTE TRANSPORT STATUS AND INFLAMMATORY CYTOKINES IN PERITONEAL DIALYSIS

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Introduction
A few studies have suggested a link between IL-6 levels and peritoneal solute transport rate (PSTR), but they have been limited by examining only local or systemic levels, or incident or prevalent cohorts, restricted numbers, and testing single centres. IL-1 and TNF-α have also been tested, but inflammatory cytokines have not been systematically examined. We present the initial results from the Global Fluid Study addressing these issues.

Methods
559 incident and 363 prevalent patients from 10 centres in the UK, Canada and Korea had plasma and 4-hour dialysate samples assayed by electrochemiluminescence using a commercial kit (Meso Scale Discovery Pro-Inflammatory Multiplex I). Clinical data stored in an Access database was combined with cytokine levels and extracted to SPSS 17. As some cytokines had a substantial number of values below the limit of detection, 1 was added prior to log transformation, obtaining a normal distribution for plasma γ-IFN, TNF-α and IL-6 and dialysate IL-6. IL-1β remained significantly skewed.

Results
In a multivariate general linear model significant associations for incident patients were centre effect and dialysate IL-6 ($p<0.001$, partial η-squared=0.154 and 0.112), systolic BP, gender, urine volume and day of PET ($p<0.01$, partial η-squared=0.015, 0.011, 0.024 and 0.021). For prevalent patients, centre effect and dialysate IL-6 remain strongly associated ($p<0.001$, partial η-squared=0.126 and 0.119) whilst gender and albumin remain significant ($p<0.03$ and 0.015, partial η-squared=0.022 and 0.018). Plasma cytokines and other dialysate cytokines were not associated.

Conclusion
Dialysate IL-6 is more strongly associated with PSTR than any covariates described to date, and is independent of centre effects seen for all of these. The centre effect has not been described before, and must be considered when comparing different single centre studies of peritoneal transport.

O-19

ULTRASONOGRAPHIC EVALUATION OF PERITONEAL MEMBRANE THICKNESS AND COMPARISON WITH THE DURATION AND EFFECTIVENESS OF PERITONEAL DIALYSIS

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Introduction
The aim of this study was to determine the morphological changes by USG on peritoneal dialysis (PD) patients and to compare these changes with the duration of PD and functional properties of peritoneum.

Material And Methods
15 male and 9 female PD patients with a mean age 45,13 ± 13,21 were included in the study. Mean PD duration was 36.20 ± 27.57 months. Patients with a history of surgery involving the peritoneum and abdomen and with a history of peritonitis in last 3 months were excluded. We examined the parietal peritoneum of fasting patients in the supine position by trans-abdominal ultrasonography. We indwelled at least 1500 mL of dialysate inside the peritoneal cavity and measured peritoneal thickness at three different ventral windows: Right upper quadrant (RUQ), left upper quadrant (LUQ) and lower quadrant (LQ).

Results
Mean thicknesses of each quadrant were as follows: RUQ: 0,68 ± 0,19 mm, LUQ: 0,68 ± 0,18 mm, LQ: 0,66 ± 0,25 mm. Mean Kt/V value was 2.12 ± 0,47 and mean nPCR (negative protein catabolic rate) value was 1.03 ± 0.26. Mean creatinine clearance (CrCl) was 68,13 ± 24,15 L/week. We found statistically significant positive correlation between PD duration and peritoneal thicknesses in both three quadrants (RUQ: r=0,692, p<0,001; LUQ: r=0,426, p<0,05; LQ:r=0,524, p<0,001). There were significant negative correlations between RUQ and Kt/V and CrCl (respectively; r= -0,530, p<0,01 and r=-0,712, p<0,001) and between LUQ and Kt/V and CrCl (respectively; r=-0,474, p<0,05 and r=-484, p<0,05). There were not any significant correlations with nPCR.

Discussion
Long PD duration may cause to peritoneal thickening. Increased peritoneal thickening is related with low Kt/V and CrCl. Ultrasound may be helpful for evaluating peritoneal thickening. It may help as a predictive method for the duration of PD life by helping to correlate peritoneal thickness with PD parameters.

O-20

HUMAN γδ T CELLS DRIVE THE ACUTE INFLAMMATION IN BACTERIAL INFECTION: IMPLICATIONS FOR PD-RELATED PERITONITIS

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Introduction
Episodes of PD-related peritonitis with severe morbidity are often associated with bacteria that produce the low molecular weight metabolite HMB-PP, which activates Vγ9/Vδ2 T cells in vitro at subnanomolar concentrations. We examined here whether infections caused by HMB-PP producing organisms lead to activation of Vγ9/Vδ2 T cells in vivo.

Methods
Eight-colour FACS was used to assess the cellular composition of the inflammatory infiltrate and expression of activation, memory, migration, and APC markers. Soluble mediators were detected by multiplex ELISA. Patients were grouped into HMB-PP^{-} and HMB-PP^{+} infections according to positive microbiological cultures and/or 16S rRNA sequencing.

Results
Acute peritonitis was marked by a rapid increase of peritoneal leukocytes, which was mainly attributable to a pronounced influx of neutrophils and monocytes/macrophages. However, we also observed increased numbers of T cells, including Vγ9/Vδ2 T cells. Frequencies of Vγ9/Vδ2 T cells were higher in patients with HMB-PP^{+} infections, compared to HMB-PP^{-} infections, implying selective recruitment and/or local expansion in response to HMB-PP-producing bacteria. Peritoneal effluent from patients infected with HMB-PP^{+} pathogens also contained elevated levels of inflammatory mediators such as TNF-α, TRAIL, IL-6, and CXCL10, compared to HMB-PP^{-} infections. These observations were backed up by extensive in vitro experiments demonstrating a rapid and HMB-PP dependent crosstalk between purified γδ T cells, monocytes and neutrophils that resulted in enhanced survival of monocytes and neutrophils, production of inflammatory mediators, and differentiation of monocytes into inflammatory dendritic cells capable of triggering antigen-specific CD4^{+} αβ T cells expressing IFN-γ and/or IL-17.

Discussion
Our findings provide evidence for Vγ9/Vδ2 T cell activation by HMB-PP^{+} pathogens during acute infection, and suggest a role for Vγ9/Vδ2 T cells in driving early inflammatory responses. As the capacity of bacterial pathogens to produce HMB-PP correlates with morbidity in PD-related peritonitis, our findings have direct implications for rapid diagnosis and therapeutic intervention.

P-1

DIFFERENTIAL PRODUCTION OF NEUTROPHIL-GELATINASE-ASSOCIATED-LIPOCALIN BY MESOTHELIAL CELLS UPON EXPOSURE TO DIFFERENT PERITONEAL DIALYSIS FLUIDS

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Daily exposure to peritoneal dialysis fluids (PDF) activates peritoneal cells which will secrete chemokines and cytokines involved in inflammation, fibrosis and angiogenesis. Over the past years more biocompatible solutions have been developed to improve peritoneal performance. To better understand the influence of PDF on peritoneal damage, we have set up a genome approach to select genes associated with inflammation and tissue remodelling during PD. Rats were daily instilled with 10 ml of conventional or bicarbonate/lactate-buffered PDF (Dianeal® or Physioneal®, 3.86, Baxter, the Netherlands), via an intra peritoneal access port. Untreated animals served as control. After 5 weeks, a peritoneal equilibrium test (PET) was performed and effluents were collected. RNA was isolated from the mesothelial layer of the parietal peritoneum and RNA micro-array analysis was performed.

Analysis of the immunity and defence pathway showed enhanced gene expression in Physioneal treated animals compared to control, whereas gene expression was impaired after Dianeal treatment. Unclustered analysis of genes revealed neutrophil-gelatinase-associated-lipocalin (NGAL), one of the genes involved in this pathway, to be up-regulated in Physioneal and down-regulated in Dianeal treated rats. Cultured mesothelial cells showed time-dependent production of NGAL, and synthesis increased after exposure to Physioneal but decreased after Dianeal exposure. PET effluents contained higher concentrations of NGAL without differences between the Dianeal and Physioneal groups, which can be explained by NGAL-positive neutrophils in both groups. Current research is directing at the mechanism behind differential regulation of NGAL in mesothelial cells upon exposure to PDF and its potential role in PD-related changes.

Our micro-array data indicate that Dianeal induces damage to mesothelial cells leading to impaired immunity and defence, whereas the more physiological Physioneal enhances this pathway. In accordance NGAL synthesis of mesothelial cells is differentially affected by these PD solutions. Therefore NGAL is an interesting candidate in the study of the mesothelial response to different PDF.

P-2

VITAMIN D RECEPTOR ACTIVATION STATUS INFLUENCES PERITONEAL FUNCTION AND REMODELLING IN EXPERIMENTAL PERITONEAL DIALYSIS

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Peritoneal dialysis (PD) is associated with functional and structural alterations of the peritoneal membrane. Vitamin-D-receptor (VDR) activation plays an important role in inflammation and is described as both anti-angiogenic and anti-fibrotic. Vitamin-D activation takes place in the kidney, regulated by parathyroid hormone. Due to renal failure, this process is impaired in PD patients. We therefore studied the effects of VDR modulation on function and morphology of the peritoneal membrane in control and PD treated rats.

VDR modulation was done in rats by a) oral VDR activator paricalcitol (Abbott; 0.04 mg; 3 times/week); b) parathyroidectomy (PTX); c) paricalcitol+PTX; and d) no treatment. Half of the animals of each group were daily instilled with 10 ml PD fluid (Dianeal 3.86, Baxter) via an intra-peritoneal access port. After 5 weeks, a peritoneal equilibrium test was performed and blood, peritoneal cells and tissues were collected.

PD-treatment significantly reduced ultrafiltration, but was partially prevented by paricalcitol and significantly worsened upon PTX. PD fluid exposure induced tissue remodelling such as a significant increase in cell influx, MCP-1, hyaluronic acid, fibrosis and angiogenesis. Cell numbers as well as MCP-1 increased even further by paricalcitol treatment, whereas fibrosis and hyaluronic acid levels were significantly suppressed in both PD+paricalcitol and PD+PTX groups. PD-induced angiogenesis in omentum was prevented by paricalcitol treatment.
In the four non-PD treated groups no effect of paricalcitol or PTX on tissue remodelling or inflammation was found.

Our data indicate that VDR activation status is a determinant of peritoneal function and tissue remodelling in experimental PD. Besides the capacity to maintain the vitamin D metabolism, oral paricalcitol treatment prevented tissue remodelling features leading to improved peritoneal performance and is therefore potentially relevant in chronic PD.

P-3

IMPACT OF ORAL SULODEXIDE IN A RAT MODEL OF PERITONEAL PERFUSION

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Changes occurring in the peritoneal membrane (PM) during peritoneal dialysis are comparable to those of diabetes mellitus, and mainly consist of fibrosis and neo-angiogenesis. The glycosaminoglycan 'sulodexide' has been related to improvement of proteinuria and cardiovascular disease in diabetes. Small experiments with oral, intraperitoneal (humans) or subcutaneous (animals) administration of sulodexide demonstrated a beneficial impact on functional and morphological properties of the PM. As oral administration would be the easiest and cheapest route, this study wanted to analyze the effect of oral sulodexide in long term peritoneal function and morphology in a rat model of peritoneal perfusion.

Female Wistar rats (chronic controls,CC,N=20) received twice daily 10ml 3.86% glucosedialysate. Another group (sulodexide group,S,N=23) received in addition 5 mg sulodexidepowder/day, mixed in their chew. A third group (acute controls, AC, N=6) was sham treated. Blood samples were obtained at baseline and after 4,8 and 12 weeks. After 12 weeks, PET-tests were performed and samples of the PM were obtained for histology.

The results of the PET didn't show convincing differences between the 3 groups.

	Time (minutes)	'AC'	'S'	'CC'
D/P_{Urea}	30	0.52±0.049	0.60±0.102	0.61±0.086
	60	0.68±0.064	0.69±0.070	0.74±0.063
	240	0.98±0.004	0.97±0.044	0.99±0.017
$D/P_{Creatinine}$	30	0.34±0.041	0.40±0.067	0.44±0.045
	60	0.44±0.003**	0.50±0.037*	0.54±0.039
	240	0.79±0.076	0.84±0.049*	0.89±0.058
$D/D_{0Glucose}$	30	0.58±0.010	0.52±0.059	0.49±0.051
	60	0.43±0.022	0.40±0.037	0.37±0.030
	240	0.16±0.023	0.15±0.03	0.13±0.02
D/P_{Sodium}	0	0.91±0.011	0.90±0.013	0.91±0.019
	30	0.82±0.025	0.83±0.024	0.83±0.019
	60	0.80±0.010	0.82±0.017	0.83±0.014
	240	0.93±0.001	0.92±0.027	0.94±0.015
$Ultrafiltration_{Netto}$(ml)	30	4.81±0.453	5.04±0.485	5.08±0.297
	60	8.17±0.594	7.07±0.543	6.81±0.336
	240	14.83±0.177•	11.68±1.608	11.212±1.365

*P<0.01 vs CC,**P<0.001 vs CC&S, *P<0.05 vs CC,•P<0.0001 vs CC&S

Histologically, no pronounced differences of the visceral PM were found between the CC and the S-group.

The protective effect of oral sulodexide on peritoneal transport appears negligible in this rat model. No positive effect was seen for ultrafiltration or histologically. Either sulodexide is not effective or other routes should be used.

P-4

IMPORTANT DIFFERENCES IN PERITONEAL EQUILIBRATION TEST RESULTS

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During acute animal experiments, intravenous hydration is necessary to avoid deshydratation. As peritoneal transport might be dependent upon hydration status of the animal, the hydration regimen should be kept constant. During a modified PET in animal studies, mostly physiologic saline is used as hydration solution. However, studies do mostly not describe their hydration protocol. We hypothesized that the type and intensity of hydration fluid used might influence the results of a rat PET test.

Wistar rats were randomised to PET A (hydration with 5% glucose solution, 2.5ml/hour;n=12) or PET B (hydration with isotonic saline,5ml/hour;n=16). After 30 minutes, a silicone catheter was inserted in the abdomen and 15 ml of 3.86% Dianeal was infused. Plasma (P) and dialysate (D) samples were collected at t=0,30,60 and 120 minutes for calculating D/P ratio's. After 120 minutes, the abdomen was opened for collection of the rest of the dialysate. D/P_{Urea}, $D/D_{0\ Glucose}$ and blood pressure were not significantly different.

	Time (minutes)	PET A	PET B	P value
$D/P_{Creatinine}$	30	0.30±0.042	0.31±0.033	NS
	60	0.35±0.064	0.43±0.028	0.002
	120	0.45±0.088	0.58±0.038	<0.001
D/P_{Sodium}	0	0.89±0.014	0.88±0.010	NS
	30	0.81±0.019	0.79±0.012	NS
	60	0.82±0.016	0.79±0.018 0.018	<0.001
	120	0.87±0.025	0.82±0.016	<0.001
$D/P_{Potassium}$	30	0.62±0.032	0.55±0.048	<0.001
	60	0.76±0.056	0.69±0.046	0.001
	120	0.85±0.057	0.79±0.025	<0.001
$Ultrafiltration_{Netto}$(ml)	120	9.49±0.678	9.78±0.633	NS

Results are different when low volume glucose 5% or high volume physiologic saline are used as rehydration solution. The higher transport rate of small solutes in the higher volume group could be expected, as better hydration results in better perfusion, and thus vascular recruitment. The prolonged sodium sieving as a hallmark of free water clearance over the aquaporins demonstrates that free water clearance is not only dependent upon aquaporin function per se, but also on capillary perfusion. Hydration status should be taken into account in the interpretation of PET results.

P-5

GLUCOSE DEGRADATION PRODUCTS MEDIATE SYSTEMIC TOXICITY IN PERITONEAL DIALYSIS

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Introduction
It is known that glucose degradation products (GDP) impair the peritoneal membrane locally and are moreover resorbed by the peritoneum into the systemic circulation.

Here we examined in subtotally nephrectomized (SNX) rats whether GDP affect the remnant kidney and cardiovascular system, too.

Methods
Sprague-Dawley (SD) rats were randomly assigned to a two-stage SNX or sham operation and were left untreated for 3 weeks. SNX+GDP group received chemically defined GDP by an osmotic mini-pump intravenously for 4 weeks; the SNX and the sham operated groups remained without GDP. The complete follow-up for all groups was 7 weeks post-operatively.

Results
In SNX+GDP group the expression of carboxymethyllysine in the kidney and the cardiovascular system was significantly higher compared to the SNX rats. The same was true for apoptosis marker Caspase 3 where a pronounced increase in the SNX+GDP animals could be observed in the kidney and the cardiovascular system.

Higher serum levels of oxidative stress markers, namely reactive oxygen species and advanced oxidation protein products could be observed in the SNX+GDP animals, moreover we found a more pronounced expression of oxidative stress shown by measurement of endothelial nitric oxide synthase in the aorta.

The SNX+GDP animals revealed a significantly higher index of glomerulosclerosis and tubulointerstitial damage, as well as significantly higher levels of albumin excretion. In this context we observed an increased expression of the podocyte damage marker desmin in the SNX+GDP group in comparison to the SNX animals.

Conclusion
Besides local toxic effects GDP cause systemic toxicity. Here we showed that in SNX rats the administration of GDP increased kidney and cardiovascular damage; in particular we found increased levels of AGE, apoptosis, oxidative, and podocyte damage. Whether these findings are of clinical relevance has to be further investigated.

P-6

WHAT ADDITIONAL IMPACT DOES END STAGE RENAL FAILURE (ESRF) HAVE IN PATIENTS WITH HEART FAILURE AND NORMAL EJECTION FRACTION (HFNEF)

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Introduction
Many patients with ESRF develop HFNEF. Whether their echocardiographic findings are comparable to hypertensive HFNEF patients with normal renal function is not known. We hypothesized that ESRF has an additional impact on the myocardial diastolic and systolic dysfunction.

Methods
17 peritoneal dialysis (PD) patients (9 female mean age 68±10years) and 17 age and gender matched hypertensive (HT) and HFNEF patients with normal renal function were recruited. Duration of HT: 12.2±10.6years in PD versus 11.8±10.1years in non-ESRF. Additionally a group of 17 age matched healthy control subjects were included. Full Doppler-2D-echocardiography and tissue-Doppler-Imaging were performed and images analysed off line (EchoPac-Software, GE). Left atrial volume index (LAVI) and LV mass index (LVMI) were derived from 2D images or M-Mode, respectively. Systolic (Sm_{colour}) and peak early diastolic annular velocities (Em_{colour}) were assessed by Colour-Tissue Doppler Imaging at the mitral annular level at septal, lateral, inferior and anterior wall and values averaged. Speckle tracking was performed tracking three cycles of apical short axis and 4-Chamber long axis images.

Results
NYHA class and mean blood pressure (MBP) were similar in both patients groups (NYHA II/III 11/6 in PD versus 10/7 in non renal HT patients, MBP 99±15 mmHg in PD versus 99±10 mmHg in non renal patients). PD patients showed a significantly higher LVMI (113.1±33.5 g/m² versus 81.3±29.6 g/m², p=0.012) than non renal HT patients. Inflow into the left ventricle (E/A ratio) and early diastolic function (Em_{colour}) were found to be reduced in PD compared to non renal HT patients (0.7±0.14 versus 0.87±0.2, p=0.008 and 4.1±1.1 versus 5.1±1.0, p=0.02 respectively.)

Conclusions
Both patient groups showed a reduced systolic and diastolic function compared to healthy controls. Peritoneal dialysis seems to be a sufficient treatment to prevent fluid overload since E/E´pw ratio as a surrogate parameter for left atrial pressure was comparable in both patients groups.

P-7

INCREMENTAL IMPAIRMENT OF LEFT VENTRICULAR LONGITUDINAL STRAIN AND DIASTOLIC FUNCTION ASSOCIATED WITH HYPERTENSION WITH OR WITHOUT LEFT VENTRICULAR HYPERTROPHY (LVH) IN CHRONIC KIDNEY DISEASE (CKD5) AND NORMAL RENAL FUNCTION

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Introduction
The early effects of hypertension and CKD on left ventricular function measured by global longitudinal strain and diastolic function before the development of left ventricular hypertrophy (LVH) are unclear. We studied hypertensive patients with and without CKD 5 on peritoneal dialysis (PD) and/or LVH using 2 dimensional (2D) speckle tracking and tissue Doppler Imaging (TDI).

Methods
24 hypertensive patients with LVH (65±17years,13 female, 12 CKD 5, BMI 28±5, LVEF 58±6%, LVMI 133±17), 43 with no LVH (70±12years, 27 female, 9 CKD 5, BMI 29±5, LVEF 59±8%, LVMI 77±19) and 30 healthy controls (67±7years, 22 female, BMI 24±4, LVEF 63±8%, LVMI 78±19) underwent full echocardiography. Apical four-chamber (4C) and two chamber (2C) images were used to study longitudinal strain with 2D speckle tracking. Global longitudinal strain was calculated from 4C and 2C data. Early diastolic velocity (E) and average septal and lateral annular diastolic velocities (E´) were recorded using pulse-wave Doppler and TDI. E/E´was used as a marker of diastolic function.

Results
There was incremental worsening of 4C and global longitudinal strain with and without LVH: 4C strain were -21.24±3.01 in controls, -19.82±2.57 in non LVH group and -17.57±4.11 in LVH group, p=0.003 (one way ANOVA). Global strain: -20.93±2.96 in controls, -19.49±2.29 in non LVH group and -17.60±3.47 in LVH group, p=0.002 (ANOVA). The same trend was observed for E/E: 8.14±1.98 in controls, 9.71±3.42 in non LVH group and 12.98±4.62 in LVH group, p=0.001. 4C strain, global strain and E/E´in CKD 5 patients with or without LVH were not significantly different when compared with their counterparts with normal renal function.

Conclusions
Hypertension with and without LVH is associated with impaired longitudinal strain and diastolic function. The incremental differences suggest a progressive left ventricular dysfunction that is present before the development of LVH. These observations were similar in CKD 5 patients.

P-8

ANKLE BRACHIAL INDEX IN PERITONEAL PATIENTS

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Peripheral artery disease (PAD) is highly associated with end-stage renal disease patients (pts). PAD is linked with high cardiovascular risk and is often unrecognized in such pts. Ankle Brachial Index (ABI) is a non-invasive method to diagnose PAD.

36 peritoneal dialysis (PD) pts were screened for subclinical PAD using ABI. Blood pressure(BP) was measured in the left arm and both ankle. Highest ankle SistolicBP/ highest brachial SistolicBP was used to calculate ABI. An ABI value greater than 0.9 was defined as normal. Subclinical PAD was defined as an ABI value less than 0.90 in either extremity. The ABI value was correlated with laboratorial data, functional parameters of peritoneum, Residual renal function (RRF) and clinical cardiovascular disease (CVD).

We studied 36 pts, with a mean age of 54±15.8 (33-77) years, 38,8% female and 19% diabetics. Mean follow-up time was 36±31 (3-165) months. 9 pts were classified into a subclinical PAD group. ABI<0.9 and >1.3 were present, respectively, in 4 (11%) and 5 (13,8%) pts. The prevalence of PAD (subclinical and overt) in our PD center was 35% (12/34). ABI was positively correlated with advanced age, pulse pressure, CVD and C reactive protein (PCR). ABI was negatively correlated with albumin and lower RRF. The PTHi, ultrafiltration failure, diabetes and duration of PD treatment were not correlated with ABI. ABI>1.3, which is the result of non compressible peripheral arteries in lower limbs, was associated with vascular calcifications observed in other peripheral arteries. Multivariate analysis show that ABI was associated with PCR, albumin and RRF.

ABI is correlated with age, CVD, albumin, PCR, and RRF in PD pts.

P-9
COMORBIDITY IN ELDERLY PERITONEAL DIALYSIS PATIENTS

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There is no consensus on the measurement of comorbid illnesses in dialysis patients. Comorbidity was scored according to Index of Coexistent Diseases (ICED), the Charlson Comorbidity Index (CCI), Cumulative Index Risk Scale (CIRS) and Davies indices.

The objective of the present study was to investigate correlation between ICED, CCI, CIRS and Davies indices with clinical and biochemical parameters in 99 PD patients.

Differences between subgroups (<65 and > 65 years old) were tested for significance using one-way ANOVA. Univariate associations of each instrument with other variables were assessed in separate logistic regression models. The interaction of incident status (3 months vs >3 months since start of dialysis) was tested with each comorbidity instrument to determine whether instruments performed differently in incident vs prevalent populations of each subgroup (<65 and > 65 years old).

Prevalent cohort of CAPD patients included 67 patients on chronic dialysis program, 25 (37,31%) of whom were older than 65 years. Mean dialysis duration was 16.9 + 16.7 months. Incident cohort of CAPD patients included 32 patients, 25 (37,31%) of whom were older than 65 years. Statistically significant difference between the two groups regarding age was not found (F test = 0.076, P >0.783).

With increasing comorbidity severity, measured by ICED, as well as CCI, CIRS and Davies indices, patients were older, and had diabetes. Increasing comorbidity severity was significantly correlated with decreasing serum albumin (p<0.001), increasing C-reactive protein (p<0,01), lower ultrafiltration (p<0,03), residual diuresis p<0,05), residual renal function (p<0,05) and normalized protein catabolic ratio (p<0,05). In the multivariate analysis, only serum albumin and CRP was associated with comorbidity measured by four comorbidity instruments.

In conclusion, hipoalbuminemia and inflammmation have statistically significant correlation with comorbidity derived from four comorbidity instruments. Identifying the key prognostic comorbid conditions may provide a practical means for widespread comorbidity assessment.

P-10
ARTERIAL HYPERTENSION IN PERITONEAL DIALYSIS

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Arterial hypertension (AHT) is a common complication in chronic renal disease. A better management in peritoneal dialysis (PD) prevents the hydro-sodium accumulation.

The Purpose of our study is to evaluate the AHT prevalence in PD patients, their therapeutics and to determine the patients 'evolution.

We realized a prospective study in the dialysis unit of Ibn Sina Hospital –Rabat between July 2006 and April 2009, including 24 patients in CAPD followed at least a month. We determined their clinical characteristics [AHT, leg oedema, diuresis, and peritoneal ultrafiltration(PUF)]. AHT was defined according to the WHO.

The mean age of our patients is 51,1 ±15,2 years (20 - 79). When PD started, AHT prevalence was 87,5 % with a systolic of 155± 18 mmHg and a diastolic of 86,6 ±12,3 mmHg. 45,8 % had leg oedema. The patients' diuresis were kept with a mean of 1497 ±556 ml/24h. Diuretics were used in 91%, enzym conversion inhibitors (ECI) in 81% of the cases. After a follow-up of 14,2 ±10,6 months, AHT prevalence decreased in a significant way (87,5% versus 45,8%, p=0,002) with a systolic of 134 ±19 mmHg and a diastolic of 78,3± 14,2 mmHg. Two patients had occasional leg oedema. The mean diuresis was 1452± 689 ml/24h and the mean PUF was 720± 484 ml/24h. The residual renal function (RRF) was ≥ 2ml/min in 87% of the cases. A hydric restriction was prescribed in oligo-anuric patients and a less sodium diet in all hypertensed patients. All were treated by diuretic with a dose between 40 mg and 1g/24h and 78,3% by ECI.

AHT is often volum-dependant in PD, this technique associated to dietetic measures participate to reduce the hydric accumulation. Besides diuretics, ECIs prevent the RRF.

AHT is a major complication in PD patients, imposing a correct dialysis and dietetic behaviour.

P-11
DYSPLIDEMIA IN PERITONEAL DIALYSIS

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Dyslipidemia is a high cardiovascular risk factor mainly in kidney disease treated by peritoneal dialysis (PD).

The purpose of the study is to evaluate the prevalence of dyslipidemia in PD patients, its therapeutics and to determine its evolution.

We realized a prospective study in the dialysis unit of Ibn Sina Hospital –Rabat between July 2006 and April 2009, including 24 patients in CAPD followed at least a month. We determined their clinical characteristics (overweight and obesity). Dyslipidemia has been defined for a TG rate >1,5g/l and/or HDL<0,4g/l and /or LDL>1g/l.

The mean age of our patients is 51,1 ±15,2 years (20 - 79). When PD started, 25% had an overweight and 8,3% had obesity. Dysplidemia prevalence was 82,6% with a mean rate of Total cholesterol (TC) of 1,69±0,51g/l; 1,42±0,92g/l of TG ; 0,37±0,12g/l of HDL and 1,08±0,43g/l of LDL. 25% among our patients were treated by a statine, and 4,2% by a fibrate. After an average medical follow-up of 14,2 ±10,6 months, 33,3% of our population had an overweight and 12,5% were obese. Dyslipidemia prevalence has increased in a non significative way (82,6% versus 95,2 %, p=0,5) with means rates:

1,9 ±0 ,61g/l of TC, 1,54 ±0,58g/l of TG , 0,42±0,13g/l of HDL and 1,24±051 of LDL. 37,5% of the patients were treated by statine and 8,3% by fibrate. There was no rhabdomyolysis complication related to the treatment by statine nor fibrate. Hygieno-dietetic treatment and physical activity have been prescribed for all patients.

The lipidic profile is more atherogenic in PD patients, which is caused by the high level of carbohydrates. A non significative dislipidemia increase has been noticed in our review, explained by hygieno-dietetic measures and hypolipemiants use.

Dyslipidemia is a frequent complication in PD. Its well management allows a better control of lipidic metabolism.

P-12
PERITONEAL DIALYSIS IN THE MANAGEMENT OF REFRACTORY CONGESTIVE HEART FAILURE

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Congestive Heart Failure (CHF) is a highly prevalent condition and a major cause of mortality and morbidity in the general population. This occurs despite continuous improvements in its treatment. Several studies have documented the high prevalence of renal dysfunction in the presence of CHF, particularly in patients with treatment-resistant CHF. Refractoriness to optimal pharmacological therapy is an increasing problem, and current therapeutic strategies for these cases are limited. We present four patients with refractory CHF and renal dysfunction treated with PD and discuss the role of this technique in their chronic management.

These 4 patients (2 males; ages: 34-90 years) share in common a history of CHF (all from ischaemic heart disease). At some point they had CHF NYHA class III-IV, despite maximal optimization of standard therapy, including diuretics and ACE inhibitors. They also had CKD, with worsening azotemia. Their baseline eGFR ranged from 17-21 ml/min/1,73m2. Echocardiograms showed depressed systolic function and/or abnormal diastolic relaxation; NT-proBNP was consistently elevated in all of them (7234-31378 pg/ml).

An early start of peritoneal dialysis was proposed, to manage the refractory CHF and worsening azotemia. With the start of PD, symptoms generally improved in the first few months, to NYHA class I-II. Fluid overload and blood pressure were successfully managed. The NT-pro-BNP levels of also improved (35-77% reduction from baseline). Patients remain clinically stable after a follow-up that ranges from 6 months to 3 years. During this period, no serious PD-related complications were reported in any of them.

Peritoneal dialysis is an alternative therapeutic option in the long-term management of patients with refractory CHF, whose renal function is also affected. It has been associated with improvement of symptoms, functional rehabilitation and quality of life, reduction of hospitalizations and readmissions, as well as improvement in diuretic responsiveness. However, its impact in survival remains to be determined.

P-13
THE METABOLIC SYNDROME-RISC FACTOR CLUSTERING

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The term the metabolic syndrome (MS) is the name for set of risk factors for cardiovascular disease and tipe 2 diabetes that are of metabolic origin. Metabolic syndrome plays an important role in the development of vascular complications and often mention with malnutrition (MIAS).

The aim of our research was to determine presentation and character of the metabolic syndrome in patients on peritoneal dialysis. The investigation was conducted in the two months period of time. We made an observational study which included 48 patients 21(43.75%) male and 27(56.25%) female, average age 59.4±12.5years of age who are in the chronic peritoneal dialysis (CAPD). Patients were divided into two groups based on the presence of diabetes mellitus 22(45.83%) had diabetes mellitus.

Results
The distribution of our patients by age was equal and by sex is in favor of women 27 (56.25%). The greatest number was group of patients on CAPD in the period < 1 years 20 (41.7%), then group 2-5 years 21(43.75%) and >5 years 7(14.58%). MS was represented in 63.6% of patients with diabetes mellitus and 61.5% of patients without diabetes. All the patients had hypertension 100% (n-22 diabetic and n-26 non diabetic pts) then high level of triglycerides had n-10(63.63%) diabetic and n-16 non diabetic pts. finaly abdominal obesity-waist had n-13 (63.63%) diabetic and n-14(53.85%) nondiabetic pts. BMI was equal in diabetic 30.15±6.61 and nondiabetic pts 30.02±4.07 with MS statistically significant p<0.05. All parameters of MS in diabetic and nondiabetics expressed as means±SD had significant differences p<0.05.

All these elements can contribute to cardiovascular disease not only as result but also the possible causes of diseases progression. We do not treat each risk factor individually because of polypharmacy and single risk factor approach be useful

P-14
APPLICATION OF MODERN CARDIOVASCULAR IMAGING MODALITIES IN THE EVALUATION OF RIGHT VENTRICULAR FUNCTION IN PATIENTS WITH END STAGE RENAL DISEASE

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Although there are plenty of data about the differences in left ventricular tissue Doppler (TD) velocities by preload reduction, only a few studies regarding right ventricular function are found in the literature.

Aim
To evaluate the reliability of Tissue Doppler, Strain and Strain Rate Imaging for the assessment of right ventricular (RV) function and the association of the derived indices with acute preload changes occurred during haemodialysis in end stage renal disease (ESRD) patients, without obvious heart disease.

Methods
Twenty nine ESRD patients (15 males/age 68±13years), with ejection fraction (EF)≥50%, underwent a full echocardiographic study(classic,TDI) one hour before and after a hemodialysis session. TD, Strain and strain rate indices were assessed in the basal segments of the lateral RV wall and interventricular septum.

Results
A mean 3.1±1.4L of ultra-filtration was obtained during dialysis session, while blood pressure and heart rate did not reveal any remarkable change (141/82vs133/80mmHg, 73vs76beats/min, all p=ns). Besides, both RVEF and LVEF (Simpson's method) remain unchanged. Peak systolic(Sm), early(Em) and late(Am) diastolic TD lateral RV velocities before dialysis were 14.18±2.49, 9.68±2.7, 16.06±6.34cm/s and after dialysis were 13.28±3.29, 7.84±1.78, 14.95±6.30cm/s. Thus, Em velocity and Em/Am ratio decreased marginally significant by 1.84±2.2cm/s(p=0.045) and 0.06±0.25(p=0.041), while only minor reductions observed in Am and Sm velocities(p=ns). RV lateral myocardial deformation indices did not exhibit significant changes after dialysis [Strain(%) RV: 30.77±6.94 Vs 30.19±7.52 and Strain rate(1/sec) RV: 2.08±0.78 Vs 2.01±0.84,both p=ns]. Besides, we observed no changes studying basal segment of interventricular septum [Strain(%) IVS: 21.1±5.5 Vs 21.55±4.8 and Strain rate(1/sec) IVS: -1.52±0.42 Vs -1.59±0.46,both p=ns].

Conclusions
TDI, Strain and Strain rate indices are mildly or not at all affected by acute preload changes during haemodialysis in ESRD patients. They represent useful and reliable tools for the evaluation of RV function in this setting.

P-15
ARE PERITONEAL CALCIFICATIONS RELATED TO AORTIC CALCIFICATIONS AND CALCIUM PHOSPHORUS PRODUCTS?

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Introduction
Long-term peritoneal dialysis (PD) can lead to encapsulating peritoneal sclerosis (EPS). A previous study showed that peritoneal calcifications, seen at abdominal CT scans, are more often present in EPS patients than in long-term PD patients without EPS. The aim of the present study was to investigate whether there is a relation between peritoneal calcifications and aortic calcifications and calcium phosphorus products.

Methods
We included all EPS patients in our center from 1996 until 2008 with a CT scan at the time of diagnosis, and all other long-term PD patients (PD duration > 4 years) without EPS who underwent a CT scan for different reasons. The CT scans were reviewed by 2 experienced abdominal radiologists. The presence of peritoneal calcifications was scored as yes or no. The following scoring system for abdominal aortic calcifications was used: 1=none, 2=mild, 3=moderate, 4=severe and 5=very severe. Calcium phosphorus products of each patient were calculated every 6 months up to five years prior to the CT scan.

Results
We included 31 patients: 15 EPS patients (mean age 43 years, mean PD duration 98 months, 57% men) and 16 long-term PD patients without EPS (mean age 54 years, mean PD duration 62 months, 44% men). Eight EPS patients had peritoneal calcifications against 4 long-term PD patients without EPS. Aortic calcifications were more often present and more severe in the long-term PD patients without EPS (p=0.02). No relation was present between peritoneal calcifications and aortic calcifications or calcium phosphorus products.

Conclusion
Peritoneal calcifications are more often seen in EPS. Aortic calcifications were more often present in patients without EPS, probably due to their higher age. The presence of peritoneal calcifications in long-term PD patients with and without EPS cannot be explained by the presence of aortic calcifications or high calcium phosphorus products.

P-16
BODY COMPOSITION MONITORING AND FLUID ASSESSMENT IN PERITONEAL DIALYSIS PATIENTS. VARIABLES DETERMINING OVERHYDRATION AND BLOOD PRESSURE

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Objective
Adequate management of fluid status is a pivotal factor for long term outcomes of peritoneal dialysis (PD) patients. Despite its importance, body composition is rarely determined by objective methods. With the Body Composition Monitor (BCM, Fresenius Medical Care) a precise direct measurement has been developed for every day practice. The purpose of this cross-sectional study was to evaluate body composition and to identify relevant variables for optimized fluid balance and patient outcomes.

Methods
We screened 973 PD patients from 28 centers in 6 European countries. 639 patients met the inclusion/exclusion criteria. Body composition, blood pressure (BP), dialysis modality and prescription, pre-existing diseases, comorbidities, and antihypertensive medication were documented and analyzed.

Results
Overhydration (OH) was commonly seen in PD patients (53%). Mean OH was 1.67±2.3 liters (range: -4.7 to +19.7L). Mean BP was 137±25.6mmHg systolic and 80±14.3mmHg diastolic with 85.4% of the patients being on antihypertensive medication. Less than half of the patients were normohydrated (40%). Regarding OH and BP 27% were in the optimal range, 26% with OH and high BP, 28% with OH and normal BP, 14% with high BP but without OH. Patients on biocompatible glucose solutions alone or polyglucose had a significantly better outcome regarding OH than those on standard glucose or amino acid solutions. Further age, sex, modality, PD solution, glucose concentration, transport status, hemoglobin, NYHA stage, diabetes, and body mass index had significant beneficial or adverse influence on OH in the multivariate analysis, whereas ultrafiltration, urine output, and months on PD did not show any relevance in the model.

Conclusions
The results show that common assessment of clinical parameters such as weight, BP, urine output, and ultrafiltration does not give a reliable estimate for the patient's fluid status. The BCM measurement provides essential information to identify patients at risk, supporting clinicians to optimize PD therapy and patient outcomes.

P-17

SERUM FIBROBLAST GROWTH FACTOR-21 CONCENTRATION IS ASSOCIATED WITH RESIDUAL RENAL FUNCTION AND INSULIN RESISTANCE IN PATIENTS WITH NONDIABETIC END-STAGE RENAL DISEASE RECEIVING CHRONIC PERITONEAL DIALYSIS

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Background
Recent studies have demonstrated that fibroblast growth factor-21 (FGF-21) exerts antidiabetic and antiobese effects and improve dyslipidemia. The purpose of this study was to identify relationships between metabolic parameters and serum FGF-21 levels in nondiabetic patients with end-stage renal disease. We also investigated whether chronic treatment with angiotensin receptor blocker (ARB) alters serum FGF-21 level and variables associated with insulin resistance.

Methods
We measured serum concentrations of FGF-21, b-Klotho, inflammatory markers, and metabolic parameters in healthy people (n = 63) and nondiabetic patients receiving peritoneal dialysis (PD, n = 72). The patients were treated with ARB for 6 months, and the changes in FGF-21 concentration and metabolic parameters were assessed.

Results
Serum FGF-21 concentration was 7 times higher in patients with PD than in healthy controls (754.2±463.5 vs. 86.9±60.2 pg/ml, P<0.001). In controls, only lipid parameters correlated positively with FGF-21 concentration (Total cholesterol, r=0.222, P=0.002; Triglyceride, r=0.394, P<0.001; HDL, r= -0.150, P=0.039; LDL, r=0.223, P=0.002). In PD patients, residual renal function (RRF, r= -0.456, P<0.001) and Kt/V urea (r= -0.459, P<0.001) correlated negatively with FGF-21 concentration. Inflammatory markers (interleukin-6, r=0.318, P=0.006; fibrinogen, r=0.495, P<0.001; hsCRP, r=0.296, P=0.012) and homeostasis model assessment of insulin resistance (HOMA-IR, r=0.394, P=0.001) correlated positively with serum FGF-21 concentration. In the multivariate linear regression analysis, RRF (ß= -0.320, P=0.033), HOMA-IR (ß=0.268, P=0.016), and fibrinogen (ß=0.399, P=0.007) concentration were independently associated with serum FGF-21 concentration. After 6 months ARB treatment, serum FGF-21 concentration declined significantly by 13% and HOMA-IR and inflammatory markers improved in PD patients.

Conclusions
Serum FGF-21 concentration was elevated markedly in patients receiving PD. Serum FGF-21 concentration was dependent on RRF and was significantly associated with inflammatory markers and HOMA-IR. These findings suggest that FGF-21 plays a role in insulin resistance in ESRD patients.

P-18

SYMPTOM BURDEN IN PERITONEAL DIALYSIS PATIENTS

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Background
Relatively little data exists on the nature and frequency of physical symptoms in PD (peritoneal dialysis) patients. We wish to document the symptoms experienced by our PD population and investigate prospectively any correlations with dialysis parameters and patient outcomes. We report our initial cross-sectional findings.

Methods
Questionnaire with 8 abdominal symptoms and 13 non-abdominal symptoms. Each symptom is scored as 0, 1, 2 or 3 for both severity and frequency and added to produce a total score (range 0-126). We also collected PET and adequacy data including residual renal function (RRF), co-morbidity data (Stoke-Davies score) and medication burden.

Results
34 patients mean age 61.8 (range 28-90) years, on PD (19 CAPD, 15 APD) for median of 1.4 (range 0.1-9.3) years. They were generally well dialysed (median kT/V 2.31 and total fluid removal/24 hours 1353mls). Median Stoke co-morbidity category=2 and number of medications taken=10. Median total symptom score was 29.5 (range 6-61). Median abdominal symptom score was 6 (range 0-20). Highest scores were seen for "lack of energy" (median 3/6) followed by "joint pains", "cold hands", "cramps", "dry mouth", "poor sleep" and "itch"(all median 2/6). Abdominal symptoms were neither particularly frequent nor severe. No correlations were seen with dialysis adequacy parameters or transporter status, age, time on PD, RRF or co-morbidity score. Follow up questionnaires at a median interval of 6 months in 10 patients showed a similar pattern of scores across each category with no change in the median total scores.

Conclusions
Although clinicians may focus on dialysis issues and abdominal symptoms, patients report general and non-specific symptoms as more troublesome. Further investigation is required in a larger group to determine any predictive value of such symptoms in terms of patient outcomes and whether adjustment of medications or dialysis regime can reduce this considerable symptom burden.

P-19

DETERMINANTS OF ANXIETY IN PATIENTS WITH ADVANCED SOMATIC DISEASE – DIFFERENCES AND SIMILARITIES IN KIDNEY AND CANCER PATIENTS

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Introduction
The anxiety is the most frequent emotional reaction to the chronic somatic disease. It can be assessed as the fairly stable anxiety-trait connected with personality features and variable anxiety-state depending on external factors.

The purpose of the study was to assess the intensity of anxiety of patients with chronic renal failure in comparison to patients at advanced stage of breast cancer and healthy controls and to establish the determinants of the level of anxiety of these patients.

Methods
The study involved 164 persons (85 women and 79 men), aged between 22 and 80 (average age: 49, 17) who comprised three study groups: 84 kidney patients divided into three groups according to method of treatment: 32 transplant patients, 31 hemodialysis and 21peritoneal dialysis patients, 25 women with breast cancer and 55 healthy persons.

We used: State–Trait Anxiety Inventory, Scale of Personal Religiousness, Mental Adjustment to Cancer Scale, Rotterdam Symptom Checklist.

Results
Patients with advanced somatic illness (kidney failure, breast cancer) revealed higher level of anxiety state and trait in comparison to healthy controls. Dialysis and transplant patients had similar intensity of anxiety. The coping strategies as helplessness – hopelessness, anxiety preoccupation correlated with level of anxiety state in patients with kidney disease. In contrast to breast cancer patients, in kidney patients religiosity had no effect on the anxiety state and quality of life.

Conclusions
Kidney patients present higher to healthy controls and lower to breast cancer patients, level of anxiety. The intensity of anxiety is similar irrespectively of the mode of treatment (dialysis or transplantation). An elevated level of anxiety-trait in patients with chronic disease suggests that this personality feature may be modified in the presence of chronic somatic illness. Intrinsic religiosity is the most effective factor diminishing anxiety in advanced breast cancer patients as opposed to dialysis and transplant ones.

P-20

THE ADVANTAGES OF A NEPHROLOGY-LED PERITONEAL DIALYSIS CATHETER INSERTION PROGRAMME

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Peritoneal access guidelines state that blind implantation of a peritoneal dialysis catheter is possible and it is known that bedside placement of catheters can have outcomes comparable with surgical techniques. However, 'medical' techniques are still under-utilised in UK renal centres.

For many years, nephrologists at the Wessex Renal Transplantation Unit have used a percutaneous Seldinger insertion method for peritoneal dialysis catheter placement. In 2007, this technique was refined to include clear patient selection criteria, pre-procedure scanning and the use of long acting local anaesthesia combined with sedation. 34% of peritoneal dialysis catheters are now inserted by nephrologists using this technique. Our success rate is 88%.

The medical catheter insertion programme has saved costs by reducing surgical theatre time. In addition, 52% of medical insertions in 2008 were performed as a day case procedure reducing bed occupancy. With no requirement for surgical services, percutaneous catheter insertion offers greater flexibility for both doctor and patient as it can be performed within 24 hours of request.

Medical catheter insertion also facilitates immediate start peritoneal dialysis. In 26% of cases, catheters inserted via our percutaneous Seldinger technique have been successfully used for dialysis within 7 days of insertion. There have been no incidences of insertion site leakage.

Catheter insertion under sedation removes the mortality risk associated with general anaesthesia. As a consequence our unit has been able to offer peritoneal dialysis in patients with significant co-morbidities including end-stage heart and liver disease.

We have therefore found that a nephrology-led catheter insertion service has numerous advantages. These include increased patient access to peritoneal dialysis, more flexibility in the timing of catheter insertion and safe immediate-start peritoneal dialysis. It also leads to significant cost savings. In addition, we have noted a 10% increase in patients commencing peritoneal dialysis since 2006.

P-21
A DAMAGED GLYCOCALYX IN PERITONEAL DIALYSIS PATIENTS?

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Introduction
Endothelial dysfunction and accelerated vascular disease are common features in patients with chronic renal failure. The glycocalyx is a negatively charged mesh lining the inner wall of blood vessels. It is a main regulator of vascular homeostasis. No data is available on the state of endothelial glycocalyx in chronic renal failure. In the present study we investigated whether the microvascular glycocalyx is damaged in patients with end-stage renal disease (ESRD) treated with peritoneal dialysis (PD), as compared to healthy controls.

Methods
Investigations were carried out in 6 patients with ESRD undergoing peritoneal dialysis (male/female 3/3; median age 28.1 (18.3-66.4) years; median time on dialysis 33.5 (7.5-91.3) months and 6 healthy age and sex matched controls with normal kidney function. Exclusion criteria: diabetes mellitus, use of antioxidants, use of statins 6 weeks prior to the measurement, use of angiotensin converting enzyme inhibitors or angiotensin II receptor blockers on the day of the measurements. Thickness of the endothelial glycocalyx in individual blood vessels was estimated from intravital microscopic image sequences of 5 minutes duration of the sublingual microvasculature, using Sidestream DarkField (SDF) imaging with a MicroScan videomicroscope. Measurements were repeated after the administration of one dose (0.4mg) of nitroglycerine sublingually.

Results
Compared to healthy controls, time-averaged glycocalyx dimensions appeared 1.09±0.45 microns thinner in PD patients. Furthermore, PD patients appeared to have an increased time-dependent variability in estimated glycocalyx thickness after the challenge with nitroglycerine (p=0.04).

Discussion
Patients with ESRD on PD have a thinner average glycocalyx dimension that shows hyperdynamic swelling and collapse as compared to stable healthy control glycocalyx dimensions. Thin, unstable glycocalyx dimensions are likely to reflect impaired glycocalyx barrier properties, which may be an early indicator of pathogenic activation of vascular endothelium as a marker of increased cardiovascular risk.

P-22
NO MAJOR DIFFERENCES IN QUALITY OF LIFE OVER TIME ON AUTOMATED PERITONEAL DIALYSIS COMPARED TO CONTINUOUS AMBULATORY PERITONEAL DIALYSIS

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Dialysis provides a substantial burden in the life of patients with renal failure. Automated peritoneal dialysis (APD) is often prescribed because of an expected better quality of life (QoL) compared to continuous ambulatory peritoneal dialysis (CAPD). The aim of this study was to analyze the differences in QoL over time in incident APD and CAPD patients.

Adult patients on CAPD or APD at 3 months after the start of dialysis in the NECOSAD were included. In this cohort of incident dialysis patients, data were collected at the start of dialysis, at a 3 month interval and every 6 months thereafter until death or transplantation. For QoL measurements the Short-Form 36 (SF-36) questionnaire was administered from start; the KDQOL was administered from the 3 month visit onward. In both questionnaires, a higher score implicates a better QoL. Mean differences over time on QoL dimensions were calculated for APD compared to CAPD using Linear Mixed Models. Analyses were adjusted for age, sex, comorbidity and GFR at baseline. Patients were followed until their first switch to any other dialysis modality. Maximal follow-up was 3 years.

No major differences were present in physical or social parameters for the 561 patients treated with CAPD and the 86 with APD. For CAPD the mean(SD) age was 54(15)years and 66% were men. For the APD group mean age was 52(16) and 77% were men. In the SF-36 no differences were found on mental and physical summary scores. In the KDQOL the dimensions "dialysis-staff-encouragement" (β:-5.24 (CI95%:-9.02 to -1.46)) and "sexual-function" (β:9.89 (CI95%:2.03 to 17.75)) were different between both therapies. After adjustment the difference on "dialysis-staff-encouragement" remained. In contrast to expectation, sleep was not worse on APD.

No major differences in quality of life were present between APD and CAPD in incident dialysis patients.

P-23
MARKERS IN PERITONEAL EFFLUENT FOR PREDICTING ENCAPSULATING PERITONEAL SCLEROSIS – A REPORT FROM THE JAPAN FLUID STUDY

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Encapsulating peritoneal sclerosis (EPS) is one of the most serious complications in peritoneal dialysis (PD) patients. It is reported that long-term PD leads to the deterioration of the peritoneum, resulting in peritoneal fibrosis and increased permeability because of neoangiogenesis. However, there is no suitable marker for predicting the change in peritoneum and the development of EPS.

The Japan Fluid Study (JFS) examines PD effluents and plasma collected from patients over a period of more than 4 years to identify markers for EPS. One hundred ninety six patients (mean age ±SD of 55.7±11.3) who had been on CAPD for 9.8 ± 3.8 years were included in the study. Plasma and PD effluent samples were collected from the patients every 6 months. Interleukin-6 (IL-6), soluble interleukin-6 receptor (IL-6R), interferon-beta (IFNb), monocyte chemotactic protein-1 (MCP-1), and vascular endothelial growth factor (VEGF) that are thought to be associated with peritoneal sclerosis were analyzed by ELISA. IL-6 in the PD effluents significantly correlated with IL-6R, IFNb, MCP-1 and VEGF in the PD effluents. In addition, the dialysate concentrations of IL-6, IL-6R, IFNb, and VEGF positively correlated with the D/P creatinine ratio, indicating that these markers were associated with peritoneal hyperpermeability. It is concluded that IL-6, IL-6R, IFNb, and VEGF in PD effluent are closely linked with peritoneal function and measurement of theses markers may help predict the deterioration of peritoneum and development of EPS.

P-24
PERSONALISATION OF AUTOMATED PERITONEAL DIALYSIS (APD) TREATMENT USING A COMPUTER MODELING SYSTEM

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Introduction
The availability of new cyclers and management software for patients on Automated Peritoneal Dialysis (APD) enables individual cycle differentiation both for dwell time and load and drainage volumes in addition to a reduced glucose load. Considering that there are various peritoneal transport capacities, it is possible to personalise the final treatment to improve dialysis adequacy or its maintenance by reducing the duration and volumes of the total load per session and by using solutions containing low glucose concentrations, thereby prolonging the survival of the technique itself.

Methods
Fifteen clinically stable patients in APD treatment with a standard treatment profile for at least six months. After performing PET scans and measuring clearances, the dialysis programme was modified by individualising it according to the characteristics of peritoneal membrane transport and by taking into account the amount of residual diuresis and the patient's need for ultrafiltration; this was implemented by means of the the Patient on Line® software created by the Fresenius Medical Care® company.

Results
After a month of personalised dialysis treatment, the weekly peritoneal Kt/V increased from 1.02 ± 0.37 to 1.47 ± 0.61, P=0.001. The total Kt/V reached levels of optimum dialysis adequacy (from 1.62 ± 0.33 to 2.21 ± 0.28, P=0.0001). The weekly peritoneal creatinine clearance also increased from 22.27 ± 9.16 to 32.86 ± 16.94 (P=0.005), with total weekly clearance increasing from 53.51 ± 16.86 to 67.58 ± 14.52 (P < 0.0001). The improvements obtained in terms of dialysis adequacy involved no statistically significant differences regarding the total infused volume, ultrafiltration and the duration of dialysis treatment. It should also be noted that no changes in residual diuresis occurred. No hypertonic solutions were used in the personalised prescriptions and the 2.5% solutions were also reduced from 23% to 2% in favour of isotonic solutions (97%).

P-25

CT SCREENING FOR ENCAPSULATING PERITONEAL SCLEROSIS (EPS) IN PERITONEAL DIALYSIS (PD) PATIENTS

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Background
Abdominal/pelvic CT scans in patients with symptomatic EPS were significantly different in our scoring system from control PD or haemodialysis patient scans; scans performed before EPS was clinically evident were near normal in 9 of 13 patients. We have now investigated the utility of CT as a screening modality in a larger group of patients on long-term PD.

Method
Pre-diagnostic CT scans performed in 20 patients for routine screening/other indications at least 4 months before EPS developed and later diagnostic scans when EPS was clinically evident were scored by the three radiologists. The control group was 20 PD patients with CT scans performed for various indications that have not developed EPS (median follow up 2.25 years). Analysis was by non-parametric tests. CT scores range from 0-22; > 2.5 was considered abnormal.

Results
Clinical EPS only developed after transplantation or transfer to HD. Diagnostic scans scored significantly higher than pre-diagnostic or control scans (median scores 9, 2, 1; p<0.0001), confirming previous work. 12 asymptomatic patients pre-EPS diagnosis had median CT score=1.75, similar to the control group. ROC analysis confirms CT screening of this group has poor sensitivity and specificity. 8 patients had abdominal symptoms (7 required hospitalisation), but did not have the clinical picture of EPS; their median CT score was 4.5; (p=0.0016 cf control group). The time from pre-diagnostic scan to clinical EPS (median 0.82 years) and duration of PD at time of pre-diagnostic scan (median 7.1 years) did not differ significantly between the symptomatic and asymptomatic groups.

Conclusions
CT screening of asymptomatic PD patients is not indicated; EPS may occur within a year or less of a normal CT scan. Abdominal symptoms in long-term PD patients can be associated with CT scan abnormalities; stopping PD is then followed by development of the full blown EPS syndrome.

P-26

A REVIEW AND COMPARISON OF THE PRE-OPERATIVE BACKGROUND AND POST-OPERATIVE PATHWAY OF TWO OUT OF A SERIES OF 83 PATIENTS HAVING SURGICAL PERITONECTOMY FOR ENCAPSULATING PERITONEAL SCLEROSIS

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Introduction
Encapsulating peritoneal sclerosis (EPS) is an increasingly recognised complication of Peritoneal Dialysis. It is associated with deposition of fibrous sheets which constrict and restrict the bowel causing acute or sub-acute obstruction, nutritional deficiency, sepsis and perforation. Our centre has the largest European experience of surgical intervention.

Methods
Eighty three (83) patients undergoing surgical intervention were retrospectively reviewed with a particular emphasis on post operative care.

Results
The patients at referral ranged from acutely unwell, septic and unstable requiring emergency intervention to relatively stable suitable for more "semi elective" surgery after preoperative optimization.

We have demonstrated that the outcome is significantly better in the latter group with our survival rates being 56% vs 89% respectively. 13 of our patients required stoma formation and 15 required laparotomy with washout and often "VAC" (Vacuum Assisted Closure) abdominal closure.

Case Study 1
A 35 year old female with 13 years on PD and 2 previous transplants, with symptomatic EPS was relatively well nourished, not anaemic and not septic, underwent peritonectomy and enterolysis had a smooth post operative recovery and was discharged home after 3 weeks.

Case Study 2
A 43 yr old female with 10 years on CAPD, one previous transplant also relatively well preoperatively has currently been an inpatient for 20 weeks having had 19 operations including stoma formed and required sophisticated wound management techniques. She has experienced significant physical and emotional sequalia of her intensely stressful recovery including two cardiac arrests.

Discussion
Even with patients who present with a similar profile and apparently comparative pre operative condition there can be a very wide variation in post operative recovery pathway. As dialysis centres we need to be aware of the possible consequences and experiences our patient's may have to face as a result of surgery to correct this condition.

P-27

ENCAPSULATING PERITONEAL SCLEROSIS IN A PERITONEAL DIALYSIS PATIENT USING BIOCOMPATIBLE FLUIDS ONLY; IS ALPORT SYNDROME A RISK FACTOR?

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Background
A patient with Alport syndrome is described who developed encapsulating peritoneal sclerosis (EPS) despite the exclusive use of biocompatible dialysis solutions. Both conditions are rare. Therefore we hypothesized that Alport syndrome might predispose to the development of EPS and that this is reflected in fast peritoneal transport rates.

Methods
We examined the prevalence of Alport syndrome and of EPS in our PD population. We also compared the MTAC of creatinine, the clearances of albumin (Alb), IgG and alpha-2-macroglobulin (A2M) at baseline and for all available measurements between 4 groups: EPS patients with Alport syndrome, EPS patients without Alport syndrome, Alport patients without EPS and long-term PD patients without EPS. The transport characteristics were obtained during a standard peritoneal permeability analysis (SPA).

Results
Between July 1995 and December 2008 5 out of 417 PD patients treated in our center had Alport syndrome as a primary kidney disease (1%). Thirteen out of these 417 PD patients developed EPS (3%). Two of these thirteen EPS patients had Alport syndrome (15%). Alport syndrome was more often present in patients who developed EPS compared to our general PD population (p=0.01). No differences were present in the baseline transport characteristics of the four groups. When all measurements of the transport characteristics were added only the MTAC of creatinine was higher in both EPS groups compared to the other two groups (p=0.01).

Conclusion
The combined occurrence of EPS and Alport syndrome in our PD population is striking, although the number of patients is small. Further studies should focus on the survival of PD patients with Alport syndrome.

P-28

PROGNOSTIC VALUE OF TROPONIN I LEVELS IN PERITONEAL DIALYSIS PATIENTS

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Cardiovascular (CV) disease is the main cause of death in end-stage renal disease (ESRD) population. The prevalence of silent ischemia in ESRD patients is high. Cardiac troponin I (TnI) is highly sensitive and specific marker of myocardial damage. Our aim was to determine the prognostic value of TnI levels for all-cause and CV mortality or CV events risk in peritoneal dialysis (PD) patients.

We studied 121 PD patients (78 men, mean age 52 years, PD time 9 months, mean follow-up of 24 months. TnI levels were registered every four months.

Mean Charlson index was 5.1(including age) and 3.4(without age). 31% had previous CV pathology; 29% developed at least one CV event during the follow-up. Twenty-four deaths (19,8%)(13 from CV cause) were registered. Mean baseline TnI was 0.05±0.1 ng/ml. Patients who developed fatal or non-fatal CV events showed significant higher mean TnI levels during follow-up than patients who did not (0.09±0.14 vs 0.05±0.09, p=0.045).

36% had elevated TnI levels (>0.02 ng/ml). TnI levels correlated with LV posterior diameter and interventricular septum in echocardiogram.

In Cox analysis, predictive factors of CV event were: ischemic cardiopathy (HR 4.72,p=0.000), previous cardiac heart failure (CHF)(HR 3.09,p=0.002), TnI>0.07 (HR 2.65,p=0.016), Charlson index (HR 1.3,p=0.001) and age (HR 1.04,p=0.000). In multivariate analysis, the only factors independently associated with CV event were ischemic cardiopathy and previous CHF. Patients with TnI>0.07 (n=15) showed higher Charlson index (6.8 vs.4.8,p=0.04), higher previous CV comorbidity (60% vs.26%, p=0.008), more prevalence of diabetes (47 vs.15%,p=0.04) and hypertrigliceridemia (53 vs.20%,p=0.004).

In Kaplan-Meier analysis, patients with TnI>0.07 showed higher CV events (p=0.03), all-cause mortality (p=0.01) and CV mortality (p=0.007) during the follow-up.

Conclusion
Previous ischemic cardiopathy or CHF are independently related to the developed of CV event in PD population. TnI>0.07 ng/ml are associated with higher risk of CV event and with all-cause mortality.

P-29

BREAKPOINT VERSUS PHISICIAN-PRESCRIBED AUTOMATED PERITONEAL DIALYSIS (APD)

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Background
The place for an individualized optimization of APD efficiency remains a matter of debate, giving the quite conflicting data published to date, mainly focusing on comparison between tidal and non tidal modality. Breakpoint is defined as the residual intraperitoneal volume at which a brisk transition from the initial rapid dialysate drainage phase into a much slower drainage of the peritoneal cavity occurs. Due to its interindividual , and possibly intraindividual day by day variability, modelling APD prescription on breakpoint could minimize time spent in the less advantageous phase of treatment. Technology capable of adapting inflow-outflow pattern to the observed breakpoint on a day-by-day, cycle-by-cycle basis has been incorporated in a last generation cycler (Serena®, Gambro, Sweden). Aim of this study was to compare the efficiency of breakpoint APD as performed by such a cycler with a more conventional tidal modality.

Patients and Methods
After giving their informed consent, eight clinically stable patients (4 males, age 44+/-13 years, range 31-70), on regular nightly APD since at least 6 months, entered a crossover randomized order study, in which they perform at least three separate sessions on each of the following programs: 50% tidal APD or breakpoint APD of the same duration; initial intraperitoneal volume, as well as the quantity and osmolarity of dialysis fluids were kept costant. Peritoneal clearances of urea, creatinine and phosphate were calculated as usual, and ultrafiltration (UF) registered. Results were averaged and a Student-t test for paired data was used for statistical analysis.

Results
Urea, creatinine and phosphate peritoneal clearances were significantly higher with breakpoint APD (14,9+/-2,6 vs 13,9+/-2,3 , 8,8+/-1,7 vs 7,4+/-2,1 and 6,8+/-1,5 vs 5,5+/-1,6 ml/min, respectively, all p<0,05). UF did not differ significantly (2,29+/-0,8 vs 2,32+/-0,6 ml/min), but appears to be somewhat less predictable with breakpoint APD.

Conclusions
With the low-medium dialysate dose used in this study, breakpoint APD resulted in a reproducible efficiency gain over conventional tidal APD.

P-30

CAN UNPLANNED START PATIENTS BE GIVEN A CHOICE OVER RENAL REPLACEMENT THERAPY OPTIONS?

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Introduction
Approximately 30% of chronic kidney disease patients commence long-term dialysis in an unplanned way, without permanent vascular access, with raised morbidity and mortality. Less than 10% this group will eventually receive home dialysis therapy. Studies in single centres have demonstrated that it is possible to offer unplanned start patients choice and allow more to receive home dialysis therapy. The Unplanned Start Program is a coordinated approach in 7 centres (5 countries) to develop and implement approaches to educate, support decision-making and the process of modality choice in these patients.

Methods
Centres (Belgium, Germany, Netherlands, Turkey and United Kingdom) performed a retrospective analysis of patient flow through their units to determine numbers of unplanned start patients and the steps in their pathway. Processes were developed to ensure all unplanned patients were assessed and then included in the Unplanned Start Program. Specific tools were developed and piloted to inform, educate and support decisions in unplanned patients with their specific psychosocial needs.

Results
Before commencement of program, very few unplanned patients progressed to PD. Education and decision support materials specific for unplanned start patients were developed and refined. There have been 67 unplanned start patients, 47 were referred to the Unplanned Start program, 34 are suitable medically for PD. 24 patients have made a decision on modality and 9 chose PD. There is wide inter-centre variation in proportion of patients who have made a decision who have chosen PD -14-100% (mean 38%).

Discussion
The program demonstrates that educational materials and decision support tools to assist unplanned start patients can be developed and implemented to help them understand dialysis options. The Unplanned Start Program has implemented these approaches alongside examination of the patient pathway to increase the percentage of this disadvantaged patient group who receive informed choice and choose home dialysis therapy

P-31

DOES PERITONEAL THICKNESS PREDICT TECHNICAL FAILURE IN PERITONEAL DIALYSIS PATIENTS?

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Introduction
Prolonged peritoneal dialysis (PD) time and frequent episodes of peritonitis lead to structural changes, thickening of the peritoneum and ultimately lead to technical failure. Early detection of morphological changes is not only important for estimation of technical failure but also for encapsulated peritoneal sclerosis which carries high mortality and morbidity rates in long term PD patients. Ultrasonographic (USG) investigations of peritoneal membrane may provide the opportunity to detect morphological changes early.
The aim of this study is to evaluate the association between functional parameters of peritoneum and ultrasonographically measured peritoneal thickness (PT).

Method
Fifty-three prevalent PD patients, who were on PD for at least 12 months, were included in the study. All demographical characteristics and peritoneal equilibration test results were recorded. Parietal PT was measured by the same radiologist from three abdominal quadrants except one of the lower quadrants in which peritoneal catheter taken place at the mid-clavicular line. The mean of three measurements were calculated as PT.

Results
Twenty-three patients were female (43%) and five of study patients were diabetic (9%). The mean age was 50±13 years. The mean duration of PD was 36±17 months. The median PT was 466 µm(IQR:366-633) and was significantly correlated with body weight (r:0.31,p< 0.05), height (r:0.31,p< 0.05), D/D0 glucose (r:-0.32,p< 0.02), D/P creatinine (r:0.29, p<0.03) and PD duration (0.40,p<0.01).

Discussion
Peritoneal thickness measurement showed a positive correlation with time on dialysis; progressing from a median of 400 µm (IQR:275-525) in patients who have been on PD for less than 24 months up to 1035 µm (IQR:725-1316) in patients who have undergone PD for more than six years. Cox regression analysis showed that PT was an independent risk factor for technical failure (OR:1.0039, p<0.001)
In conclusion, ultrasound examination is a simple and non-invasive method to measure the peritoneal thickness that may predicts technical failure and even EPS.

P-32

NUTRITIONAL STATUS OF PATIENTS UNDERGOING SURGICAL PERITONECTOMY FOR ENCAPSULATING PERITONEAL SCLEROSIS (EPS)

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Background
Encapsulating Peritoneal Sclerosis (EPS) is an uncommon but serious complication of peritoneal dialysis where gastrointestinal (GI) symptoms reduce appetite and dietary intake. Adequate nutrition is important, especially if surgical interventions are required. The aim of this study was to investigate nutritional status of 26 EPS patients who underwent surgical intervention between 2008 and 2009 at Manchester Royal Infirmary.

Methods
EPS was recognised by GI symptoms and diagnostically confirmed by laparotomy or CT scanning. All patients underwent full dietetic assessment prior to peritonectomy.

Results
There were wide variations in the nutritional status of patients prior to surgery. 25/26 patients had experienced weight loss prior to diagnosis with a mean of 16% loss of body weight (IQR 9-24%). Pre-operatively, mean BMI was 20.1kg/m² (IQR 17.7-22.8), mean mid-arm circumference was 24.9cm (IQR 21.6-29.4) and handgrip strength as a percentage of normal averaged at 58% (IQR 48%-71%). Subjective global assessment scores were 58% grade C, 27% grade B and 15% grade A. CRP levels were elevated in the majority of patients with a mean of 89mg/L (IQR 24-140). 23/26 patients received parenteral nutrition prior to peritonectomy for a mean of 30 days however there was a range of 2-180 days.

Conclusions
There is a large variation in the nutritional status of patients referred for surgery following diagnosis of EPS. The majority experienced loss of over 10% of their body weight which may lead to poor post-operative outcome. There is a need for early recognition of GI symptoms which may herald the diagnosis of EPS and pre-operative optimisation of nutritional status with intensive nutritional support.

P-33
THE UK EPS STUDY AND DNA BANK

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Objectives
Peritoneal dialysis (PD) is a successful treatment modality for end stage renal failure and has seen universal application over the last 20 years. Complications of prolonged PD therapy have become more evident in the last decade with more patients experiencing long term therapy. One of the most serious complications of PD is the development of Encapsulating Peritoneal Sclerosis (EPS). From the literature there are no validated guidelines for the diagnosis, treatment and management of EPS. Given that only a small percentage of patients on PD develop EPS it is possible, that in addition to dialysis "exposure", genetic factors may predispose certain individuals. The aim is to enrol a number of International centres to collect a specific data set designed to address all clinical aspects of PD complications with particular emphasis on EPS.

Methods
All patients on PD (including paediatrics) will be recruited to allow long term follow up and to provide controls for the EPS patients. We aim to recruit 2000 patients to ensure we have 100 cases and 200 case matched controls. DNA will be collected from consenting patients and stored for future research on genetic associations with EPS. We will collect clinical data which we will correlate with genetic markers.

Results
41 centres across the UK are currently involved with the study. 8 centres have collectively recruited 286 patients to date. As a group we have devised a bespoke PD database (PDDB) which is currently being used in 10 UK centres. Close International links are being formed across Europe, America, New Zealand and Japan.

Conclusions
A large PD Network has been formed to accurately collect data on PD patients nationally. The network has formed sub groups who have specified roles. This multicentre approach will provide valuable data and facilitate research into EPS which is a rare but often fatal disease.

P-34
CLINICAL RELEVANCE OF EFFLUENT CANCER ANTIGEN 125 AND IL-6 DETERMINATION AT EVERY OUTPATIENT VISIT IN PERITONEAL DIALYSIS PATIENTS

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Cancer antigen (CA) 125 is a glycoprotein that provides data on the state of the peritoneal membrane, when measured in peritoneal effluent. Interleukin-6 (IL-6) acts as a mediator in the acute phase response. Variability of effluent CA125 and IL-6 measurements on a more frequent base than once yearly is unknown. Aim of this study was to evaluate the clinical relevance of CA125 and IL-6 by analyzing its variation in individual patients during clinical practice at the outpatient department.

Methods
Peritoneal effluent was collected from 52 patients. Patients with peritonitis, hemodialysis transfer or renal transplants were excluded. Included patients had at least two samples available with a maximum interval of six months, and a minimum follow-up of one year. CA125 and IL-6 were measured by ELISAs. Appearance rate (AR) was calculated as the total amount of CA125 or IL-6 present in the total drained effluent divided by dwelltime (minutes). Inter- and intravariability was calculated by means of the coefficient of variation (CV). To study time courses, a linear mixed model was applied.

Results
CA125-AR of 16 short-term (0-24 months) patients ranged from 22.5-766.7 mL/min, and IL-6-AR 7.3-1534.0 pg/min. 14 Long-term (≥25 months) patients had a CA125-AR of 11.4-220.0 mL/min, and IL-6-AR 6.9-956.4 pg/min. CV_{total} was 42.6% for CA125-AR, and 59.9% for effluent concentrations. Short vs. long-term trend of CA125-AR was different (p=0.001). CV_{total} of IL-6-AR was 223.8% and 189.9% for effluent concentrations. IL-6 trends were not different.

Conclusions
The clinical relevance of CA125 and IL-6 determinations from an unstandardized dwell during every outpatient visit is limited, as judged from CVs. This is possibly due to systemical errors, like inaccurate notated dwelltimes. Standardization is therefore warranted. Furthermore, fluctuations of CA125 and IL-6 as response to environmental changes in the peritoneum can also influence the outcome of AR, and thus influence the CV.

P-35
SUCCESSFUL PREGNANCY AND CHILDBIRTH OF A 43-YEAR-OLD WOMAN ON FIVE-YEAR CONTINUOUS AMBULATORY PERITONEAL DIALYSIS (CAPD)

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Introduction
Successful pregnancies by dialyzed patients with chronic renal failure are very rare. We report the gestation period, delivery, and 4-month development of an infant, in 43-year-old CAPD patient.

Case Report
A 43-year-old female patient with ESRD due to chronic glomerulonephritis on CAPD from 2003. Prior to pregnancy, diuresis was 600 ml daily and without any peritonitis. In November 2007, she conceived spontaneously and wished to keep pregnancy. The dose of PD was adjusted to gestation periods on 1500 ml CAPD exchanges five times daily from the 4th month pregnancy. The patient is 160 cm tall and 52 kg weigth on the onset of pregnancy, 60 kg immediately before childbirth, and 54 kg one week after delivery. Before entering delivery room in her 38th gestation week + 4 days that followed spontaneous amniotic sac rupture, patient drained the CAPD dialysis fluid herself. She gave spontaneous birth a 45 cm long female infant weighing 2250 g. The infant·s APGAR score was 10/10. 1300 ml diuresis daily was stimulated postpartum, and 1000 ml CAPD five times daily was initiated to the patient on the 2nd day post-birth. Dialysis solution inflow was gradually increased during one month, with concurrent reduction in exchange rate to 3 times per 2000 ml daily. Lactation occurred on the 8th day postpartum. Physical and mental development of the infant during the first four months was regular: height: 65 cm, weight: 6200 g.

Conclusion
Professional team support was very important, particularly in managing dialysis in a manner to enable the patient's recovery for spontaneous pregnancy and delivery of a vital infant. Critical gynecologist's decision to prepare the patient for spontaneous childbirth allowed CAPD continuation postpartum. Five-year CAPD therapy allowed the patient's recovery to the extent that she spent her pregnancy, childbirth and postpartal course better than many healthy women in their 43rd year of life.

P-36
PERITONEAL DIALYSIS MODALITY DOES NOT INFLUENCE IN THE RESIDUAL RENAL FUNCTION PRESERVATION

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Residual renal function (RRF) preservation is related to greater survival on peritoneal dialysis (PD) patients. This feature has lead to its maintenance as a primary objective in this population. Contradictory results have been published related to PD modality influence on RRF outcome.

Our aim was to compare the differences of RRF in 104 incident patients treated with APD and CAPD.

We excluded patients without RRF (diuresis<100 ml/day) at PD starting. 54% started on APD. Mean age was 52.1±16 years, 70% were male and 16% diabetics. In 96%, PD was the first substitutive therapy. 57 patients used icodextrin (IC), 13 low-glucose degradation product solutions (GDP) and the others standard PD fluids. We studied RRF and diuresis every three months and peritoneal transport characteristics every six months.

Time of follow-up was 29.3±19 months. CAPD patients were older, more diabetics, used less IC and more low-GDPs solutions, and had longer follow-up. Other parameters were similar in APD group. At starting, RRF was 6.47±3.3 ml/min and diuresis 1551±758 ml/day on CAPD, and 6.1±3 ml/min and 1508±828 ml/day on APD, respectively. No significant differences were observed in RRF under both PD modalities (RRF at 24 months 3.67±3.5 ml/min on CAPD (n=32) and 3.82±2.5 ml/min (n=12) on APD). Diuresis was not different either (883±807ml/day CAPD and 1333±905 ml/day APD). Peritoneal transport parameters were similar in both groups. IC use was related to better preservation of diuresis at 24 months (1519±1035 ml/day in IC, and 767±633 in non-IC), with no significant differences in RRF evolution. Diuresis and RRF at baseline were similar for IC and non-IC patients.

In conclusion, PD modality seems to not influence in residual renal function and diuresis outcomes on PD patients. Icodextrin use since the beginning of PD seems to protect diuresis at medium-term, although no influence on RRF is observed.

P-37
SOLUBLE CD44 AND HYALURONAN IN PERITONEAL DIALYSIS

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Introduction
Several cell types are able to shed CD44, a member of type 1 transmembrane glycoproteins, resulting in soluble CD44 (sCD44). Increased serum concentrations have been reported in inflammatory states. Peritoneal dialysis (PD) may be associated with chronic systemic inflammation. Hyaluronan (HA) is the major ligand of sCD44. The aim of the study was to analyse sCD44 and HA in peritoneal effluent and serum in relation to PD duration.

Methods
Adult non-diabetic PD patients who underwent a standard 4-hour peritoneal permeability analysis (SPA) between 2004 and 2007 were included in this analysis. Patients who had peritonitis at the time of the SPA were excluded. Effluent and serum samples were obtained during the SPA. The concentrations of sCD44 and HA in peritoneal effluent and serum were determined with an ELISA. Both ELISA's were able to measure bound and unbound fractions of sCD44 and HA.

Results
A total of 42 stable PD patients were included. The PD duration ranged from 3-71 months. sCD44 was present in peritoneal effluent, but no indication for local peritoneal production was found. The highest values of serum sCD44 were found between 1.5 and 2.5 years of PD (4402 ± 600 ng/ml, n=13). Before and after that period serum sCD44 levels were significantly lower (<1.5 yrs: 1744 ± 505 ng/ml, n=11; >2.5 yrs: 2510 ± 670 ng/ml, n=18; p<0.001). HA was present in peritoneal effluent mainly due to local production (204 ± 105 µg/L) but levels remained stable during time on PD. HA levels in serum had a wide range (1-279 ng/ml), but there was no relation with sCD44 and the duration of PD.

Conclusion
The highest values of sCD44 were found after approximately 2 years of PD. This reflects increased shedding of CD44, suggesting systemic inflammation. HA levels could not explain these high values. The source of serum sCD44 remains unclear.

P-38
ANURIC PATIENTS BENEFIT FROM PD AS PART OF AN INTEGRATED PLAN OF RENAL REPLACEMENT THERAPY

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Introduction
PD feasibility in anuric patients must be evaluated by exploring outcomes and interventional strategies. The aim of our study was to investigate peritonitis free survival, technique and patient survival stratified by baseline RRF in patients receiving PD, during a 7 year period.

Methods
162 consecutive patients were admitted from 2001-2008. According to the cut-off of baseline RRF (GFR>1ml/min) two groups were compared. Comorbidity, peritoneal transport, adequacy parameters, mortality, causes of death and technique failure in anuric patients were explored.

Results
156 patients (>3 months on PD) were studied, aged 48±15 years old, 78(50%) on PD as first dialysis modality; 60% treated by APD. Technique failure occurred in 48 (31%) patients due mainly to peritonitis (50%) and inadequate dialysis (14.6%). Global patient survival was 96%, 86% and 70% at 1, 2 and 5 years on PD. Baseline anurics (33%) had longer previous haemodialysis time (median 66 months), multiple vascular access failure (65%), more comorbidity (Davies Score 1.3±1.2 vs. 0.89±1.1, P=0.016) but similar age and baseline peritoneal transport (D/Pcreatinine 0.72±0.14 vs. 0.75±0.14, P=0.2). Initial prescription allowed 73% of anuric patients to obtain >1L fluid removal/day and 67% achieved standard adequacy targets; similar rate of phosphate control (65%) was found compared with non-anuric patients. Similar peritonitis free survival (23 vs. 27 months, Log Rank P=0.38) but lower technique survival was obtained (88%, 81%, 69% vs. 94%, 92%, 87%, at 1, 2 and 3 years, P=0.02). Overall mortality was higher in anuric patients but with still reasonable patient outcomes (95%, 76.4% and 65% cumulative survival at one, two and three years on PD).

Conclusions
This study provides further evidence to support that anuria impacts patient survival, but PD is feasible as part of an integrated plan of renal replacement therapy and attains reasonable patient outcomes in anuric patients.

P-39
RESIDUAL RENAL FUNCTION IN AUTOMATED AND CONTINUOUS AMBULATORY PERITONEAL DIALYSIS

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Automated peritoneal dialysis (APD) is increasingly being used. One possible disadvantage of APD might be a more rapid decline in residual renal function (RRF) compared to continuous ambulatory peritoneal dialysis (CAPD). The study question was whether patients on APD lose their RRF more rapidly than those on CAPD?

Incident APD and CAPD patients with RRF at the start of dialysis in the prospective, multicentre cohort study of the NECOSAD were included. RRF was measured as GFR (mean urea and creatinine clearances). Time until complete loss of RRF was compared using Hazard ratio's (HR) for APD compared to CAPD. Mean GFR over time was compared with Linear Mixed Models. Both analyses were done in an intention-to-treat and an as-treated design, and were corrected for age, sex and comorbidity at baseline. Maximum follow-up was 4 years.

At the start of dialysis 516 CAPD and 81 APD patients had RRF. In the APD group 79% were men, mean(SD) age was 51.1(16.4)years. In the CAPD group 66% were men, mean age was 53.2(14.4)years. Mean GFR was 5.7 mL/min in both groups (2.9 for CAPD, 2.5 for APD). The crude HR in the intention-to-treat design was 1.10 (CI95%; 0.86 to 1.41), and adjusted 1.13 (0.88 to 1.45). In the as-treated design the crude HR was 1.13 (0.77 to 1.66), adjusted it was 1.24 (0.83 to 1.84). In the intention-to-treat design GFR was 0.27 (CI95%: -0.74 to 0.19) lower in the APD group over time In the as-treated design it was 0.33 (-0.78 to 0.18) lower. Adjustment did not change the results.

Time until complete loss of RRF and mean GFR over time, were not significantly different over time, although patients on CAPD tended to have a longer time until complete loss of RRF and a higher GFR during follow-up.

P-40
CLINICAL USE OF BIOIMPEDANCE MEASUREMENTS IN PD PATIENTS

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A three-compartment body composition model (Lean Tissue Mass, Adipose Tissue Mass and Overhydration) is used by the Body Composition Monitor (BCM) to present the results of multifrequency bioimpedance analysis.

In order to evaluate whether the BCM was adding clinically valuable and plausible information to the standard examination of PD patients, it was used repeatedly at regular patient visits during July 2008 to May 2009. Because of the limited observation time and the absence of a parallel reference method, only the "Overhydration" parameter was studied.

In 49 PD patients (31 men, 18 women), 142 measurements were performed in an identical manner.

During the observation time, the patients hydration status was characterized by ordinary clinical parameters as being a major problem (Group A, n=9), a medium problem (Group B, n=13) or a minor/absent problem (Group C, n=21). In 6 patients, the hydration status improved considerably over time (Group D). This group included 3 newly started PD patients.

As estimated by BCM, the Overhydration parameter in Group A was constantly above 4 L, in Group B 2-4 L, in Group C less than 2 L and in Group D decreasing from 4.4 L to 1.2 L (mean values).

The body composition changes seen during the initial year of PD (less overhydration, increasing body fat) in 3 patients in Group D are well known phenomena. The general BCM results show good agreement with common clinical evaluation. However, the reliability of the measurement in individual patients (of variable body size, age and sex) is still unknown, and cannot be answered by this study. The BCM analysis was useful as a didactic tool in the patient/doctor discussion, and can contribute information in attempts to decide the nature of body weight changes.

P-41

RESTRICTING HYPERTONIC GLUCOSE PRESERVES PERITONEAL PERMEABILITY FOR AT LEAST 4½ YEARS

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Some studies have shown an increase of Peritoneal Permeability (PP) with time, partly due to glucose exposure. We report on the long term evolution of PP in a population of patients where the use of hypertonic glucose was deliberately limited.

From a single-center cohort of 383 incident PD patients treated between 1992 and 2008, patients staying more than 4 ½ years on PD were included in this study. Only 1.36% glucose bags were used at the start of PD. Hypertonic (3.86%) glucose bags, never more than one per day, were introduced as late as possible. The ratio D4/D0 of peritoneal glucose concentration after dwell times of 4 and 0 hours was used as an index of PP. Test were done after 6 months of PD, and then every twelve months. The evolution of PP was analysed with a linear regression of D4/D0 index with time, using a marginal mixed model which takes into account the clustered nature of data.

44 patients were included. They had used no hypertonic bag during more than 75% of the period studied. Peritoneal infection rate was 1 episode every 16.9 months. The coefficient of the linear regression of the D4/D0 index was significantly positive, (p<.0001). PP was thus found to decrease, not to increase. In 12 patients who stayed on PD more than 7 years, linear and quadratic coefficients were respectively significantly positive and negative. In other words, permeability in these patients first decreased, and then tended to increase.

In this large series of long-term PD patients, simply avoiding hypertonic glucose was associated with an overall decrease of PP over a period of more than 4 ½ years. The subsequent evolution of PP remains of concern. More biocompatible solutions may be beneficial in that matter.

P-42

GLUCOSE LOAD AND COURSE OF METABOLIC SYNDROME IN PATIENTS ON PERITONEAL DIALYSIS

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Background
Metabolic syndrome (MS) according to IDF definition represents clustering of central obesity with at least 2 other factors: hypertension, hyperglycemia, low HDL cholesterol, or high triglycerides. Patients on peritoneal dialysis (PD) beside metabolic disturbances due to end-stage renal disease, have also continuous, long term glucose load from glucose containing solutions for PD. All those factors could lead to expression of MS with increased cardiovascular morbidity and mortality on PD. The extent of this problem on PD is not fully evaluated.

The aim of the study was to estimate the glucose burden in patients during the course of PD therapy as well as presence and the character of MS.

Patients and Methods
105 pts. included (mean age 58.8+12.4 y, male: 52, diabetics 30,) were evaluated on: anthropometric analysis, blood pressure, biochemistry, dialysis vintage, dialysis adequacy indices, and glucose burden during PD therapy.

Results
MS was present in 49pts (46.6%), in females more frequent (67.4%, p=0.001). The most common feature of MS was central obesity, then diastolic HTA (82.65 vs. 78,57mmHg, p=0.08), than hyperglycemia (6.82 +2.83 vs. 6.20+2.10; ns.). No statistical significance was found between groups with and without MS in blood biochemistry parameters, dialysis adequacy indices and dialysis vintage. MS was increased with time being on PD therapy (p<0.05), up to the fifth year spent on PD therapy, decreasing after that.

Conclusion
In our study metabolic syndrome is found to be present in patients on PD. It is more frequent in female patients, with predominant traits of central obesity, diastolic hypertension and hyperglycemia. No difference was found between patients with and without MS all parameters explored. Glucose load on PD increases up to 5 year spent on PD along with occurrence of MS. After that time, MS subsides.

P-43

PRO-BNP, ECW AND PERITONEAL SODIUM BALANCE ON CAPD AND APD

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Peritoneal sodium balance is lower and blood pressure higher on APD than on CAPD. Serum BNP concentration and also the prevalence rate of left ventricular hypertrophy have been found higher on APD suggesting a chronic volume retention on APD.

Objective
To compare volume status in patients on CAPD and APD when diet sodium restriction and dialysate is prescribed in order to reach normovolemia and in a free use of icodextrin.

Patients and Methods
A cross -sectional study was performed with 20 patients, 2(10%) were diabetics,11(55%) male,10 on CAPD and 10 on APD (6 with dry day and 4 with humid day). Icodextin was used in 9(90%) on CAPD an in 3 out of 4 on APD for the long day dwell exchange. In all of them sodium restriction was prescribed. Blood pressure, peritoneal sodium balance (sodium dialysate (meq/L)x dialysate infunded (L)-effluent sodium x drained volume) and a multifrecuency body composition analysis (Impedimed SFB7) were measured.

Results
ECW was similar on CAPD (16± 3.66) and APD (15±2.32 L; p=0.123) and also ECW/TBW (0.50±0.80 on CAPD vs 0.47±0.006 on APD;p=0.958). Pro-BNP was 1244±755 on CAPD and 1902±1640 on APD(p=0.375). There was a positive correlation between pro-BNP and age. Sodium peritoneal balance was -120 ±81 meq/24h on CAPD and -75 ±39 on APD(p=0.144). Blood pressure,24 h ultrafiltration and diuresis was similar on CAPD and APD.

Conclusions
Serum BNP concentration was similar on CAPD and APD. In spite a trend towards a lower sodium clearance on APD , not significant differences were found in ECW, Pro-BNP and Blood pressure between CAPD and APD patients. Thus we suggest that a sodium diet restriction and perhaps the liberal use of Icodextrin have a major role to help us to control the volume overload in PD patients.

Acknowledgments
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P-44

THE EFFECT OF INTRAPERITONEAL CALCITRIOL PULSE THERAPY IN CAPD PATIENTS WITH SECONDARY HYPERPARATHYROIDISM

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Purpose
In hemodialysis patients with secondary hyperparathyroidism, intravenous administration of calcitriol became widely utilized. But in CAPD patients, the intravenous administration of calcitriol is not practical. The purpose of the present study was to determine the effect and safety of intraperitoneal(IP) calcitriol pulse therapy in CAPD patients.

Methods
All patients undergoing CAPD between January 2006 and January 2007 and willing to give informed consent were eligible. Inclusion criteria were age greater 18 years, on CAPD for at least 6 months, and secondary hyperparathyroidism(intact PTH > 300 pg/ml). Intraperitoneal calcitriol was given by direct infusion into the dialysate(2.0 μg) twice per week. If hypercalcemia(> 10.5 mg/dl) and hyperphosphatemia(> 6.5 mg/dl) developed, the patients were excluded from study.

Results
18 patients were enrolled into the study. Among them, 16 patients completed the study period. After IP calcitriol for 6 month, there was a significant drop of iPTH level from pretreatment level of 490±234 pg/ml to a level of 258±215 pg/ml(p<0.05). Among the patients not responding to this therapy, All patients (4 patients) had parathyroid hyperplasia and high iPTH level (>700 pg/ml). There were no definite hypercalcemia during study period, and only 1 patient was excluded from study due to hyperphosphatemia.

Conclusion
In CAPD patients, IP calcitriol pulse therapy is effective in treating mild secondary hyperparathyroidism, and that IP calcitriol pulse therapy is associated with a low incidence of hypercalcemia and hyperphosphatemia.

P-45
CHOOSING A RENAL REPLACEMENT THERAPY OPTION - INFORMATION IS NOT ENOUGH

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Background
Dialysis modality choice is a key part of pre-dialysis care with considerable variation in practice. There is work in other clinical areas examining formal ways to support patients making decisions, patient decision aids/support tools - formal interventions that help people make difficult and deliberative choices. This approach could be useful for decision support for patients examining dialysis options in planned or unplanned settings.

Methods
Formal literature review of decision support techniques/benefits was performed and online decision support resources critically examined. Paper based decision support tools for dialysis options were generated after literature review.

Results
Literature review showed giving patients information is only one element of decision making but in dialysis literature this is the area studied and practised. In contrast in other areas (eg cancer, screening) clinical benefits for decision support aids have been shown - improved knowledge, enhanced active participation, decreased number of undecided people, improved agreement between patient values and choices. Evidence based guidance exists for style and content of decision support aids. Thus decision support aids for dialysis options were created including the Ottowa decision support template and a set of decision support cards. Each examines patients' values and how these relate to dialysis options that are presented. At the end of the process patients see how their values and goals relate to treatment locations and options. These tools are being utilised in 7 European hospitals taking part in the Unplanned Start Program aiming to give choice of modality to late presenting patients.

Discussion
Decision making over dialysis options involves patients taking complex clinical information and relating that to their lifestyle and values. Evidence from other clinical areas demonstrates benefits of decision support aids. Aids have been generated and applied in clinical practice to support decision making over long term dialysis options.

P-46
10 YEARS ON PD: THE UNCLE SCROOGE METHOD

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The rare papers reporting patients treated more than 10 years with PD usually focus on patients' characteristics. We report on 6 patients treated more than 10 years with PD at our center, and discuss the role of some specificities in our practice.

Since 1990, in our center, (i): the use of glucose has been purposely restricted, hypertonic bags being never used from the start, started only when necessary, never more than 1/day. They were systematically stopped at the time of Peritoneal Infection (PI) (ii): fluid balance has relied as long as possible on residual renal function, stimulated with furosemide; nephrotoxic antibiotics were systematically avoided, especially at the time of PI (iii) patients were not transferred to hemo after a set number of PI, but only if treatment failed, or tolerance was poor.

6 patients (2 male, 4 female) have been on PD for more than 10 years at our center (total time 804 months). They were all on CAPD. None was diabetic. At start, mean age was 43 years, weight 67 kg, height 1.65 m. Peritonitis rate was 1/20.1 patient-months. 3 patients became anuric after 0, 3, and 7 years. 1 patient was transferred to hemo, 2 patients died, and 3 are currently on PD.

We believe that our practice of systematically economizing residual renal function and glucose exposure was operative in keeping these 6 patients 10 years on PD.

P-47
FACTORS THAT PREDICT MORTALITY IN PERITONEAL DIALYSIS PATIENTS: 8 YEARS OF EXPERIENCE

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Patients receiving dialysis therapy have a high cardiovascular mortality that can only be parcially explained by traditional risk factors such us age, diabetes, hypertension and lipid disorders. Recent studies have suggested that non-traditional risk factors such us

inflammation, nutritional status and disorders of mineral metabolism are associated with the outcome in this population.

The aim of our study was to evaluate the risk factors of mortality in a population of patients undergoing Peritoneal Dialysis (PD).

We rectrospectively analysed several demographic, clinical and laboratory data. Based on serum high sensitive C-Reactive Protein (hs-CRP), the patients were divided into 2 groups: High and normal hs-CRP. Using the Kaplan-Meier method we compared the survival of both groups. The Cox Proportional Hazard model was also used to identify factors determining patient mortality. A total of 51 patients (22 females, 29 males) with a mean age of 54 years, were followed up for an average of 35 months; 18 patients (35%) were diabetic and during the follow up 15 (29%) patients died. Mean hs-CRP, serum Albumin (s-Alb), CaxP and PTH were 18.8 ± 26 mg/L, 3.5 ± 0.6 g/dL, 47 ± 18 mg^2/dL^2, 666 ± 604 pg/mL, respectively. On Cox Proportional Hazard, age (b=0,054, p=0.04), CaxP (b=0.056, p=0.02), s-Alb (b= - 2.175, p= 0.007) and PTH (b= - 0.002, p=0.02) independently influenced the mortality of our patients. The 4-year patient survival rate was significantly lower in patients with higher CRP (27.1% vs 81.6%, p=0.01).

We found that inflammation, malnutrition and mineral metabolism (lower PTH and higher CaxP) are important predictors of mortality in our PD population.

P-48
RESIDUAL RENAL FUNCTION, NUTRITIONAL STATUS AND MINERAL METABOLISM IN PERITONEAL DIALYSIS PATIENTS

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Residual renal function (RRF) has been found to be an important predictor of outcome in both Hemodialysis and Peritoneal Dialysis (PD) patients. Several studies have suggested that anuric dialysis patients have more adverse metabolic and cardiovascular profile, more inflammation, higher CaxP and worse nutrition, than patients with preserved RRF.

The aim of our study was to evaluate the potential relationship between RRF and markers of malnutrition and mineral metabolism in patients treated with PD.

We analysed several demographic, clinical and laboratory data. Nutritional status was assessed using Subjective Global Assessment (SGA) and Protein Equivalent total Nitrogen Appearance (PNA).

We included 51 patients (29 males, 22 females) with a mean age of 54 years, 14 patients were on continuous ambulatory peritoneal dialysis (CAPD) and 37 patients on continuous cycling peritoneal dialysis (CCPD). The mean RRF was 4.3 ml/mn/1.73 m^2. We divided our population in two groups: GI (n=20)- anuric patients and GII (n=31)-patients with RRF, and compared both groups regarding the parameters analysed. Patients without RRF had significantly higher PTH (969 vs 465 pg/ml, p=0.05), P (7 vs 5 mg/dl, p=0.001) and CaxP (74 vs 48 mg^2/dl^2, p=0.02) levels. In a linear correlation model we found that RRF was positively correlated with the SGA (r=0.4, p=0.01) and negatively correlated with the P (r=0.28, p=0.04) and the PTH (r=0.3, p=0.02) levels.

Our study demonstrated the positive influence of RRF on nutritional status and mineral metabolism (lower PTH and P) on chronic peritoneal dialysis patients.

P-49

QUALITY OF LIFE CHANGES AND CLINICAL OUTCOMES DURING NINE MONTHS OF PERITONEAL DIALYSIS TREATMENT

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Introduction
The main aim was to find out how can be quality of life (QoL) perception influenced during 9 months of peritoneal dialysis (PD) treatment. We focused on longitudinal trends in QoL perception and association between QoL scores and laboratory characteristics.

Subjects
- 22 patients with ESRD, 12 women
- average age 67 ± 11
- 9 diabetics.

Methods
WHQOL- BREF questionnaire is generic self- report inventory of QoL. QoL is evaluated on 5- point scale, higher is better. The items are divided into 4 domains:Physical,Psychological, Social, Environmental. Two items provide measurment of Overall QoL and Health facet on 5- point scale.

A set of laboratory characteristics was collected together with questionnaire administration: S-creatinine, S-urea, S-P, S-albumin, S-CRP, residual diuresis (RD), HbA1c, hemoglobin, D/P, Kt/V.Patients were followed-up at 0,3 and 9 months.

Results
QoL deteriorated in all domains during 9 months follow-up. Statistically significant worsening was found in 3 of them: psychological p= 0,02, social p= 0,05 and in overall QoL domain p= 0,048. There were no differences between diabetics and non-diabetics and in gender. Patients younger then 70 years experienced less compromised physical health at the end of follow-up p=0,03.

The most marked change in laboratory findings was decrease of albumin p= 0,002 after 9 months. Positive correlation between psychological health and albumin was found at the start Pearson corr.0,45. Decline of RD was obvious after 9 months p= 0,03.Dialysis adequacy and peritoneal transport characteristics did not change over time.

Conclusion
The majority of patients started with PD so we expected rather improvement in QoL after first 3 months of treatment as a certain paralell to a "honeymoon period" in hemodialysis patients. Deterioration in QoL corresponded with nutritional status. Albumin was found as the predictor of psychological health. Results reflect how difficult and at the same time essential is to intervene in protein intake in elderly patients on PD.

P-50

A SINGLE CENTRE EXPERIENCE OF ASSISTED AUTOMATED PERITONEAL DIALYSIS (AAPD)

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Background
An increasing elderly, frail dialysis population, with various co-morbid conditions, presents the Renal Service with an evolving challenge to offer informed patient choice, balanced with cost effective provision of renal replacement therapy (RRT). aAPD is a new approach providing home based RRT for patients who would otherwise utilise hospital maintenance haemodialysis (MHD).

Methods
Since November 2007 we have piloted aAPD at Manchester Royal Infirmary. Here we report our initial findings in 12 patients, including number of hospital admissions in the 12 months before and after aAPD, and peritonitis episodes.

Results
aAPD enabled 12 existing PD patients (mean age 71yrs) to remain on home dialysis, after presenting acutely with serious medical and social problems prohibiting continued self care. Currently 9 patients continue on aAPD, 2 now residing in nursing homes. 2 died: 1 soon after starting, and 1 after a year. 1 returned to CAPD. Hospital admissions: Pre and post aAPD there were 23 events in 103 patient months, and 6 in 67 patient months respectively. Peritonitis episodes: Pre and post aAPD there were 9 in 60 patient months, and only 1 in 12 patient months respectively. Comparative costing demonstrated that aAPD averaged £2,000 less than MHD per patient/per annum.

Conclusion
aAPD has so far benefited a small group of patients, by preventing them switching to MHD (also relieving pressures on this hospital service), or having to face the difficult decision to stop treatment. A substantial reduction in hospital admissions and peritonitis episodes following commencement of aAPD was obvious. Currently this is not a funded service. A Health Care Agency is providing assistance to patients. We are evaluating cost effective ways of NHS service provision, by extending existing community care. We continue to offer aAPD to existing PD patients appropriately, and are widening this choice to pre-dialysis and MHD patients.

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PERITONEAL DIALYSIS AS FIRST LINE RENAL SUBSTITUTION THERAPY IN PATIENTS WITH MULTIPLE MIELOMA

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Continuous ambulatory peritoneal dialysis (CAPD) is being used only in limited number of patients with kidney failure due to multiple myeloma, despite having better preservation of hemoglobin, higher clearance of paraproteins, and higher chances to recover the renal function than hemodialysis.

We report 7 cases (M/F:3/4, mean age:62.6years) with multiple myeloma and kidney failure without recovery of renal function after aggressive therapy. CAPD schedule with standard glucose containing lactate-buffered peritoneal solutions (3-4changes/day, 1500- 2000ml) was performed. In one patient 2 monthly cures of chemotherapy of induction according to the protocol VAD allowed to achieve recovery of renal function and independence to CAPD program (creatinine Cl=57ml/min). In six patients the CAPD was performed for a mean period of 8.0 (4 - 18) months. There were no severe adverse events during CAPD: peritoneal leak due to malignant obesity in one patient and catheter malfunction in another patient. One patient presented 2 episodes of peritonitis during 18 months of CAPD. One patient developed haemoperitoneum secondary to posttraumatic splenic rupture with splenectomy and maintenance of peritoneal catheter and CAPD schedule. Death appeared in 5/7 patients at a mean follow-up of 8.5 months (4 - 18) and was not related with peritoneal dialysis. Cause of death were: cardiac arrest in one patient after recovery of renal function and switch from CAPD (associated diseases: malignant obesity, arterial hypertension, coronary heart disease) and evolution of multiple myeloma in four patients under CAPD. @ patients are still alive and continuing the CAPD therapy and chemotherapy.

CAPD allowed the recovery of renal function or the survival on short to long term (4 to 18 months) in multiple myeloma patients. CAPD as dialysis support should be considered whenever necessary for all newly diagnosed patients with myeloma and renal function which does not improve with aggressive initial therapy.

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PARENTERAL NUTRITION AS A TREATMENT OPTION IN ENCAPSULATING PERITONEAL SCLEROSIS: A PROSPECTIVE STUDY

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Encapsulating peritoneal sclerosis (EPS) is characterised by bowel obstruction. Mortality rate is around 50%. Parenteral nutrition (PN) is required in severe cases.

EPS patients starting PN (>2 weeks) between September 2007 and August 2008 were identified. Data was collected on weight, body mass index (BMI), handgrip strength (HGS), subjective global assessment (SGA), plasma albumin and gastrointestinal symptoms prior at baseline and 2 monthly.

6 patients (4 transplanted, 2 haemodialysis) were identified. Mean time from EPS diagnosis to start of PN was 3.6 months and mean length of time on PN was 10.2 months. 3 patients required regular nasogastric drainage. 1 patient died at 4.5 months. Mean number of hospital days was 225 (129-374). Follow up time varied from 16.5-22.1 months.

In the 5 survivors, 2 patients no longer require PN (PN duration=9.3 and 10.8 months). All nutritional parameters improved in 1 and SGA and albumin only in the other. Albumin also improved in all 3 remaining on PN, but there was little improvement in weight and HGS. At the end of the study, 3 patients had an SGA score of 6-7 (well nourished) and 2 a score of 4- 5 (risk of mild-moderate malnutrition).

Average number of symptoms at baseline was 2.2 (0-4) and at study end were 0 and 1 in 2 patients off PN and 2,3 and 3 in 3 patients on PN.

Use of PN in severe EPS can lower mortality (only 1 of 6 patients). Hospital stays are long and overall improvement is achieved in a minority of patients; most continue to have a significant symptom burden. PN on its own may not be an optimal management strategy for these patients.

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ABDOMINAL PSEUDOCYSTS: A RARE COMPLICATION FOLLOWING PERITONEALDIALYSIS ASSOCIATED PERITONITIS- REPORT ON THREE CASES

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Common complications of PD-therapy are peritonitis (inclusive encapsulating peritoneal sclerosis), leckages, hernias, catheter dislocation or loss of ultrafiltration. We describe three cases of abdominal pseudocysts with progressive loss of in- and outflow.

The three patients (patient 1: male, 69 years; patient 2: female, 54 years; patient 3: male, 42 year-old) were treated with PD since 6 years (with three episodes of peritonitis), 2 years (with two episodes of peritonitis) and one year (without peritonitis). Due to progressive reduction of dialysate volume and dialysis quality ultrasound and CT scans were performed. Abdominal pain was not present in our patients and no signs of ileus was evident. Ultrasound of the abdomen showed the instilled dialysate entrapped in a cystic formation, enclosing the inner tip of the Tenckhoff catheter. CT scans confirmed these huge cystic formations without thickening of peritoneum. After drainage of dialysate the cystic formation disappeared completely. The membranous cystic formation was resected in patient 1 and 3. In patient 2 the Tenckhoff catheter was removed. A histological sample in patient 1 revealed a mere fibrous collagen tissue without inflammatory process, thus encapsulating peritonitis could be excluded.

Abdominal pseudocysts are a rare complication following peritoneal dialysis In literature so far, only two individual cases on such a complication were reported. However, in neurosurgery the formation of a pseudocystic membrane is described in association with ventriculoperitoneal shunts, although this is a very rare complication and appears with a frequency in about 1 % of cases. The overall outcome of our described cases was good, although peritoneal dialysis had to be discontinued after operational intervention and the patients had to switch to a haemodialysis regimen.

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LOWER RATES OF CATHETER MALFUNCTION USING A NEW EXTRAPERITONEAL TUNNELLED PLACEMENT OF PERITONEAL DIALYSIS CATHETERS WITH LAPAROSCOPIC ASSISTANCE (THE WIRRAL TECHNIQUE)

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Background
Peritoneal dialysis, an alternative to vascular access for renal failure, depends on a permanent indwelling catheter, free of malfunction. A one year patency rate of 80% is internationally recommended.

Aim
We report our 2 year experience of a new extraperitoneal tunnelled placement of catheter with laparoscopic assistance developed at our centre (The Wirral Technique). Catheter survival was the main endpoint.

Method
We retrospectively analysed our database (data collected prospectively) between May 2007 and May 2009. All catheters in place 13 months or more were classed as year two. A coiled, double cuffed Tenckhoff catheter was used.

Results
41 catheters were inserted over the two year period. 12 had been in place for 13 months or more. Of the 41 inserted, 13 had never been used. Reasons included bladder perforation (3), catheter blockage (2), peritonitis (2) and improving renal function (6). Once used, 3 catheters were removed for catheter related problems (blockage). Of the catheters used 12 were removed for non catheter problems such as peritonitis (3), patient death (2), other (7) e.g. transplant, hernia. Overall survival of catheters used at one and two years (including those removed for non catheter related issues) was 56% and 42% respectively. However, excluding those removed for non catheter related issues the survival increased to 83% and 83% for year one and two respectively.

Conclusion
The Wirral Technique achieved the recommended 80% patency rate at both one and two years. However, larger and longer term data are required to fully assess the new method.

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SURVIVAL AND RISK FACTORS FOR MORTALITY ON CHRONIC PERITONEAL DIALYSIS: A 3-YEARS SINGLE CENTER EXPERIENCE

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Introduction
Peritoneal dialysis (PD) is a widely applied modality of renal replacement therapy for end-stage renal failure (ESRD) and still accompanied by high morbidity and mortality rates.

Aim of the study: The aim of the study was to analyze survival and mortality risk factors in patients on chronic PD treatment in our unit during a 3-year follow up.

Methods
We followed 134 prevalent and incident patients affected by ESRD, 75 male and 59 female, middle age 57±18 years, being 38% of them diabetic, performing PD, with conventional fluids. We examined Kt/V, weekly creatinine clearance (Ccr), daily urine output, residual renal function (RRF), transport characteristics evaluated by peritoneal equilibration test (PET), body mass index (BMI), serum albumin level (SA), c-reactive protein (CRP), corrected calcium level (Ca), calcium-phosphorus product (CaxP), use of angiotensin converting enzyme inhibitors (ACEI) and/or angiotensin-receptor blockers (ARB). Patients survival was assessed by Kaplan-Meyer comparison, means were compared using the Student t-test and the overall predictors of mortality were analyzed by multivariate Cox regression test.

Results
Overall pts survival rates were 88, 82 and 79% at 1, 2 and 3 years of follow-up respectively. Diabetes status (40% vs. 12.8%, p=0.02), age (p=0.07) and RRF < 10 l/week (p=0.03) were significant predictors of mortality in our PD pts.

The observed cumulative survival of pts with CRP < 10 mg/L, SA > 28 g/L and BMI ≤ 20 was better than those with CRP ≥ 10 mg/L, SA ≤ 28 g/L and BMI > 20, but without reaching statistical significance. High-average transport status for creatinine is associated with higher mortality compared to other transport groups.

Conclusions
Patient survival in our settings is similar to that reported in other series. The strongest predictive factors for mortality were: diabetes mellitus, age and residual renal function, nutritional status, inflammation and peritoneal transport characteristics.

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HYPOPHOSPHATEMIA IN CAPD PATIENTS

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Hypophosphatemia is unusual in uremic patients. Severe hypophosphatemia have been reported in a few patients on peritoneal dialysis who received total parental nutrition.

We reviewed the records of patients who started peritoneal dialysis and became hypophosphatemic.Between April 2002- December 2008. Hypohoshatemia was defined as plasmas inorganic phosphate concentration below 2.5 mg/dl (2.5 to 4.5 mg/dl). Severe hypophosphatemia was defined below 1 mg/dl (0.30 mmol/L). History of diabetes mellitus, insulin therapy, parathyroidectomy, recent peritonitis (in past 4week) and duration of peritoneal dialysis were recorded in each hypophosphatemic individuals.

In this 7 years period, peritoneal dialysis was started in 248 patients (M/F 130/118, age: 2-87 year) in our center. Hypophosphatemia(<2.5 mg/dl) was detected in 11 patients. In eight of them (73%) hypophosphatemia developed after a recent peritonitis and in three of them it developed in early period (< 2 months) of peritoneal dialysis start. Death occurred in three hypophosphatemic patients all of them were old aged diabetic female.

Interacellular phosphate movement occurs during Intra-peritoneal carbohydrate load, low-protein and a high-carbohydrate diet. Infection increases membrane transport status and increase the glucose load and could be a predisposing factors for development of hypophosphatemia. Hypophosphatemia could be fatal and easily overlooked in uremic patients. A frequent serum phosphate monitoring during peritonitis and at the start of peritoneal dialysis is recommended.

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PD FOCUS- MULTICENTER REGISTRY: AN INFORMATION SYSTEM TO PROMOTE QUALITY IN PERITONEAL DIALYSIS (PD)

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Aim
To analyze the PD Focus preliminary results and compare them to the K-DOQI PD Guidelines recommendations.

Methods
To assure the quality of information, the PD Focus Multicenter Registry data were collected in a monthly base, and only accepted for processing after audit and approval of a coordinator committee. Data was used to support quality improvement.

Results
Data from 1,224 Pt (16,836 Pt.mo) on PD (January/2007 to May/2009) in 18 facilities were studied. 53.6% women and 73.5% on CAPD. Hypertension (34.5%) and diabetes (27.8%) were the most frequent baseline diseases. The Charlson comorbidity index >4 was present in 61%. A total of 1,416 catheters were implanted. Peritonitis incidence was 1episode/26 Pt.mo. Patient, technique and catheter survival (Kaplan-Meier) at 12 mo were 88.2%, 88% and 66.2%, respectively. Dropout rate in 12 months was 27.5%. Lab evaluation showed Kt/V urea >1.7 in 74.3%, Hemoglobin >11g/dL in 71.8%, Ca<10.5 mg /dL (92.2%), P<5.5 mg/dL (76.0%) and the PTH >150 pg/mL (63%). Subjective global assessment showed mild/ moderate and severe malnourishment in 20% and 10%, respectively. A nPCR <0.8 g/kg/day was found in 65.9% and the serum albumin was <3.5 g/dl in 56.2%%. Hypertriglyceridaemia and Hypercolesterolaemia was present in 41.4% and 43.8%, respectively. Hypertension (systolic >140 and/or diastolic >90 mmHg) was present in 47% of 14,585 measurements.

Conclusion
1 - Monitoring clinical parameters is recommended to improve the quality of Patient care on PD (K-DOQI/2005). The abnormalities found in this study (Ex: cardiovascular risk and malnutrition) need an appropriate strategy for its correction. Reliable data is essential for such actions.

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LONG TERM SURVIVAL AFTER DIAGNOSIS OF ENCAPSULATING PERITONEAL SCLEROSIS IS POSSIBLE

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Encapsulating peritoneal sclerosis is a serious, life-threatening complication in patients on long-term peritoneal dialysis (PD). As the prognosis of established EPS is poor, early recognition of preceding symptoms is essential. However, the diagnosis is usually made only when the patient has an established EPS with symptoms of partial or complete intestinal obstruction. Discontinuation of PD is the mandatory first step of therapy. Additional treatment options include immunosuppressive therapy, tamoxifen, enteric rest with total parenteral nutrition and, if needed, surgical treatment.

Subject and Results
We report five patients, 2 males and 3 females ranging in age from 36 to 63 years (mean, 48.2 years), who had achieved a long survival after the scheduled start of treatment or carrying surgery. The first patient developed EPS after 2 years on peritoneal dialysis, two episodes of peritonitis and a combined transplantation of pancreas and kidney; the other four patients developed EPS after 6, 9, 11 and 12 years on peritoneal dialysis and several episodes of bacterial peritonitis (5, 3, 7 and 5, respectively). Two patients were undergo surgical enterolysis, one with complete relief, and the other patient maintained mild symptoms that could be successfully controlled by treatment with low dose steroid (monitoring 5 and 7 years). The remaining 3 patients received treatment with steroids plus tamoxifen, associated with enteral nutritional support; they showed gradual recovery of the symptoms until their dissapearance, and maintain acceptable nutritional parameters, after 1, 3 and 8 years of follow-up.

Conclusion
(1) Long survival of patients with EPS is possible if it is suspected, and treatment started early. (2) The surgical treatment (release of intestinal adhesions) can be considered when symptoms of EPS are not improved by immunosuppressive treatment, being ideal done early, before it is presented an emergency situation, in which the prognosis is worse.

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HEALTH-RELATED QUALITY OF LIFE IN PATIENTS TREATED WITH DIALYSIS IN SERBIA. COMPARISON TO OTHER COUNTRIES

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The importance of measuring the patient's health-related quality of life (HRQoL) is being increasingly recognized. The aims of this study were to evaluate HRQoL and nutrition in patients at the initiation of PD/HD therapy (incident cohort), and in patients on long-term PD/HD treatment (prevalent cohort).

Methods
The study enrolled 229 patients on HD and 99 on PD, divided into two groups: prevalent cohort comprised 192 patients on chronic HD and 67 on PD more than 3 months, and incident cohort with 37 and 32 patients, respectively, who started their dialysis during the study. Demographic and comorbidity data were collected in all patients, as well as biochemical values and parameters of HRQoL. Patient's self-assessment of HRQoL was measured by the 36-item Short Form Health Survey Questionnaire (SF-36), encompassing 8 summary scale and 2 summary dimensions.

Results
Based on the ICED index level, in both, prevalent an incident patients, the high presence of associated diseases was observed, i.e. 56.8% and 67.6% respectively. Indicators of comorbidities have negative and statistically significant impact on HRQoL. After one year, all HRQoL parameters in the incident HD patients, and most in PD patients were improved.

Conclusions
HRQoL in patients on dialysis are substantially impaired, mainly at the initiation of HD/ PD therapy. Comorbid conditions have negative and statistically significant correlation with parameters of HRQoL, and could explain poor HRQoL to a remarkable extent. Older age and poor income substantially reduce HRQoL. The good news for patients on dialysis is that general well-being should be improved during the first year of dialysis. HRQoL of Serbian dialysis patients was similar to that in other Balkan countries, however, lower than in Italy, Spain and France, probably due to the higher degree of malnutrition and living and health care standards in these countries.

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PATIENT AND TECHNIQUE SURVIVAL IN ELDERLY ESRD PATIENTS ON CAPD

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Background
The number of elderly patients with end-stage renal disease (ESRD) on maintenance dialysis is constantly increasing worldwide. Continuous ambulatory peritoneal dialysis (CAPD) provides several benefits to elderly patients, including hemodynamic stability, steady-state chemistries, and no need for vascular access.

Materials and Methods
We retrospectively analyzed patient and technique survival of CAPD patients in one dialysis center in Iasi, Romania.

Results
Of our 257 CAPD patients, 47 were in the elderly group (> or = 65 years-old) and 210 were in the younger group (under 65 years-old). Mean age at the start of CAPD was 70.7 y.o. in the elderly group, and 45.7 y.o. in the younger group. Mean CAPD vintage was 20.2 ± 14.7 months in the elderly group, and 32.3 ± 21.9 months in the younger group. The 1-year and 5-year patient survival rates were 79.9% and 42.5%, respectively, in the elderly group, and 91.3% and 64.9%, respectively, in the younger group (p = 0.04). The 1-year and 5-year rates of technique survival were 95.2% and 35.5%, respectively, in the elderly group, and 95.8% and 49.5%, respectively, in the younger group (p = ns).

Conclusion
In our CAPD patients, patient survival was significantly lower in the elderly than in the younger patients, but technique survival was similar in both groups.

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LAPOROSCOPIC REVISION OF PERITONEAL DIALYSIS CATHETERS DEVELOPED MECHANICAL OUTFLOW OBSTRUCTION

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One of the most frequent complication in peritoneal dialysis (PD) is mechanical outflow obstruction (MOO) which has developed from different causes in peritoneal dialysis catheters. The aim of the our study is to evaluate the effectiveness of partial omentum excision and pelvic peritoneal fixation by laporoscopic revision of developed MOO.

Materials and Methods
Between November 2005-February 2008, Tenchoff catheters were implanted by using percutan, surgical or laporoscopic methods and afterwards MOO developed 26 patients were revised by laporoscopic methods.The technic of revision, duration of the operation, hospitalization, early and late complications, catheter and survival of the patients were evaluated.

Findings
The duration of the operation was 75 ± 13 mins. Pelvic peritoneal fixation was applied to all patients and 20 patients were made omentum excision. After 27.8 ± 6.2 hours of the application PD was started. No intraoperative complications were seen.The complications were as follows; peritoneal leakage (n=2), peritonitis (n=1), bleeding (n=1) and wound infection (n=1). Duration of monitoring 17±7.6 months. Kidney transplantation was made on 9 patients. Hemodialysis therapy was started on 2 patients.

Conclusion
Catheters of developed MOO can be successfully revised by the laporoscopic method. Pelvic peritoneal fixation of the catheters and partial omental excision not only prevent catheter migration, but also provide effective dialysis therapy. In addition to this, they can prolong catheter survival.

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MEDICAL CHALLENGES OF ACUTE ALUMINIUM TOXICITY IN PEDIATRIC PERITONEAL DIALYSIS PATIENTS

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Aluminium encephalopathy has been well described in pediatric patients with end stage renal disease treated with aluminium-based phosphate binders in the past. The toxicity is also associated with bone and hepatic complications. We have experienced in 2005 an accidental exposition to aluminium toxicity in a cohort of six pediatric peritoneal dialysis patients. The dialysate aluminium concentration was tested and found with values up to 20-40 µg/L (normal concentration in dialysate< 5µg/L).

We report our experience in the organization, protocols, treatment, evaluation of complications and follow-up of these patients during and after the withdrawn of the contaminated dialysate solutions. Neuropsychological tests and electrophysiological recordings, more precisely visual evoked potentials (VEPs), were performed in those patients and compared to uremic patients treated in dialysis not exposed (n=8) and to healthy participants without renal dysfunction (n=13). Although performances in the exposed uremic patients were lower than those in the unexposed uremic patients, these differences were weak and not observed on all the tests. Significant differences were more consistently found between the uremic patients (exposed or not to aluminium) and the healthy participants, suggesting that uremia itself has adverse effects on brain function. This experience was challenging as it has changed our policy in the management and follow-up of aluminium testing in our dialysis center. Since then, blood aluminium concentration is routinely tested twice a year in pediatric dialysis patients.

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ACUTE PANCREATITIS (AP) DURING PERITONEAL DIALYSIS (PD): A ONE-CENTER EXPERIENCE

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Introduction and Aims
PD patients have a higher risk of AP than general population. We report the cases of acute pancreatitis in our centre since PD started.

Methods
The medical records of all patients with acute pancreatitis treated in our PD program were retrospectively studied. Clinical presentation, biochemical diagnostic and clinical course were analyzed.

Results
Five out of 213 patients had 10 episodes of AP (2, 1 -100 treatment-year). One patient was treated with CCPD, all the others were in CAPD. In five cases the patients were using icodextrin.

Three patients had an identificable cause for pancreatitis; colelithiasis (n=2) and severe hyperparatiroydism (n=1).

In all patients, clinical presentation consisted exclusively of abdominal pain.

Serum amylase was elevated in only 5 episodes, while serum lipase was elevated in all cases. Amylase values in patients using icodextrin were lower than in other patients. In four cases treated with icodextrin amylase did not exceed the three times upper limit of normal required for pancreatitis diagnosis.

Cloudy dialysate was found in all cases. Effluent white blood cell count (WBC) was elevated in 7 cases (70%) with positive culture only in 4 (40%). (Klebsiella pneumoniae (n=2), Staphylococcus auricularis (n=1) and Streptococcus sp (n=1).

All patients were treated with starvation and analgesics. Intraperitoneal antibiotherapy was prescribed when WBC in the dialysate was elevated.

Two patients were temporally transferred to hemodialysis (HD) due to lack of ultrafiltration. When AP resolved they successfully returned to PD.

Conclusions
Icodextrin frequently interferes in serum amylase determination in PD associated acute pancreatitis.

Cloudy effluent and increased cell count dialysate is common at the onset of acute pancreatitis, but only some patients have culture proven peritonitis (40%). Gram-positive and gram-negative microorganisms are found.

Although some cases need to be temporally transferred to HD they can successfully resume PD treatment.

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RESUME PERITONEAL DIALYSIS AFTER TENCKHOFF CATHETER REMOVAL FOR PERITONITIS: FEASIBILITY AND CAUSES OF DEFINITIVE WITHDRAWAL OF PERITONEAL DIALYSIS (PD)

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The feasibility of resuming PD after severe peritonitis with catheter removal ranges from 4-50% in published series. However, the reason why around 50% patients can not resume PD treatment are not well established. The aim of our work is to review all peritonitis episodes that required catheter removal in our Unit and to analyze the posibility of restart PD.

Patients and Methods
We reviewed all episodes of peritonitis that required catheter removal and switch to hemodialysis from January 1998 to December 2008.

Results
Catheter removal was needed in 23 out of 238 peritonitis (9,6%). There were 13 men and 10 female (56,2±17 years, mean follow-up on PD of 39±37 months). Microbiologic causes of peritonitis were: staphylococcus aureus (n=5), streptococcus (n=2),pseudomonas (n=1), other gram negative-bacilli (n=5), fungal (n=6), mycobacterium fortuitum (n=2), tuberculosis (n=1) and mixed growth (n=1). After a 2 months period on HD, a new Tenckhoff catheter was implanted and 4 patients (17%) resumed PD without problems. 2 patients died before catheter reinsertion and 1 patient received a successfull renal transplant. Thus 16 patients were permanently switched to HD: suspected peritoneal adhesions (n=5), peritoneal sclerosis (n=2), diverticulitis (n=1), familial-dependence (n=6), fear of a new peritonitis episode (n=2).

Interestingly, 6 patients did not resume PD because of social reasons. They were 3 men and 3 women with a mean age of 73 years (range 60-81 years) and a mean follow up on PD of 29±10 months. So, social or familial dependence prevented the resumption of PD in 37% of patients. In these patients, a new peritoneal catheter implantation was not attempted.

Conclusion
Feasibility of resume PD after a severe episode of peritonitis which requires peritoneal catheter removal is poor. 50% are permanently transferred to HD because of medical reason. Social or familial dependence is the mean cause in old and very old patients. Assisted peritoneal dialysis can be a solution for dependent patients who want to remain in PD.

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SINGLE CENTER POST-MARKETING EVALUATION OF EFFICACY AND SAFETY OF PEGYLATED EPOETIN BETA (MIRCERA®) IN PERITONEAL DIALYSIS PATIENTS

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Purpose
To evaluate the efficacy and safety of CERA given once every 4-6 weeks in maintaining stable hemoglobin (Hb) levels in PD patients converted directly from sc darbepoetin alfa or sc epoetin beta.

Methods
We studied 13 stable PD patients with a mean time on PD of 40.0 ± 20.3 months and a baseline Hb level of 10.7 ± 1.7 g/dL. Baseline chemistry was as follows: ferritin 333.6 ± 182.3 mg/L, transferrin saturation 33.2 ± 11.1 %, CRP 5.8 ± 7.7 mg/L, vitamin B12 473.5 ± 185.5 ng/L and folic acid 11.0 ± 25.0 mg/L. At the time of conversion to CERA, 2 patients were ESA-naïve, 9 patients were on darbepoetin alfa (mean dose 57.2 ± 47.5 mg/wk) and 2 patients were on epoetin beta (mean dose 8000 ± 2828 IU/wk) for the previous 3 months. All PD patients were switched from weekly or bi-weekly sc darbepoetin alfa or weekly sc epoetin beta to CERA monthly. 3 months after conversion we switched to sc CERA with prolonged injection interval of 5 weeks in all patients.

Results
After conversion to pegylated epoetin beta the Hb level increased from 10.7 ± 1.7 g/dL to 12.1 ± 1.0 g/dL after 9 months of treatment. The prolongation of the injection interval to 5 weeks caused a dose adaptation in 7 patients. Overall there were no specific adverse events. The mean blood pressure was unchanged.

Conclusion
Conversion from epoetin beta or darbepoetin alfa to CERA administered every 5 weeks sc was effective in patients on PD. Regular monitoring of Hb levels was necessary and required dose adaptations early in the treatment course. The extended dose intervals allowed the administration on regular outpatient visits, which ensures optimal patient compliance. The drug tolerance was excellent.

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ARE CKD PATIENTS STARTED EMERGENTLY ON HD DEFINITELY DENIED THE CHOICE OF PD?

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Patients who start dialysis in an unplanned way are usually first haemodialysed with a central venous catheter and perhaps 50-70% receive emergency dialysis within 12 hours. These patients have poor clinical outcomes, less chance of dialysing with permanent access (fistula or PD catheter), increased morbi/mortality risks as well as less opportunity to receive a home therapy and/or a transplant.

We have therefore started a non-randomised pilot experience in our center aimed at providing treatment options education for the unplanned start patients. The pilot consists of a trained nurse educating the unplanned start patients in an objective, structured way using standardised tools (booklet, poster, DVD, photobook, decision aid grids, game of cards), on all the renal replacement treatment options within the first week after their admission if of course they are stabilised. The purpose of the pilot is to evaluate the number, type and co-morbidity of these patients as well as allowing the patients to make a decision on which renal replacement therapy they want as well as aiming to improve timing for permanent access placement in these unplanned start patients.

After 1 month, 4 male patients with a median age of 37 have already been included. Their first contact with the training nurse took place 3 to 8 days after the first hemodialysis and the first information session 4 to 20 days thereafter.

Two patients could not make a choice after 5 weeks and are still on HD with a CVC while one chose PD at day 34 (Tenckhoff catheter implanted on day 42) and one refused PD at day 7 for socio-economic reasons.

Of course, only a larger collaborative multicentre study using the same educational tools would provide us a better idea of the value of such an approach on patients' free choice of a dialysis modality.

P-67

LABORATORY PROCEDURES AND METHODS FOR CALCULATING PERITONEAL DIALYSIS ADEQUANCY; DETECTED PROBLEMS

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Introduction
Our laboratory has been monitoring peritoneal dialysis since 2003.Although Baxter-PD Adequest programs are available to the Dialysis department, our aim was to show how good results can be achieved using simple formulae, to emphasize the importance of the laboratory, and to recommend the cooperation between the laboratory and the dialysis department.

Materials and Methods
In the samples of 59 patients processed on peritoneal dialysis the following parameters were measured: creatinine (uncorrected), urea and glucose.

Urea and creatinine clearances in dialysates and urine (if provided) were calculated. The body fluid volume (V) was calculated for calculation the Kt V urea. The dialysates creatinine/ plasma creatinine ratio, and dialysates glucose / glucose dialysate0 ratio were calculated to determine membrane transport type.

Results
We observed the problem with calculating V because of use 2 formulae (Watson and Hume). According to Watson, 31 out of 59 patients (52,5%) have the Kt/V urea under the limit of 1,69, and according to Hume only 21 patient (35,6%) have the same results. An independent T test reports that the results for men and the peritoneal weekly Kt/V urea and total weekly Kt/V urea do not belong in the same groups (P=0,0007; P=0,0433), while for women they do (P=0,7329; P=0,9182). According to membrane transport type we get: 13, 8% low, 39, 7% high average, 39, 6% low average and 6, 9% high transporters.

Conclusion
The laboratory is familiar with the method for determining creatinine and decides if the results should be corrected. The laboratory is able do all the way up to the transporters types. Our clinicians find that the Kt/V by Watson responds the general state of the patient, but the matter of different results remains unresolved and the opinion of the profession is necessary.

P-68

1-84 PARATHYROID HORMONE FOLLOW-UP DOES NOT FAVOR A PREDOMINANCE OF ADYNAMIC BONE DISEASE IN PATIENTS TREATED MORE THAN 5 YEARS BY PERITONEAL DIALYSIS

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Several studies, based on bone histomorphometry or biochemical markers, have shown a predominance of adynamic bone disease (ABD) in peritoneal dialysis (PD) patients. These studies were cross-sectional. We report on the evolution of serum parathyroid hormone (PTH) levels in 46 patients treated more than 5 years by PD at our institution.

Since 1990, serum 1-84 PTH levels have been prospectively studied every sixth month in all our patients. Patients basically used a high calcium dialysate. Treatment objectives were (i) phosphorus control (ii) keeping PTH levels in the 100-200 pg/ml range. Treatment with vitamin D derivatives, beginning with 25 OH vitamin D, was not systematic.

As of February 2006, 46 patients (21 male) had been treated with PD (41 CAPD, 5 APD) for more than 5 years. In 20 patients, PTH levels either stayed, or progressively became, superior to 450 pg/ml, predictive of high turnover bone disease (HTBD). In 16 patients, PTH levels either stayed, or progressively became, inferior to 150 pg/ml, predictive of ABD. In 10 patients, serum PTH levels stayed in a range between 150 and 450 pg/ml, of imprecise significance.

Within the limitations of a study based on 1-84 PTH follow-up, HTBD, and not ABD, appeared the most frequent bone lesion in our patients treated more than 5 years by PD. This may be due to the fact that ABD is associated with factors hampering long-term PD, such as age, diabetes, malnutrition, and hyperpermeability. Alternatively, unrelenting hyperparathyroidism may be associated with a factor favoring long-term PD, such as slow decline of renal function before, and after, initiation of dialysis.

P-69

A STUDY ON HEMOGLOBIN STABILITY IN PATIENTS TREATED WITH PERITONEAL DIALYSIS

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Introduction
The variability of hemoglobin (Hb) levels has not improved in recent years in patients on dialysis despite treatment with erythropoiesis stimulating agents (ESAs). There is little evidence about differencies between hemodialysis and peritoneal techniques.

Materials and Methods
Descriptive observational study of Hb levels changes has been performed in 36 patients in PD and different ESAs, to assess Hb levels fluctuations. Physical examination, laboratory parameters, anemia treatment, concomitant medications and associated diseases were registered every two months for a year. All data management and analysis was performed using SAS 9.1.3.

Results
Mean age (SD) was 56.9 (15.95) years. 26 patients (72%) were male. Arterial hypertension was reported in 44% , diabetes 16%, hypercholesterinemia 16%, and cardiovascular disease 7%. Anemia was treated with ESAs in 97% of patients, 67% with iron, 58% with folic acid and 3% with vitamin B12. Mean iron levels remained stable during the study. Mean Hb levels varied from 12.32 ± 1.79 gr/L at baseline to 12.06±1.36 gr/L at 12 months. The percentage of patients with Hb levels between 11 and 12 g/dL increased from 11% at baseline to 35% at 1 year, whereas the percentage with Hb levels greater than 12 g/dL decreased from 75% at baseline to 50% at 1 year. At least 1 Hb cycle was reported by 39% of patients. The mean number of excursions per patient was 1.07 and the mean amplitude was 3.13 g/dL. A positive excursion occurred after increasing the EPO dose in 29%, but a negative excursion occurred in 7% after decreasing it.

Conclusions
In our PD patients, mean Hb levels remained stable during a year suporting the hypotesis that PD could facilitate the management of anemia in CKD patients.

P-70

25 HIDROXY VITAMIN D (25OHD) : COMPARISON PERITONEAL DIALYSIS (PD) WITH HEMODIALYSIS (HD) LEVELS AND TREATMENT TO CONTROL SECUNDARY HYPERPARATHYROIDISM (SHPP).

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It is accepted that PD patients have lower 25OHD levels than HD patients. Otherwise there are no differences in the targets for 25OHD and the treatment in the current K-DOQUI guidelines between PD and HD.

Aim
To compare 25 OHD levels between HD and PD patients as well as treatment necessities in order to control hyperparathyroidism.

Patients and Methods
A cross-sectional study was performed: 94 patients on HD, and 21 on PD. Clinical characteristics, routine biochemistry, phosphate binders, active vitamin D analogs and calicimimetics, were studied in relation to levels of 25-hydroxyvitamin-D (chemiluminescence).

Results
25-OHD deficiency (<15 ng/ml) was present in 86% in PD and and 54% in HD . 25-OHD levels was lower in PD (10± 4.95) than HD (16±10 ng/ml) p <0.05. There was no difference between CAPD (11 ±6.32 ng/ml) and APD (9.37 ±3.56 ng/ml) patients. There was no significant difference between HD and PD patients in calcium (9.9 ±0.6 vs 9 ±0.5; p=0.07), phosphate (4.55 ± 1.45 vs 4.9 ± 1.34; p = 0.36) and iPTH (266 ±249 vs 355 ±339 pg/ml; p=0.156). There was a negative correlation between 25OHD and iPTH in PD (Rho = -0.51, p=0.05) and in HD (Rho = -0.38; p <0.0001). Prescription of phosphate binders ,active vitamin D analogs and calcimimetics was higher in PD patients than HD patients : Sevelamer hidroclorhidre: 12(57%) on PD,28(29%) on HD (p=0.017); Calcium Carbonate: 10(47%) on PD,20(21%) on HD (p=0.015); Aluminum based binders:17(81%)on PD, 42(44%) on HD (p=0.021); Cinacalcet: 8(38%) on PD, 14(15%) on HD (p=0.019); Active vitamin D analogs: 14(66%) on PD, 42(44%) on HD (p=0.047).

Conclusion
PD patients were significantly more 25 OH vitaminD deficiency than HD patients. In connection to this, larger doses of phosphate binders and calcimimetics were prescribed to the PD patients than to the HD patients to control secondary hyperparathyroidism.

P-71

USE OF ANGIOTENSIN II INHIBITORS IN PATIENTS WHO DEVELOPED EPS: A CASE-CONTROL STUDY

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Background
Animal studies suggest that angiotensin converting enzyme inhibitors (ACEi) and angiotensin receptor blockers (ARBs) may prevent the development of peritoneal adhesions and fibrosis. Encapsulating peritoneal sclerosis (EPS) is a severe complication of PD and causes bowel obstructions due to adhesions. The aim of this study was to investigate the duration of exposure to ACEi/ARBs in PD patients who developed EPS and controls.

Methods
24 EPS patients from 2 large PD centres in the Netherlands were selected and matched for PD duration and PD center to 24 controls. Duration of ACEi/ARBs use was calculated in months for the total treatment time on PD and additionally expressed as a percentage. A paired t-test and chi-square test were used to compare the groups.

Results
The median age of the EPS group was 30 (7-68) years versus 44 (6-81) years in controls (p=0.04) at the start of PD. The median time on PD was 72 (30-222) months for the EPS group versus 76 (33-123 months) for the controls (p=0.16). EPS patients and controls did not differ for the primary kidney disease, the number of transplantations, and number of peritonitis episodes.

The median duration of ACEi/ARBs during PD was 15 (0-134) months in the EPS group and 27 (0-116)months in the control group (p=0.44). The median percentage of ACEi/ARBs use was 14% in the EPS group and 41 % in the control group (p=0.33). 7 of the 24 EPS patients used ACEi/ARBs at the start of PD compared to 12 of the 24 controls (p=0.12).

Conclusion
Although no statistical significance was reached our results suggest that ACEi/ARBs may have some beneficial effect on the development of EPS, similar to the results in animal studies.

P-72

APD AS RENAL SUBSTITUTION IN RARE CASE OF NEPHROTIC SYNDROME AND ESRD WITH NORMAL KIDNEY SIZES

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The prevalence of HIV infected patients in the ESRD program has increased dramatically, from 0.45% in 1995 to 0.83% in 2000, in part because of the improved survival of patients with HIV infection .

We report a 18 years old female referred to our Clinic with nephrotic syndrome and progressive renal failure to kidney failure with normal kidney sizes in the last 5 years. Her medical history included: AIDS (probable HIV infection during the first year of life) on antiretroviral therapy since the diagnosis of the disease with nephrotic syndrome and kidney failure at age of 12 years. At admission in our Clinic she presented anasarca, oligoanuria and dyspnea. Physical examination show: pallor, anasarca, hypertension (BP=160/100mmHg), oligoanuria=700ml/24 hours. Laboratory evaluation showed: anemia (Hb=9.5g/dl, Ht=31.7%), creatinine Cl (Cockroft-Gault formula)=6.85ml/min, hypoproteinemia=4.84g/dl, hypoalbuminemia=2.4g/dl, hyperkalemia=6mEq/L, hypocalcemia=3.9 mEq/L, nephrotic syndrome (13.8 g/24 hours), hematuria=56000. Ultrasonography evidenced normal kidney sizes, hepato and splenomegaly and ascites.

Due to severe nephrotic syndrome and kidney failure, automated peritoneal dialyses was initiated with standard glucose solution (1.36%x5000ml+2.27%x4000ml) 5 dwell/night and icodextrin 1000ml/day. After 7 days from the peritoneal dialysis initiation kidney biopsy was performed and revealed glomerulonephritis cryoglobulinemic type II.

In the next 18 months, APD was ongoing and immunosuppressive treatment in low doses (tacrolimus and mycophenolat mofetil) and sartan was added. The patient developed a single episode of peritonitis treated with gentamicin for 7 days and cephazolyn 21 days. Another complication was malfunction of catheter caused by epiploon accolation.

There are comparative studies between HIV positive and non-HIV patients with peritoneal dialysis which showed no differences in hospitalization rate or number of peritonitis episodes. Our patient was able to finish the high school and now she is attending a faculty. The patient is listed for renal transplantation.

P-73
AN UNSUAL COMPLICATION IN PERITONEAL DIALYSIS

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Introduction
As the use of continuous ambulatory peritoneal dialysis (CAPD) for treatment of end-stage renal failure increases so rarer complications are being recognised. We report a case of dialysis fluid leakage from peritoneum by way of the uterus into the vagina.

Case Report A 74 year-old woman with end-stage renal failure due to hypertensive nephropathy started CAPD two years ago. She reported a three months history of abdominal pain associated to vomits and fever 37,5ºC. She previously was repaired an hernia and transferred to haemodialysis. No previous history of peritonitis. Symptomatology appeared few days later starting haemodialysis and went on after restarting peritoneal dialysis. Peritoneal effluent was clear. Urine and liquid peritoneal cultures were negative.

The blood test: reactive protein C 284 ng/ml, ferritin 579 mg/dl and hypoalbuminemia (1,7 g/dl), and leukocyte count was normal.

A month later patient presented clear liquid lost after infusion dialysis solution. Of suspected vaginal or urinary leakage was asked additional tests.

Abdominal scanner was observed collection pericatheter tip and gas bubbler inside uterine cavity.

Peritoneal scintigraphy was made with Tecnecium-99m. To make sure if leakage was urinary or vaginal we used an urinary catheter and measured the quantity of marker passed from peritoneal cavity. Countings get were: 20.883.620 counts from vagina and 78.379 counts from bladder, compatible with vaginal fistula.

Patient was prepared to repaired the fistula. An uterine rupture was found during surgery. It was sutured and patient was transferred to haemodialysis. On restarting peritoneal dialysis four weeks later there was no further vaginal leakage. Because of discomfort during liquid infusion patient decided to be transferred definitively to haemodialysis.

Conclusion
Vaginal leakage of dialysis fluid through a structurally normal genital tract is unusual. The mechanism of uterus rupture is unknown. Surgery history can be a possibility, moving catheter tip near uterus surface.

P-74
HUMAN RAGE ANTIBODY PROTECTS HUMAN PODOCYTES AGAINST AGE MEDIATED DAMAGE

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Introduction
Residual renal function contributes to improved patient survival and quality of life in peritoneal dialysis (PD) patients. Glucose degradation products (GDP) and advanced glycation end-products (AGE) do not only impair the peritoneal membrane, but - after systemic resorption - also cause renal damage as demonstrated previously in an animal model.

Using human podocytes, we hypothesize that GDP and AGE affect the structure and function of podocytes and investigate whether these effects can be rescued by human RAGE antibody (hRAGE ab) to prevent AGE/RAGE interaction and podocyte damage in PD.

Methods
Cells were seeded on 6-well plates. One row of human differentiated podocytes was preincubated with hRAGE ab to block the AGE/RAGE interaction and afterwards, all vials were incubated with either control or PD solution or a GDP mixture for 48 h.

We analyzed podocyte damage and rescue by hRAGE ab using immunofluorescence and Western blot analysis as well as a functional woundhealing assay. For quantitation a semiquantitative score was used.

Results
After incubation of human podocytes with control or PD solution and GDP mixture we observed higher levels of AGE and RAGE, augmented levels of podocyte damage marker desmin, a reorganization of the podocyte actin cytoskeleton together with functional losses in wound healing ability, increased levels of inflammation shown by activation of NFkB, and apoptosis. All these markers could be at least in part rescued by using hRAGE ab to prevent AGE/RAGE interaction.

Conclusion
In summary, our findings suggest a novel function of hRAGE ab in protecting human podocytes from damage mediated by AGE/RAGE interaction in PD.

P-75
GENE EXPRESSION PROFILING OF HUMAN PERITONEAL MESOTHELIAL CELLS (HPMCS) EXPOSED TO EFFLUENTS FROM CAPD PATIENTS SHOW A MORE BIOCOMPARTIBLE RESPONSE FOR LOW GDP-SOLUTION BALANCE

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Background
When analysing the effects of effluents from patients being treated with a conventional CAPD-solution (solution A) and a newly formulated PD solution with neutral pH and a low GDP-content (solution B, balance; both from Fresenius Medical Care Deutschland GmbH, Bad Homburg, Germany) on gene expression in HPMCs by using microarray technology, we previously could demonstrate that several genes were downregulated with effluents from solution B vs. solution A. In order to examine cell specificity of gene expression and to confirm the results of the microarray analysis in HPMCs, the effect on Human Umbilical Vein Endothelial Cells (HUVECs) and the human hepatocarcinoma cell line (HEP G2) cells were also investigated.

Methods
PD effluents (n=6) were obtained in a standardized manner from patients treated in a cross-over study with the two different dialysis solutions. HPMCs were isolated from omentum of non-uraemic patients. HUVECs and HEP G2 cells were incubated with PD effluents from the two different dialysis solutions mixed with media (1:1) for 24 h. Gene expression was quantified by real-time PCR using TaqMan® technology.

Results
Ten genes involved in cholesterol biosynthesis, three apoptosis genes and one stress response gene were analysed and all were downregulated in HPMCs after incubation with effluents from solution B, in comparison to solution A. The ten genes involved in cholesterol biosynthesis were also downregulated in HEP G2 cells and HUVECs
this effect on HPMCs was not donor dependent.

Conclusion
The results support the hypothesis, that gene expression of certain genes in HPMC is mostly influenced by the amount of GDPs and that solutions with low amounts of GDPs seem to elicit a more biocompartible gene expression response. Furthermore a long term beneficial effect of treatment with low GDP-solutions on lipid metabolism may be indicated by the fact that the downregulation of cholesterol biosynthesis was also present in HEP G2 cells.

P-76
DEVELOPMENT OF THE 5Lt PHYSIONEAL CLEAR-FLEX PRODUCT FOR A SAFE AND USER-FRIENDLY APD THERAPY

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The development of a novel container using peelable seals instead of inter-chamber frangible enables a 5 Liter container suitable for PHYSIONEAL solution in APD.

This new container has two compartments to hold respectively pH 9.0 concentrate of bicarbonate/lactate solution in one compartment and pH 2.0 glucose concentrate solution in another compartment. These concentrate solutions are mixed prior to infusion of the PHYSIONEAL solution into the peritoneal cavity.

PD patients were involved in the human factor studies of the initial development of this new container. Further the container was validated through usability studies before commercialization.

The PHYSIONEAL CLEAR-FLEX film allows cohesive and/or adhesive seals according the temperature of the sealing die. The container contains two adhesive (peelable) seals. The first peelable seal divides the bag in two chambers to separate the concentrate solutions during sterilization and storage. The second short peelable seal called SafetyMoon seal isolates the access system from the solution. The easy opening of the long peel-seal allows for instant mixing of the concentrates to reconstitute the PHYSIONEAL solution. Once the PHYSIONEAL solution is reconstituted, the opening of the short SafetyMoon seal allows infusing of the well mixed PHYSIONEAL solution. The sealing parameters, the shape and the dimensions of the two PHYSIONEAL CLEAR-FLEX peel-seals assure the correct sequential opening of both seals, which prevents mis-infusion.

Additionally, the peelable overpouch, the large medication port, the new access system to the solution and the overall bag preparation for the APD therapy are proven to be convenient to use by nurses and patients.

The selection of the plastic raw materials and the development of the CLEAR-FLEX film have allowed the reformulation of the Buffer and Glucose concentrate solutions, the usage of peelable seals to separate solutions, the ease of operation and the safety needed for a successful APD therapy.

P-77

ANALYSIS OF PERITONEAL TRANSPORT OF LOW- MOLECULAR WEIGHT SOLUTES AND RESIDUAL RENAL FUNCTION BETWEEN CONVENTIONAL AND BIOCOMPATIBLE SOLUTIONS

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Introduction
Biocompatible peritoneal solutions with low GDPs and in some cases a partial/total incorporation of bicarbonate as buffer, have shown in `in vivo´studies a favourable outcome with regard to conventional ones. Nonetheless, clinical studies in humans have not been conclusive in aspects such as impact on ultrafiltration of the technique, solutes transport, survival in the technique or patient survival. The aim of our study was to compare the impact of biocompatible solutions (BS) (Physioneal, Balance and Gambrosol trio) versus non-biocompatible ones (NBS) (Dianeal, Stay-Safe)with respect to peritoneal transport, ultrafiltration and residual renal funtion (RRF)

Methods
We retrospectively analyzed abovementioned parameters in our PD Unit. We compared 37 incident patients who received either BS or NBS and were followed during two years. We employed conventional peritoneal equilibration test (PET). Statistical analysis: $p < 0,05$; X + SEM. Both parametric (T-student) and non-parametric tests (Chi-squared, Mann-Whitney and Wilcoxon t-test) were employed.

Results
PET Cr D/P (4 h) did not show significant differences between patients who received NBS (0,61 + 0,03 vs 0,62 + 0,04 at 2 years) with respect to those who received BS (0,65 + 0,03 vs 0,61 + 0,05 at 2 years). Neither did we find differences with regard to ultrafiltration of the technique (NBS 1146 + 142 mL/24 h vs 1238 + 193 at 2y; BS 939 + 144 vs 837 + 204). Nevertheless, we found a significant slower decrement in RRF in those patients who received BS (4,21 mL/min/1,73 m2; 4,03 (1y) NS; 3,29 (2y) NS) compared to those who received NBS (6,24; 2,16 (1y) p=0,037; 0 (2y) p=0,045).

Discussion
Low-molecular weight solutes tranport and ultrafiltration of the technique were not significant different between patients who received either BS or NBS. Nonetheless, those patients who received BS solutions showed a slower decrement in RRF with respect to those who received NBS.

P-78

LONG-TERM EFFECTS OF CITRATE-SUBSTITUTED PD FLUID ON ULTRAFILTRATION AND PERITONEAL ANGIOGENESIS IN RATS

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Experimental data from rats have shown that substituting 10 mM/L citrate for lactate in a standard, lactate and glucose based, PD fluid improves net ultrafiltration (UF) in single dwells. In order to characterize the long-term effects of citrate-substituted PD fluids on ultrafiltration and peritoneal angiogenesis, a rat model was used in a comparative evaluation over 5 weeks of daily PD fluid exposure.

A standard filter sterilized, 2.5% glucose, 40 mM lactate PD fluid was compared with a corresponding fluid where 10 mM/L of sodium lactate had been replaced by 10 mM/L of sodium citrate. A control group of rats carried PD catheters (heparin-coated polyurethane) without receiving PD fluid infusions.

UF and PD fluid reabsorption was measured at the beginning and at the end of the 5-week exposure by applying an indicator dilution technique to 125I-labeled albumin included in the PD fluid for single dwells. The type of PD fluid used for exposure was also used to measure UF and reabsorption. Standard PD fluid was used to measure control animals. Angiogenesis was evaluated immunohistochemically in mesenteric window preparations at the end of the 5-week experiment.

Net UF was initially significantly higher in animals treated with citrate-PD, however over time both types of fluids induced loss of ultrafiltration and increase of PD fluid reabsorption. At the end of the 5-week exposure, the control animals showed a significantly higher net UF than both PD fluid groups and the difference between citrate-PD and standard PD was no longer significant. Average vascular density, suggestive of angiogenesis, did not differ significantly among the groups.

In conlusion, a positive acute effect of citrate on UF was confirmed in the beginning of this long-term study. Over time, both citrate- PD fluid and standard PD fluid induced negative effects on UF, compared with control animals.

P-79

A NOVEL AND IMPROVED METHOD TO MONITOR THE CYTOTOXIC GLUCOSE DEGRADATION PRODUCT 3,4-DGE IN PD-FLUIDS

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3,4-Dideoxyglucosone-3-ene (3,4 DGE) was recently identified as a novel glucose degradation product (GDP) in heat sterilized peritoneal dialysis fluids (PDFs). When applied in concentration similar to those occurring in PDFs, cytotoxic activity of 3,4-DGE was shown in vitro. Furthermore it may contribute to the loss of peritoneal membrane integrity by inducing the expression of different growth factors. Due to this high biological relevance it is important to monitor its presence in PDFs carefully.

In this study, a method was developed and validated to quantify 3,4-DGE in PDFs by high-performance liquid chromatography (HPLC) with UV detection after derivatization with o-phenylenediamine to give quinoxalines. In contrast to direct HPLC-analysis with UV detection at 228 nm, quinoxalines can be detected with high specificity and sensitivity at 316 nm, where less interference from other compounds can be expected. The new method furthermore allows unequivocal peak identification by parallel LC-MS/MS-analysis. 3,4-DGE was analyzed with the novel method together with 3-deoxyglucosone, methylglyoxal, glyoxal, 5-hydroxymethylfurfural, 2-furaldehyde, formaldehyde and acetaldehyde in 19 commercial PDFs.

3,4-DGE concentrations in conventional, single chamber PDFs ranged from 7.5 to 18.1 µM, whereas they were below the limit of detection (2.4 µM) in most of the double and triple chamber bags. The concentrations of the other GDPs and the total sum of GDPs showed the same trend: 222.9 - 479.9 µM of total GDPs where found in single chamber fluids, 17.2 - 214.3 µM in double and triple chamber fluids.

The present work allows for the first time a comprehensive comparison of the levels of eight different GDPs in a broad variety of commercial PDFs, since all fluids were analyzed with the same standardized methods. The results indicate that the use of double or triple chamber PDFs considerably reduces potentially harmful GDPs and may thus lead to higher biocompatibility compared to conventional PDFs.

P-80

CHRONIC EXPOSURE TO PERITONEAL DIALYSIS FLUIDS REDUCES HSP EXPRESSION IN MESOTHELIAL CELLS

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Background
Acute exposure of mesothelial cells to peritoneal dialysis fluid (PDF) has been shown to not only result in injury but also to induce cytoprotective heat shock proteins (HSP). Aim of the present study is to evaluate the expression of these markers of the cellular stress response in the chronic in-vitro PDF exposure system.

Methods
Human peritoneal mesothelial cells (HPMC) were chronically incubated for up to 10 days in filter- or heat-sterilized PDF (mixed 1:1 with cell culture medium) or in control cell culture medium. After the incubation period cell extract was assessed for HSP-27 and HSP-72, and supernatant for IL-6 and IL-8.

Results
Chronic in-vitro PDF exposure resulted in depressed cellular levels of both HSP, but increased IL-6 and IL-8 release. These effects were significantly stronger with heat sterilized than with filter sterilized PDF, delineating a specific role of GDP.

Conclusion
Our data suggest that GDP related cellular inflammation (dys) regulates the mesothelial cell stress response in terms of reducing HSP Expression in mesothelial cells.

P-81

A NEW SAFE AND CONVENIENT DOUBLE-CHAMBERED SOLUTION BAG FOR AUTOMATED PERITONEAL DIALYSIS (APD)

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Introduction
Physioneal is a biocompatible PD fluid with a bicarbonate/lactate buffer and physiological pH that can be prescribed effectively to maximise clinical outcomes in patients on APD. In order to improve patient ease of use, we developed a new 2-chamber, 2-seal Physioneal 5 Litre bag and assessed its effectiveness in preventing mis-infusion (MI) of the buffer chamber solution and ability to enhance patient convenience during APD therapy.

Methods
A non-interventional, prospective, open-label, multi-centre, uncontrolled Post Authorisation Safety Study with active surveillance was conducted at 37 sites in Europe. APD patients treated with Physioneal were enrolled over 6 months. Clinical data were collected during routine subject-nurse or physician telephone contacts and routine visits to dialysis units. Success criteria required < 2 MI/60,000 bags in a minimum of 200 pts who received Physioneal 5 Litres for at least 2 weeks.

Results
249 patients (mean age 55 years; 61% male) were enrolled for 4.3+/- 1.9 months/patient and used a total 68,519 bags during the study. No MI's occurred during the study. 128 adverse events (AE's) occurred in 77 (30.9%) patients including 92 serious AE's in 59 (23.7%) patients. No AE's were related to the Physioneal 5 Litre solution. 34 peritonitis episodes occurred in 30 patients (rate = 1 episode/27.3 months). % patients using Physioneal in 2.5-Litre bags, Dianeal, Extraneal, or Nutrineal prior to study onset was 67%, 36%, 52%, and 6%, respectively. Change in mean +/- SD (% change) weekly number of bags used per patient from baseline to final visit for Physioneal and ALL solutions was -10.8+9.9 (-24%) and -10.0+8.2 (-26%), respectively.

Discussion
The new Physioneal 5 Litre bag appears to be safe with an apparent fail-safe seal system. The reduced number of required bags increases the convenience of APD therapy.

P-82

DOES ICODEXTRIN DIALYSATE IMPROVE NUTRITIONAL OR INFLAMMATORY PROFILES IN PERITONEAL DIALYSIS PATIENTS?

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Background
Previous studies demonstrate that icodextrin enhances nutritional and inflammatory status by improving fluid balance. The aim of our study was to analyse if icodextrin improves nutritional and inflammatory status in Peritoneal Dialysis (PD) patients.

Methods
This case-control study included 253 PD patients. Seventy-four patients where on icodextrin (icodextrin group) and 179 used glucose-containing fluids icodextrin-free (control group). Patients who had been on technique for at least 1 year, within the period of study (1996-2008) were selected. Demographic and laboratory data were analysed at baseline, 3, 6 and 12 months follow-up.

Results
Most of the patients were men, 172 (68%) and 81 women (32%). We observed that there was an increase in albumin levels after one year in the control group (3.7±0.6 vs. 3.8±0.6, p = 0.025), while it did not change for the icodextrin group (3.8±0.5 vs. 3.8±0.3 p NS). The inflammatory marker C-reactive protein (CRP) decreased although not significantly in either groups. Hemoglobin, hematocrit and bicarbonate levels increased significantly after 6 months (p < 0.001 in both groups); after one year, these changes were only observed in the control group (p <0.001).

Conclusion
According to our study, icodextrin does not seem to improve acid-base balance, nutritional or inflammatory parameters. It is possible that a longer follow-up may influence nutritional and inflammatory status.

P-83

EFFECT OF ICODEXTRIN USE AT STARTING PD ON PERITONEAL PERMEABILITY

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Peritoneal permeability differs between patients at starting peritoneal dialysis (PD) and it can increase along with time on the technique.

The aim of this study was to evaluate if the use of one exchange a day of icodextrin from the time of DP initiation affects the evolution of peritoneal permeability.

Patients and Methods
56 incident PD patients (mean age: 48,3 ± 14,0; 62,5% males; 17,9% diabetics) that used one exchange a day with icodextrin from the time of starting PD. We performed a peritoneal transport kinetic study at the time of starting PD and then every 6 months during two years. We calculated the peritoneal mass transfer area coefficient of creatinine (Cr- MTAC) and urea (U-MTAC) as well as the D/P creatinine (D/P Cr). As a control group we used the results of Cr-MTAC of 249 patients that had used glucose as the only osmotic agent from the time of starting PD.

Results
The peritoneal transport, calculated using Cr-MTAC, U-MTAC and D/P Cr, diminished at 12 months (11,7±5,7 vs. 8,1±3,1; 23,5±7,3 vs. 18,9±3,8; 0,72±0,09 vs. 0,67±0,08; respectively), staying stable afterwards. We found that high transporters (HA) patients showed a higher decrease of Cr-MTAC along the first year of treatment. The diminution of Cr-MTAC after 12 months using icodextrin was significantly higher (p<0,001) that the one observed in the control group (10,5±5,3 vs. 10,1±4,6). High transport patients showed a higher decrease of Cr-MTAC along the first year of treatment that the others.

Conclusion
Icodextrin use at starting PD might help to correct the high transport status observed in some patients. The peritoneal transport kinetic studies performed at 6 and 12 months after starting PD are more representative of the long term peritoneal transport characteristics of the patients than those performed at starting PD

P-84

COMBINED AMINO ACID AND GLUCOSE DIALYSATE IN CHILDREN ON AUTOMATED PERITONEAL DIALYSIS (APD)

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Objectives
To see if AA dialysate will improve nutritional markers and growth in children receiving automated peritoneal dialysis (APD) in a prospective study.

Patients
All children on APD were recruited for the study. Syndromatic and children on growth hormone were excluded. Seven children fulfilled the criteria .Their mean age was 11.33+ 3.7, the mean duration on PD before the study was 15 + 0.8 months.

Methods
During the study period children received hourly APD cycles for 10 hours using mixture of AA dialysate (1.1%) and dextrose solution. We have HtSDS, BMI, dialysis efficiency, serum albumin, renal function tests and acid-base disturbances.

Results
There was no improvement in HtSDS; BMI or serum Albumin.

We have observed a rise in White blood cell count (WBCs) in the peritoneal dialysis fluid (PDF) >100 cells/ml^3, in 5 children (71%). The differential was mainly monocytes and it was not associated with clinical picture of peritonitis or elevation CRP or blood WBC count. All the cultures were negative for both bacteria and fungus. All of them were treated with intra-peritoneal (IP) antibiotics with no improvement in the PDF cell counts. In view of no improvement we removed the catheter in two children and we shifted them temporarily to hemodialysis. We stopped the AA dialysate in two children and PDF cell count rapidly improved to less than 100 cells/ml^3. The 5th child had high PDF cell count of 311 cell/ml with 75% monocytes and improved spontaneously after few weeks.

There was no difference in peritoneal equilibration test or Kt/V before the study and after finishing the study.

Conclusions
AA diaylsate was effective in APD but caused sterile peritonitis in children. We did not observe any improvement on nutritional status or growth parameters in treated children over 12 months duration.

P-85

PHYSICIAN AND PATIENT REASONS FOR USING A NEW DOUBLE-CHAMBERED SOLUTION BAG FOR AUTOMATED PERITONEAL DIALYSIS (APD)

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Introduction
APD therapy offers potential advantages for the patient as well as allowing the physician an option of prescriptions to improve clinical outcomes. In addition, physicians wish to reduce glucose exposure and to use more biocompatible PD fluids. Until now, Physioneal bags larger than 2.5 Litres were not available for use with the APD cycler.

Methods
A non-interventional, prospective, open-label, multi-centre, uncontrolled, Post Authorisation Safety Study (PASS) with active surveillance was conducted at 37 sites in Europe. During a 6 month period, 249 APD patients were enrolled and followed for 4.3 +/-1.9 months/patient. They were treated with a new Physioneal 5 Litre bag containing bicarbonate/lactate concentrations of 35 or 40 mmol/L. Patients and physicians completed questionnaires about their views of the new Physioneal container.

Results
Predominant reasons for physicians wishing to use the new Physioneal bag for APD patients were biocompatibility (70.3%,175/249), physiological pH (56.2%, 140/249), and easier for patient use (56.6%, 141/249). Overall, 94-97% of patients and/or care providers rated the Physioneal bag preparation as Very Easy or Easy at baseline (0-8 weeks) and after 9-16 weeks, 17-24 weeks, and 25-32 weeks of therapy. During the same time periods, 92-99% of patients and/or care provider's rated the new bag as Much Easier or Easier to use compared to the previous Physioneal bag. The change in mean +/- SD (% change) weekly number of Physioneal bags used per patient from baseline to final visit was -10.8 +/- 9.9 (-24%).

Discussion
Physicians wish to use the new Physioneal 5 Litre bag in order to improve overall biocompatibility of the APD therapy and optimize patient ease of use. Patient advantages to using the Physioneal 5 Litre bag include improved ease of use and increased APD convenience through a reduction in the number of bag connections.

P-86

BIOCOMPATIBILITY OF AUTOMATED PERITONEAL DIALYSIS (APD) THERAPY REGIMES - BENEFITS OF PHYSIONEAL IN A 5 L BAG

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Introduction
Careful prescribing of APD therapy is essential to maximise patient comfort and convenience as well as to achieve adequate solute clearance and ultrafiltration while preserving peritoneal membrane function. The overall biocompatibility of a daily PD therapy should be considered -glucose load, avoiding hyperosmolar exchanges if possible, physiological pH and buffer as well as glucose degradation products (GDP) content. Physioneal is now available in 5-L APD Clear-Flex bags (P-5L) and this study determined GDP content in bags and in simulated APD therapy regimes using P-5L.

Methods
GDPs were measured in 36 P-5L batches, 3.4±0.3 months after production. 3-DG*, Methylglyoxal*, Glyoxal*, Acetaldehyde*, Formaldehyde*, 5-HMF and Furfural were quantified by reverse-phase high-performance liquid chromatography (* after derivatization). Glucose and GDP content of APD therapy simulations were calculated (12 L at night, 2 L in day) with either glucose (P-5L) only or by reduced glucose load APD regime using 7.5% icodextrin (E) in day and replacing one 1.1% amino acid (N) bag at night (P-E-N).

Results
GDP content in P-5 L is low, Glyoxal, Methylglyoxal, Formaldehyde, Acetaldehyde, and Furfural concentrations are below or close to the level of quantification. 3-DG and 5-HMF content (µmol/L) are low and vary with [glucose] - 5-HMF (1.36% = 23.3±2.0 vs 2.27% = 37.8±3.1 vs 3.86% = 61.9±4.9), 3-DG (17.0±0.7 vs 27.9±1.4 vs 44.5±2.7). GDP levels in P-5L based APD (mmol/14L) are low but are reduced further with P-E-N (3-DG 282 vs 188, 5-HMF 384 vs 221) along with reduced glucose content (227 vs 121, g/14L).

Discussion
P-E-N APD therapy with P-5L reduces glucose load by approximately 50% alongside added benefits of physiological pH and physiological [bicarbonate]. The overall biocompatibility and the convenience of this APD therapy regime is enhanced by the low GDP content of P-5L.

P-87

CAPD WITH TWO ICODEXTRIN BAGS PER DAY FOR HIGH TRANSPORTERS: A FOLLOW-UP OF SERUM ICODEXTRIN METABOLITE LEVELS

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High transporters are usually treated with APD. We report on 2 CAPD patients treated with 2 Icodextrin (Ico) bags/day, with a follow-up of serum icodextrin metabolite levels (SIML).

Patient 1: a 47-year-old man resumed CAPD in October 1998 after a failed transplantation. After severe peritonitis, he started using a second Ico bag in the afternoon in December 2006. He is still currently on CAPD, expecting a new transplant. SIML were 5,24 g/liter when using 1 Ico bag, and 8.14, 8.46, and 9.02 g/liter 3, 9, and 15 months after introducing the second Ico bag.

Patient 2: a 48-year-old man resumed CAPD in December 2007 after a failed transplantation. SIML were 8.02 g/liter when using 1 ico bag, and 9.72, 8.74, and 7.78 g/liter 1, 3, and 6 months after introducing the second Ico bag.

These 2 CAPD patients have used 2 ico bags a day for 22 and 10 months. No evidence of local or systemic toxicity was found. SIML were similar to the upper values of the range (2.04-9.16 g/liter) found in our patients using 1 icodextrin bag per day. We suggest that CAPD with 2 icodextrin bags per day is a safe, cheap, logical, compensatory, and efficient treatment in high transporters.

P-88

NON-OXIDATIVE PD SOLUTION KEEPS THE REDUCED TYPE ALBUMIN IN SERUM

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Foreword
Heat sterilized dextrin solution oxidizes albumin in PD patient's serum. This study attempts to minimize the oxidation by simple modification of the sterilized solution; filtering through a sterilized semi-permeable membrane (cut-off point: 15,000) and mixing amino acids.

Method
(1) After the filtration of the heat sterilized dextrin solution, the polymer portion was used for incubation with albumin.

(2) The combination of the filtered dextrin solution with amino acids including cystein was applied for the incubation with albumin.

(3) The oxidants was analyzed by redox-potential titration.

(4) The ratio of oxidated/reduced albumin was estimated by HPLC(chromatography)

Results
In the experiment (1), the ratio of oxidated albumin did not increase in contrast to the original heat sterilized dextrin solution.

In the experiment (2), the ratio of oxidized albumin decreased.

Discussion
The filtrate of the dextrin solution contained GDP as well as dextrose monomer and oligomer. While the amino acids including acetylcystein may work as reductant for albumin.

The combination of the filtered dextrin polymer portion with amino acids solution may achieve ultrafiltration as much as the original dextrin solution.

Summary
This may suggest that the substitution of dextrose monomer / oligomer and GDP (glucose degradation product) in the PD solution with amino acids may suppress the progress of peritoneal membrane sclerosis.

P-89

EVALUATION OF ICODEXTRIN EFFECTS IN ULTRAFILTRATION AND OPTIMISATION OF BLOOD PRESSURE: A SINGLE CENTRE STUDY

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Introduction
Icodextrin is a high molecular weight osmotic agent that induces ultra filtration mainly by colloid osmosislike phenomenon. Consequently, it induces sustained ultra filtration, which makes it especially suitable for long dwells. in principle, it allows high ultra filtration.
The aim of the present study is to evaluate the effect of icodextrin solution in ultrafiltation and in the optimisation of blood pressure.

Methods
We have include patients undergoing peritoneal dialysis (PD) for at least six months and with no episode of peritonitis in the last month.
Icodextrin was used for their long daytime dwell.All the patients were High or High average and had lost of ultrafiltration.

An evaluation of blood pressure, body weight and ultra filtration was done at the inclusion then one, three and six months after selection.

Results
It's a prospective study including 8 patients(mean age 50,25±13,42 ans), seven undergoing automated peritoneal dialysis (APD) and one undergoing continued ambulatory peritoneal dialysis (CAPD).The causes of chronic kidney disease were diabetes mellitus in 3 cases , tubulointerstitial nephropathy in 2 cases and vascular nephropathy in 3 cases.
Mean duration of PD was 39 months.
Ultrafiltation with icodextrin dialysate was significantly higher (620,5 ± 239,4 at the inclusion vs 1215,16±197,8 ml/day) from the first months after icodextrin.

The rate of decrease of systolic and diastolic blood pressure was stastically significant (respectively p=0,017 and p= 0,014.

In the present study we found no difference in body weight, mean weekly Kt/V, albumin and glycaemia.

Conclusion
In our study the use of icodextrin solution was benefic for better ultrafiltration and optimisation of blood pressure.

P-90

EOSINOPHILIC PERITONITIS ON INITIATION OF CAPD

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A 60 year old woman with diabetic nephropathy was referred for continuous ambulatory peritoneal dialysis (CAPD). There was no history of any diseases know to be associated with eosinophilia. Seven weeks after a Tenckhoff catheter insertion, CAPD was commenced using two liter bags of 1.5 g/l glucose dialysate. Eight weeks after catheter was placed, she presented asymptomatically with cloudy peritoneal effluent, and ultrafiltration failure without dialysate leakage or catheter malfunction. The peritoneal fluid revelead a white cell count of 1200/mm3, with the differential showing 74% eosinophils. Eosinophil count was elevated in peripheral blood, $0.87*10^9$/l (13%). Peritoneal dialysis fluid samples showed Langerhans' cells. Repeated cultures for bactéria, fungi and acid fast bacilii were consistently negative. No parasites were detected in stool analysis. Blood and peritoneal fluid IgE levels were in the normal range. On the 10 day of Eosinophilic Peritonitis, prednisolone was administered at 20 mg/day was done. Within 5 days blood eosinophilia improved, and the number of the cells in peritoneal effluent decreased.

P-91

THE HMB-PP PRODUCING CAPACITY OF THE CAUSATIVE PATHOGEN PREDICTS EARLY OUTCOME IN PD-RELATED BACTERIAL PERITONITIS

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Introduction
Peritoneal infection and associated inflammation remain frequent complications in PD patients. Human γδ T cells respond rapidly and specifically to (E)-4-hydroxy-3-methyl-but-2-enyl pyrophosphate (HMB-PP), an essential metabolite produced by a large range of bacterial pathogens. We here attempted to identify a possible link between the potential of the causative pathogen to produce HMB-PP, and morbidity and mortality in PD-related bacterial peritonitis.

Methods
We analysed a database derived from the GLOBAL fluid study containing prospective data from a single centre, following a cohort of 369 PD patients with first time peritonitis between 1987 and 2008. Episodes were classified according to the result of organism culture into culture negative, HMB-PP negative and HMB-PP positive infections, respectively. Demographic, clinical, and laboratory variables as well as culture results were tested as predictors of early (day 14) outcome.

Results
The overall mortality rate in the patient cohort was 3.25% (12/369) on day 14 after the first epidose of PD-related peritonitis. The increase in mortality was progressive and significant (χ^2 for trend, $p<0.001$) based on the classification into culture negative, HMB-PP negative, and HMB-PP positive infections. This classification according to HMB-PP producing capacity had the best discriminative power (AUROC 0.771±0.069, $p<0.001$) based on day 14 mortality compared with earlier (day 7) and later time points (days 21, 30, 60, and 90). Cumulative survival rates on day 14 differed significantly ($p<0.05$) for culture negative, HMB-PP negative, and HMB-PP positive patient groups.

Discussion
The HMB-PP producing capacity of the causative pathogen can predict early outcome of patients with first-time PD-related bacterial peritonitis. This study generates objective information for patients and physicians and supplements the clinical prognosis. Moreover, our data imply a role for γδ T cells in the nature and severity of the inflammatory response to bacterial pathogens and suggest novel approaches for therapeutic intervention.

P-92

DETECTION OF VIRUSES IN THE PERITONEUM OF PATIENTS ON PERITONEAL DIALYSIS

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Introduction
Peritonitis from bacterial, and occasionally fungal, infections is one of the most common causes of morbidity in peritoneal dialysis (PD) patients. Viral infections have rarely been investigated in the context of peritoneal fibrosis and documented viral peritonitis in PD patients is rare, although up to 20% of cases are culture negative (non-fungal, non-bacterial). The impact of viral infection on membrane function and peritoneal morphology is unknown.

Aims
We aimed to screen stored PD effluent samples for viral infection to assess the incidence in a cross-sectional cohort of patients on peritoneal dialysis.

Methods
Nucleic acids in PD samples (n = 109) were extracted using the Qiagen Biorobot MDx system with QIAamp extraction to efficiently purify both DNA and RNA. Extracts were examined using sensitive polymerase chain reaction test (PCR) procedures for human cytomegalovirus (CMV), Epstein-Barr virus (EBV), varicella-zoster virus, adenoviruses, enteroviruses, human polyomaviruses JC and BK, norovirus, rotavirus, and astrovirus.

Results
Viruses were detected in 5/109 PD effluent samples giving an incidence of 4.6% in this initial pilot screen. One patient was positive for CMV alone, 2 were positive for BK, with 1 patient showing positivity for CMV and BK. One patient was positive for EBV. 4/5 patients were clinically well at the time of PD effluent collection although one patient who tested positively for CMV and BK was diagnosed with sterile peritonitis at this time.

Conclusions
In this pilot study we have demonstrated viral infection to be present in the peritoneum in a small percentage of patients on PD. The clinical implications of these infections are unknown and further investigation in longitudinal studies are needed to assess whether these viruses, which may become latent over time, may cause damage to the peritoneum, influence membrane function and indeed be a source of infection post-transplantation.

P-93
FACTORS OF RISK OF THE DEVELOPMENT OF PERITONITIS IN DIALYSIS PERITONEAL

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Introduction
Peritonitis represents one of the most important complications in peritoneal dialysis (PD) and supposes the most frequent cause of technique failure.

The aim of our study was to review the possible factors related to the presence of peritonitis in our unit, comparing the characteristics of the patients who presented some peritonitis episode with which they did not present any.

Material And Methods
Retrospective study where we reviewed the data base of peritonitis and clinical histories of the patients who made PD in our center from January 1999 to December 2008. There were 2 groups, those with some episode of peritonitis (group P) and those that did not present any (group NP). We evaluated age, sex, aetiology of the chronic kidney disease (CKD), presence of diabetes mellitus (DM), type of technique (DPA/CAPD), average time in the technique.

Results
We reviewed 112 patients, 56.2% of them were male and 24.1% diabetics, with mean age of 51.5±17.3 years old and were on therapy 21±17 months (42 on CAPD- 37.5%, 70 on DPA-62.5%), 59 presented peritonitis (group P) and 53 did not present episode (group NP). Average age was 53.6 ± 17.1 years in group P and 49.1 ± 16 years (p NS). There was no difference in sex and type of technique in both groups. DM was more frequent in group P (27.1% in group P, 18.8% in group NP) (p 0.001) and average time on PD was more prolonged in group P (25 ± 18 months in group P, 16 ± 14.5 months in group NP) (p 0.001).

Conclusions
1. - In PD, patients with DM and a more prolonged time in the technique present more incidence of peritonitis. 2. - Neither the age, sex nor the type of technique (DPA/CAPD) present relation with the peritonitis presence.

P-94
PERITONEAL DIALYSIS-RELATED PERITONITIS: 10 YEARS EXPERIENCE IN A SINGLE CENTER

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Introduction
Peritonitis remains a common complication of peritoneal dialysis (PD) and representing the most frequent cause of technique failure.

The aim was to know the peritonitis rate, determinate the aetiology and evaluate the outcomes in our center.

Materials And Methods
A retrospective analysis of the PD-associated peritonitis seen in our center from January 1999 to December 2008. Patient and peritonitis characteristics were evaluated.

Results
We reviewed 112 patients, 56.2% of them were male and 24.1% diabetics, with mean age of 51.5±17.3 years old and were on therapy 21±17 months (42 on CAPD- 37.5%, 70 on DPA-62.5%). There were 114 peritonitis episodes during 2407 months in risk (697 on CAPD and 1710 on DPA), resulting in a rate of 1 episode per 21.1 patient-months (1/12 on CAPD and 1/30.5 on DPA). The most frequent micro-organism was Coagulase-negative Staphylococcus (32 episodes-28.1%). Other micro-organisms: Staphylococcus Aureus 12 (10.5%), other Gram+ 15 (13.2%), Gram- 23 (20.1%), fungus 9 (7.9%) and several micro-organisms 1 (1%). In 22 cases the culture was negative (19.2%).

Outcome
Cure rate was 82.5% (78.1% initial and 4.4% after relapse) and catheter removal rate was 16.7% (12.3% initial and 4.4% after relapse). Only 1 patient died. The worse outcome was for fungal peritonitis (88.9% required catheter removal and 11.1% died) and several micro-organisms episode (100% required catheter removal). The best outcome was for Coagulase-negative Staphylococcus (catheter removal rate-3.1%) and Staphylococcus Aureus (catheter removal rate- 8.3%).

Conclusions
1. The peritonitis rate on CAPD is very high, 3 times more than in DPA. 2. The outcomes was good with high cure rate, but in 1/6 was necessary the catheter removal. 3. Fungal and multi-microorganism peritonitis had the worst outcomes (100% leaving the thecnique). 4. Coagulase-negative Staphylococcus and Staphylococcus Aureus peritonitis had the best outcome with a very low rate of catheter removal.

P-95
ANTISEPTIC POLYHEXAMIDE WOUND GEL AS AN ALTERNATIVE TO TOPICAL ANTIBIOTIC PERITONEAL DIALYSIS EXIT SITE PROPHYLAXIS

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Introduction
The use of topical Mupirocin has reduced exit site infections (ESI), however antibiotic resistance can emerge. Can the antiseptic Prontosan Wound Gel™ (Polyhexamide, a polymer of chlorhexidine) be used as an alternative?

We conducted an in vitro study to examine Prontosan biocompatibility on silicone rubber PD catheters. A user evaluation of Prontosan compared with Mupirocin was completed. Finally, we describe interim results of a pilot study comparing Prontosan with Mupirocin for the prevention of ESI.

Methods
PD catheters were exposed to demineralised water (9) or Prontosan (20) for 3 days. The force to stretch each catheter was compared.

20 patients compared their experience using Prontosan for 1 month against Mupirocin.

In a pilot study, consented patients were randomised to use Prontosan or Mupirocin in an open-label study. We performed an interim analysis of ESI for safety monitoring.

Results
Forces during elongation were similar between catheters exposed to Prontosan gel and demineralised water, confirming Prontosan is biocompatible with PD catheters.

13 of 20 respondents described no side effects with Prontosan. 5 described mild local irritant effects insufficient to discontinue treatment. 11 / 20 stated they preferred mupirocin ointment and 8 preferred prontosan.

18 Patients were randomised to mupirocin and 20 to prontosan with a mean 12.2 months follow up. There was no difference in peritonitis episodes (6 in each group p=0.9). The number of patients developing ESI was higher (5/20) in Prontosan vs Mupirocin (2/18), however this did not reach significance(p=0.099). Time to first infection (ESI or Peritonitis) on Kaplein Meyer analysis was not significantly different between the groups.

Conclusion
Prontosan is biocompatible with PD Catheters and is well tolerated in our satisfaction survey. We should remain vigilant to the efficacy of Prontosan compared with Mupirocin to prevent ESI, accepting the limited patient numbers of our initial analysis.

P-96
REDUCTION IN PERITONEAL DIALYSIS EXIT SITE INFECTIONS

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Catheter-related exit-site infections are the main cause of morbidity and treatment failure in patients on peritoneal dialysis (PD).

The Wessex renal unit covers a large geographical area of about 2 million populations. The centre unit is based in Portsmouth. The number of patients on PD patients averages about 100-120.

In 2006, the number of exit site infection episodes was 66.

In order to improve these rates in line with National Service Framework for renal services and International Society for Peritoneal Dialysis guidelines, we looked for ways to reduce infection.

We began by instigating a number of alterations to our protocol.

We looked firstly at patient re-education, including improvements in hand washing technique and the introduction of the UV wash and glow training kit.

Rotation of general renal ward nurses to the PD unit and the involvement of PD link nurses have further added to the educational support for PD patients.

We also introduced the Use of Bio patch (chlorhexidine radial slit dressing) for the first 3 weeks after catheter insertion, and, in addition, some patients (circa 50%) commenced prophylactic use of Mupirocin ointment to the exit site as a result of consultant choice.

In 2007, infection rates were reduced by 15% to 56 episodes and by a further 64% to 20 episodes in 2008.

Of the 20 episodes in 2008, 15 were in patients not using Mupirocin.

In the 5 patients using Mupirocin on their exit sites, there were notably fewer cases of infection caused by Staphylococcus aureus than in those patients using Mupirocin.

In conclusion, by introduction of simple changes to our protocol, we reduced the number of PD catheter exit site infections in our patients by 69.7% and, importantly, reduced the number of S. aureus infections 75%

P-97
SERUM ALBUMIN DURING PERITONITIS

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Introduction
In peritoneal dialysis (PD) peritonitis episodes are associated with decreasing serum protein, due to protein loss caused by increased permeability of the peritoneum and the inflammatory response. However, there is little information about the natural course of serum protein during peritonitis. The purpose of this study was to observe the serum albumin behaviour during acute inflammation.

Methods
In this observational study seven stable PD patients diagnosed with peritonitis were included. Peritonitis was defined as the presence of two of the following criteria: cloudy effluent, symptoms (e.g. fever, abdominal pain) and positive culture on Gram-stain or subsequent culture of dialysate.

The patients were controlled in seven visits during the "peritonitis phase" (days 1 to 28 after diagnosis of peritonitis) and once at the end of the "recovery phase" which lasted further four weeks. Pre-peritonitis data were retrospectively documented.

Results
The mean serum albumin values reduced to 33.9±3.8 g/L at day 1 reaching the lowest value (32.2±3.1 g/L) at day 2. After that the serum albumin recovered to 33.6±3.8 g/L at day 7 and 34.4±3.3 g/L at day 10. After 8 weeks (35.4±28 d/L) the values were similar to the pre-peritonitis values (35.2±3.4 g/L). Albumin loss to the dialysate was the highest at day 1 (10.2±2.0 g), reduced to 7.3±1.7 g at day 2 and reached with 5.6±1.4 g after 18 days similar levels as at the end of the study (6.1±1.6 g). At day 1 the mean C-reactive protein (CRP) values were 28.5±25.4 mg/L and increased to 67.5±62.3 mg/L at day 2, after this the CRP reduced, reaching similar values as pre-peritonitis (6.1±4.2 mg/L) at day 10 (5.8±4.9 mg/L).

Conclusions
An association between albumin levels in serum and loss into dialysate and inflammation was observed. Serum albumin, as well as CRP recovered usually within few days to pre-peritonitis levels.

P-98
CAPD PATIENTS PERITONITIS: ELDERLY VS YOUNGERS

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Peritonitis still remains one of the major complications in patients on continuous ambulatory peritoneal dialysis (CAPD) treatment. The aim of the present study was to analyse number, causes and outcome of peritonitis in CAPD patients: elderly (over 65 years) and younger patients.

Seventy-two elderly patients mean age 72.19±4.97 years, treated with CAPD 20.74± 14.85 months and 109 younger patients mean age 53.02±10.00 years, on CAPD treatment 29.28±21.88 months were analysed during the last three years. All patients had positive inflammatory signs and pathological number of white blood cells in dialysis effluent.

Elderly patients were significantly older and for a shorter period on CAPD treatment ($p<0.01$). We found 66 peritonitis episodes in 72 elderly patients and 124 peritonitis episodes in 109 younger patients during three years which means 1/22.6 patients' months in elderly patients and 1/25.5 patients' months in younger patients.

The most common causes of peritonitis in elderly patients were sterile peritonitis (30) and Staphylococcus spp (21) while in younger patients were Staphylococcus spp (32) and sterile peritonitis (29).

After the treatment with antibiotic therapy according to culture of peritoneal effluent 55 (83.3%) elderly and 92 (87.9%) younger patients recovered and continued CAPD treatment, 2 (3%) elderly and 7 (5.6%) younger patients stopped CAPD treatment and began hemodialysis treatment, and 9 (13.6%) elderly patients and 8 (6.5%) younger patients died.

We can conclude that our elderly patients were significantly older and for a shorter period on CAPD treatment than younger ones, but there were no significant differences between numbers of peritonitis episode per patients' months. The most common causes of peritonitis were similar in both groups of patients. Higher number of elderly patients died ($p<0.05$), but higher number of younger patients stopped CAPD treatment and went to hemodialysis.

P-99
DELAYED TREATMENT OF PERITONITIS DUE TO INADEQUATE INSTILLATION OF ANTIBIOTICS AND HEPARINE INTO THE DIALYSATE

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Background
Patient with peritonitis. After more than 1 week leucocytes in peritoneal dialysate and still cloudiness of the effluent, despite adequately dosed antibiotic added to dialysate.

Methods
Comparison of needle size used to inject drugs, adding Methylene blue to injected solution. Volume injected in the bag was 0,3 ml Methylene blue

First BicaVera® bag was injected with a 24G needle of 25 mm. Second bag was injected with a 22G needle of 40mm with 0,3 ml Methylene blue.

Results
With 25mm 24G needle injected fluid in the injection conus. (Figure1) After mixing the 3 compartments of the BicaVera® bag, the major part of the Methylene remained in the injection conus and was not mixed with the fluid.

With the 40mm 22G needle Methylene blue was adequately mixed with the dialysate. (Figure 2). Dialysate effluent became clear within 24 hours.

Conclusion
A minimum of 40 mm needle with maximum 22 G is needed to inject additives in dialysate when using BicaVera® bags.

P-100
RHIZOBIUM RADIOBACTER PERITONITIS

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We describe the case of a patient presenting a peritoneal infection with Rhizobium radiobacter, and her unexpected favorable course.

This 49-year-old female patient on CAPD since 5 months for ADPKD arrived at the emergency room for abdominal pain, fever and cloudy effluent. Serum CRP level was elevated. Her dialysate analysis revealed a high leukocytes count (10340/µl with 80% neutrophils). Empirical intra-peritoneal (IP) antibiotherapy (vancomycin + amikacin) was started. Vancomycin was stopped after 48h and replaced by IP ceftazidim when the presence of a Gram negative bacillus in the effluent's culture was announced. The microorganism was eventually identified as Rhizobium radiobacter. THe latter showed multi-resistance to aminoglycosides, but remained susceptible to cephalosporins and quinolones. Oral ciprofloxacin was therefore added to her treatment on day 4. Our patient's episode subsided rapidly, with resolution of her clinical and biological abnormalities. She was discharged after 7 days, and asked to continue her double therapy (IP ceftazidim + ciprofloxacin orally) for a total of 21 days. Nine months later, she remains asymptomatic.

Rhizobium (or Agrobacterium) radiobacter is a Gram-negative, non fermenting, oxydase + bacillus, appearing alone or in pair at Gram's stain. Motile and aerobic, this germ found in the grounds, usually infests plants. In humans, it has been isolated in decreasing order in: blood, peritoneal dialysate, urine and ascites. It seems to cause infection only in the presence of a foreign body, or in immunocompromised patients. Most of the described strains are susceptible to broad-spectrum cephalosporins, carbapenems, tetracyclins and gentamycin, but not to tobramycin.

The majority of the 13 reported cases of R. radiobacter peritonitis in PD patients necessitated catheter removal.

In conclusion, we report a new case of PD-related Rhizobium radiobacter peritonitis, this time successfully treated by a combination of IP + oral antibiotics with no need for catheter removal.

P-101
EPIDEMIOLOGY OF PERITONITIS AND ITS IMPACT ON SURVIVAL OF PATIENTS ON PERITONEAL DIALYSIS

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Peritonitis is a relatively frequent complication of peritoneal dialysis (PD). In some studies it was associated with increased mortality. In the present study we retrospectively evaluated frequency, risk factors for and outcome of peritonitis episodes in PD patients in a single dialysis unit of a community hospital. Study population consisted of 65 patients on PD. There were 21 women and 44 men (age 59 ± 16 years). Patients were followed for mean period of 32 months (0-97). Over that period cumulative incidence of the first episode of peritonitis was 38.5%. A total of 41 peritonitis episode was diagnosed in 21 patients. A single peritonitis episode occured in 7, two episodes in 9, 3 episodes in 4, and 4 episodes in 1 patient. The most frequent causative agents were S. epidermidis (in 10 episodes), Streptococcus sp. (10 episodes), S. aureus (5 episodes), Enterobacteriaceae (8 episodes), Enterococcus sp. (6 episodes) and Candida sp. (4 episodes). In 5 episodes other bacteria were isolated and in 6 episodes peritoneal lavate remained sterile. Most peritonitis episodes were caused by a single microorganism. However, 7 episodes (17%) were polymicrobial. Median time to first peritonitis was 8.7 months (3-55). Except for fungal peritonitis, where catheter was removed by default, there was no immediate loss of PD due to peritonitis. There were no deaths during an episode of peritonitis. Overall patient survival was 65% during the observation period and tended to be worse in patients who experienced peritonitis (37%), vs. patients without peritonitis (69%; n.s. Cox-Mantel test). However, in multiple logistic regression analysis, peritonitis episode was not independently associated with patient survival. The only variable significantly associated with lower patient survival was age of patient. In conclusion, peritonitis is a frequent complication in patients on PD, especially during first year. Its negative impact on patient survival may be at most modest.

P-102
PD PERITONITIS DUE TO ORAL GERMS: A NEED FOR PROPHYLAXIS

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We report on a patient who had a succession Peritoneal Infections (PI) due to germs of the oral flora, and discuss its mechanism and the importance of prophylaxis.

A 63-year-old diabetic patient with poor oral hygiene was started on CAPD in November 1997. In November 2004, he had one episode of PI due to Streptococcus sanguis, and in December 2004 another one, due to Streptococcus gordonii. He was again admitted in January 2005 for an extraordinarily painful episode of PI due to Stomatococcus mucilaginosus. Treatment was difficult, and the patient was transferred to intensive care. He died 6 weeks later.

Our patient thus had a quick succession of PI due to varying germs of the oral flora. Stomatococcus mucilaginosus is a slime-producing gram-positive coccus, which may cause septicemia in immunocompromized patients. 4 cases of PI due to Streptococcus viridans, another adherent germ of the oral flora, have been reported in PD patients with oral lesions or dental treatment (BMJ 1985; 290: 969). We suggest that transient bacteremia due to adherent germs of the oral flora may cause PI by attaching to a fibrin-coated peritoneum, much in the same way as it causes endocarditis by attaching to valvular fibrin vegetations. PD patients should have a good oral hygiene; prophylactic antibiotic therapy is mandatory at the time of dental treatment

P-103
PERITONITIS: A COMPLICATION OF ENTEROCOLITIS INDUCED BY CLOSTRIDIUM DIFFICILE - OUR EXPERIENCE

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Peritonitis is one of the most frequent complications of peritoneal dialysis (PD). Inflammatory diseases of the intestines can play a role in the development of severe forms of peritonitis.

A 62-year old patient was on peritoneal dialysis program during six years. He was treated for dilated cardiomyopathy and mitral and tricuspid valve insufficiency. In November 2008 peritonitis was diagnosed, which was successfully cured. In December, the patient suffered a lateral wall myocardial infarction. The patient was admitted to our Clinic for further monitoring and A-V fistula formation. During hospitalization period the diarrheal syndrome developed, and coprocultures revealed presence of Clostridium difficile- toxin A. Therapy, which included vancomycin and Orvagil, resulted in overall improvement and normalization of stool consistency. Several days upon the therapy ending the diarrheal syndrome relapsed, associated with increased values of acute phase reactants (CRP 28,2- 32,5 mg/l; fibrinogen 4,63-6,34 g/l; Le 9,51-11,1 x 10-9/l; SE 66/111 - 96/101 mm/h). Consultation of infectologist confirmed the relapse of enterocolitis caused by C.difficile, and appropriate therapy was introduced. Within subsequent 24 hours the abdominal pain intensified associated with dialysate turbidity and elevated levels of Le and Er (Le 27 - 2980 x 10-6/l, Er 2-70 x 10-6/l). Escherichia coli was isolated from the dialysate culture. Peritoneal antibiotic treatment was introduced (aminoglycosides) along with the CT of the abdomen due to suspect perforation of the asceding colon, thus patient was referred to abdominal surgeon for examination. During surgery toxic megacolon was identified, and subtotal colectomy with terminal illeostomy was performed. Postoperative course was normal, resulting in complete recovery of the patient and continuing of the hemodialysis program.

The described case of peritonitis as the complication of the C.difficile-induced colitis is very rare, yet severe episode that may occurr in PD-patients.

P-104
FAVOURABLE CLINICAL COURSE OF PERITONITIS DUE TO PSEUDOMONAS AERUGINOSAE COMPLICATING PERITONEAL DIALYSIS: 3 CASES

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Introduction
Infectious complications are the major cause of increased morbidity and technique failure in a peritoneal dialysis (PD) program. The most frequent causative pathogens are Gram positive cocci such as staphylococci and Gram negative bacilli. Peritonitis due to pseudomonas species is a serious complication in CAPD patients and is one of the most important causes of technique failure.

Patients and Methods
We describe three cases of peritonitis due to pseudomonas species with a literature review.

The Patients' characteristics are summarized in the table n°1

Table N°1	Gender	Age	Etiology of renal failure	Technique of PD	Duration of peritoneal dialysis	Number of prior peritonitis
Case N°1	female	71	Chronic interstitial nephritis	CAPD	2004	3 : Staphylococcus
Case N°2	male	62	Hypertensive nephropathy	CAPD	June 2008	2 : Acinetobacter Baumani
Case N°3	female	22	Diabetic nephropathy	APD	July 2008	none

The diagnosis of peritonitis was based on abdominal pain, fever and cloudy peritoneal dialysis effluent (PDE), leukocytosis in PDE (white blood cells > 100/ml) and positive Gram stain or culture from PDE. There was nother exi-site infection nor nasal staphyloccus in the three cases.

Initial antibiotic regimens have consisted on Vancomycin associated with ciprofloxacin in cases 2 and 3 and with third generation cephalosporin only in case 1; after culture results (Pseudomonas Aeruginosae), the treatement have adjusted and the three patients have received this association of antibiotics: Ceftazidim, ciprofloxacin and aminoglycoside with a good response(complete cure).

Conclusion
Peritonitis due to the pseudomonas species is a notorious complication of peritoneal dialysis. Exit-site Infection and previous antibiotic treatment were the major risk factors and are associated with a poor therapeutic response. Nevertheless, Tenckhoff catheter reinsertion and/or switch to hemodialysis must be considered.

P-105
UNUSUAL PERITONEAL DIALYSIS PERITONITIS DUE TO MICROCOCCUS SP

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Introduction
Peritonitis is the most frequent complication of peritoneal dialysis (PD) and one on the major cause of drop outs from PD. The typical spectrum of microorganisms causing peritonitis include gram positive organisms(67%),mainly staphylococcus aureus, gram negative organisms(28%) and Fungi(2,5%).we report an unusual peritoneal infection due to micrococcus sp.

Case report: We report the case of a 47year old female with end stage renal failure due to lupus nephritis; she had been maintained on automated peritoneal dialysis for two years. She has no nasal colonization with staphylococcus aureus. Eighteen months after commencement of dialysis she was hospitalized a 24 H history of abdominal pain and vomiting. On examination, she had a fever of 38°c and a cloudy effluent. Empiric antibiotics covering gram positive and negative organisms was started. Micrococcus sp was isolated from dialysis fluid. After the vancomycin treatment the infection resolved, but recurred six weeks later with the same microorganisms and antibiotic sensibility. The second episode was resolved when treated with amoxicillin for two weeks.

Discussion
Micrococcus is Gram-positive cocci that has been isolated from human skin, animal and dairy products, and beer. It can be found in many other places in the environment. Micrococcus is generally thought to be a saprotrophic or commensal organism, though it can be an opportunistic pathogen, particularly in hosts with compromised immune systems. It can be difficult to identify Micrococcus as the cause of an infection, since the organism is a normally present in skin microflora.

Conclusion
Micrococcus sp isolated from peritoneal dialysis fluid cannot be lightly dismissed as non pathogens. They are clearly distinct from the caogulase negative staphylococcus.

P-106
CONNECTIVE TISSUE GROWTH FACTOR (CCN2/CTGF) IS INCREASED IN PERITONEAL DIALYSIS PATIENTS WITH HIGH PERITONEAL SOLUTE TRANSPORT RATE

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Introduction
Peritoneal fibrosis is an important complication of peritoneal dialysis (PD) therapy that often occurs in association with peritoneal high transport rate and ultrafiltration failure (UFF). The mechanism of these interactions between peritoneal fibrosis and UFF, which may become a target to prevent the peritoneal damage, is still not clear. In addition, there is no biomarker which reflects both conditions.

Methods
Dialysate CTGF contents (n=178) and tissue CTGF expression (n=61) were investigated by ELISA, real-time PCR, immunohistochemistry and in-situ hybridization. Local peritoneal production of CTGF was calculated by the difference between the measured and expected dialysate concentration using the peritoneal transport line. CTGF and bone morphogenic protein-4 (BMP-4) mRNA induction with and without TGF-β1 stimulation in human peritoneal mesothelial cells (HPMC) from the spent patients' peritoneal dialysate (n=32) was studied in vitro.

Results
The dialysate-to-plasma ratio for creatinine (D/P Cr) was positively correlated to dialysate CTGF concentration ($r=0.653$, $p<0.001$) and estimated local peritoneal production of CTGF ($r=0.724$, $p<0.0001$). CTGF mRNA expression was 11.4-fold higher in peritoneal membranes with UFF than in pre-PD uremic peritoneum and was correlated with thickness of the peritoneum ($r=0.57$, $p<0.0001$). CTGF protein and mRNA were detected in mesothelium and in fibroblast like cells. In cultured HPMC, TGF-β1 induced expression of CTGF mRNA was increased at 12 and 24 hours and was correlated with D/P Cr ($r=0.802$, $p<0.0001$). In contrast, BMP-4 mRNA expression was inversely correlated with D/P Cr ($r= - 0.678$, $p<0.001$).

Discussion and Conclusion
Our results suggest that high peritoneal transport state is associated with fibrosis and increased peritoneal CTGF expression and production by mesothelial cells which can be stimulated by TGF-β. Dialysate CTGF concentration could be a biomarker for both peritoneal fibrosis and membrane function. Functional alteration of mesothelial cells may be involved in progression of peritoneal fibrosis in high transport state.

P-107
PROTECTIVE EFFECTS OF PPAR-γ AGONIST ON PERITONEAL MEMBRANE DAMAGE INDUCED BY PERITONEAL DIALYSIS

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Peritoneal membrane (PM) fibrosing syndromes associated with ultrafiltration (UF) failure is a devastating process in PD patients. Glucose and glucose degradation products (PDGs) content in PD fluid induces a local diabetic environment with structural protein glycation, AGEs formation and epithelial-to-mesenchymal (EMT) of mesothelial cells (MC). Several pathways can be involved in these processes, among them that of TGF-β and NFκB signalling, partially linked to peroxisome proliferator-activated receptors (PPARs). PPAR-γ agonist, rosiglitazone (RSG) has been documented as an anti-fibrotiic, anti-angiogenic and antiproliferative agent in different tissues. Herein, we have explored the effect of RSG on EMT of MC, extracellular matrix component (ECM) production, angiogenesis and peritoneal transport.

In our mice PD model, we studied the effects of a PD fluid (3.86% glucose), one peritoneal exchange (2 ml) per day during 3 weeks. Five mice were co-treated with this PD fluid and oral RSG (20 mg/kg/day). We found a remarkable preservation of mesothelial layer, reduction of membrane thickness, angiogenesis and MC migration and AGEs and accumulation in submesothelial area.

To explore the RSG mechanisms, we co-stimulated human peritoneal mesothelial cells (HPMC), with TGF-β (1 ng/ml) to induce EMT and different doses of RSG. We determined E-cadherin and Snail expression (RT-PCR), the ECM synthesis, α-SMA (WB), VEGF (ELISA), MC proliferation by chemo-luminiscence, cell cycle (flow-cytometry) and apoptosis. RSG did not inhibit the EMT of MC neither its deleterious effects. Wound healing study did not show differences between RSG and MC control. However, RGS showed an anti-apoptotic effect.

In fibroblast-like MC from PD effluents, RSG was not able to revert EMT neither ECM or VEGF production.

Conclusion, in vivo RSG shows an anti-fibrotic, anti-apoptotic, anti-angiogenic and anti-migration effect of MC on PM in PD. These positive effects may be mediated by decreasing in AGEs accumulation in submesothelial area.

P-108
ADEQUATE DIALYSIS CRITERIA IN PERITONEAL DIALYSIS

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Introduction
Adequate dialysis in peritoneal dialysis (PD) lays on many clinical and biological parameters. The epuration efficiency can be controled by clairance of creatinine and Kt/V of weekly urea.

Purpose of the study: To evaluate adequate dialysis criteria in DP patients.

Materiel and Methods
We realized a prospective study in the dialysis unit of Ibn Sina Hospital –Rabat between July 2006 and April 2009, including 24 patients in CAPD followed at least after a month. We determined their clinical characteristics [AHT, leg oedema, residual diuresis, peritoneal ultrafiltration(PUF)] and biological [residual renal function (RRF) electrolytes, haemoglobin and CRP]. The clairance of créatinine and KT/V of weekly urea have been considered as indicators of dialysis dose.

Results
The mean age of our patients is 51,1 ±15,2 years (20 - 79) with a male prevalence (sex ratio= 1,4). After an average medical follow-up of 14,2 ±10,6 months, 45,8 % of patients had AHT and 2 patients leg oedema. The mean residual diuresis 1452± 689 ml/24h and 87% of the population kept a RRF ≥ 2ml/min. the mean PU was 720± 484 ml/24h and 50% had a PU ≥ 750ml/24h. Hyperkaliemia, hyperphosphoremia and metabolic acidosis were respectively noticed in 25%, 8,3% and 4,2%. No one had anemia. CRP was under 6 in 90% of all cases. Total clairance of creatinine value was ≥ 60 L / week /1,73m² in 93 % with an average of 125,5± 77,7 L/week/1,73m². KT/V was ≥ 2 in 57,1 % of patients with an average of 2,4 ±1,7.

Discussion
Most of our patients have an efficient dialysis dose with a Kt/V and a total clearance creatinine that corroborates with the international recommandations (DOQI 2000), without hydro-sodium accumulation.

Conclusion
adequate dialysis criteria must be interpretated by considering clinical and biological parameters of the studied population.

P-109

PERITONITIS AND EXIT SITE INFECTION IN CHILDREN ON CHRONIC PERITONEAL DIALYSIS: 14 YEARS FOLLOW UP

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The aim of this study was to evaluate the incidence of peritonitis and catheter exit site infection (ESI) in children undergoing chronic peritoneal dialysis, during January 1995 to may 2009. The incidence of peritonitis and catheter related infections were reviewed in 23 (M:F=14:9) children on continuous peritoneal dialysis over a mean period of 32.3±23.7 months. Mean age was 10.58±4.02 years. Peritonitis occurred in 18 and ESI in 9 children. The mean time from starting dialysis to the first episode of peritonitis was 1.9+/-1.0 months. During 743 patient's months we observed 65 episodes of peritonitis and 20 episodes of ESI. The incidence of peritonitis was 1 episode in 11,43 patient's mounts. The incidence of catheter ESI was one episode in 37.15 patient's mounts. Staphilococcus aureus was the most prevalent pathogens and accounted for 38% of the peritonitis, and 55% of the ESI. Most patients with dialysis-related peritonitis and catheter exit site infection responded to antibiotic therapy. Thirteen episodes of ESI resulted in peritonitis, of whom nine had to have catheters replaced because of associated chronic infections of the deep peritoneal cuff, the exit site or the catheter tunnel. Four patients had membrane failure and were shifted to hemodialysis. Patients with exit site infection had 7 times higher risk than those without ESI to developing peritonitis.

Although peritonitis and ESI were common complications of chronic peritoneal dialysis in our children, it did not affect the success of the technique.

P-110

THE NALP3 INFLAMMASOME COMPLEX IS INVOLVED IN THE INFLAMMATORY RESPONSE DURING ACUTE PERITONITIS

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The inflammasome is a caspase-1-activating multiprotein complex that link the sensing of microbial products to the activation of proinflammatory cytokines including IL-1beta. The process involves the intracellular NOD-like receptor NALP3 and the adaptor protein ASC. Pyrin, the protein mutated in the auto-inflammatory disease Familial Mediterranean Fever (FMF), is suggested to interact with ASC. In order to investigate the potential involvement of the NALP3 inflammasome and pyrin during peritonitis, we used a mouse model of acute peritonitis induced by intra-peritoneal injection of LPS (10mg/kg; 1-3-6-12h). Treatment with LPS induced time-dependent leukocyte recruitment in parallel with an upregulation of NALP3, ASC and pyrin in the peritoneum and an increased concentration of IL-1beta in the peritoneal cavity that peaked 6h after treatment. LPS treatment in mice knock-out for ASC (ASC-/-) led to significantly lower leukocyte recruitment and release of IL-1beta. To investigate the role of macrophages in the inflammasome response, LPS pre-stimulated peritoneal macrophages were treated in vitro with ATP (1mM). ATP treatment upregulated NALP3 and pyrin expression, and led to caspase-1 activation and specific IL-1beta secretion. The response was lost in ASC-/- macrophages. Treatment of human peritoneal macrophages with ATP activated the inflammasome in a similar manner than in wild-type murine macrophages. By contrast, the induction of IL-1beta and the upregulation of inflammasome components upon ATP treatment was lost in peritoneal macrophages from a patient with FMF caused by the homozygous missense mutation (M649I) in pyrin. These data suggest that the NALP3 inflammasome complex participates to the inflammatory response of peritoneal macrophages during LPS-induced peritonitis. Furthermore, the lack of macrophage response to ATP in patients with FMF suggests that pyrin is an activator of the inflammasome complex in peritoneal macrophages.

P-111

CHARACTERIZATION OF INFLAMMATION INDUCED BY PERITONEAL DIALYSIS FLUIDS

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Peritoneal exposition to peritoneal dialysis fluid (PDF) induces peritoneal morphological and functional alterations that correlate with ultrafiltration failure and fibrosis. Acute peritonitis caused by infection or hemoperitoneum are able to accelerate peritoneal degradation. However, the mechanisms involved in peritoneal damage in the absence of peritonitis are still poorly understood. Our hypothesis is that PDF instillation induced a subclinical inflammation responsible for peritoneal deterioration.

In order to address this hypothesis, we used a chronic model of PDF exposure in mice. We daily instilled 2 ml of Stay Safe 4.25% into female C57BL/6 mice and, check at different days (0, 7, 15 and 30) the presence of inflammatory cells, cytokines and chemokines at peritoneal cavity and correlate them with thickness and peritoneal function.

The results demonstrate that PDF instillation induce peritoneal inflammation determined by the number of total cells present in the effluent. This number increase at day 15 and show a tendency to decrease at day 30. The inflammatory cells could also be observed in the peritoneal biopsies stained with HE. The increased numbers of inflammatory peritoneal cells correlates with chemokines in drained PDF. As early as day 7 after initiation of PDF exposure, peritoneal membrane express signals of fibrosis and does also suffer functional alterations. These alterations are related with the number of drained cells and especially with macrophages.

Discussion

The exposition to PDF induces inflammation at peritoneal cavity of mice. Comparing to control mice, the number of total cells is increased and the frequencies of inflammatory peritoneal cells change in response to PDF. The frequency of macrophages correlates with peritoneal thickness, suggesting an important role for these cells in morphological and functional alterations suffered by peritoneal membrane exposed to PDF.

P-112

THE EFFECT OF MYCOPHENOLATE MOFETIL ON INFLAMMATION AND MORPHOLOGICAL CHANGES IN ENCAPSULATED PERITONEAL SCLEROSIS

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Introduction

Encapsulated Peritoneal Sclerosis (EPS), characterized by peritoneal membrane fibrosis and increased neoangiogenesis, is a rare but higly fatal condition that effects long term peritoneal dialysis patients. In recent years Mycophenolate mofetil (MMF), which inhibits recruitments of lymphocytes, monocytes and also inducible nitric oxide synthase activity, has become a novel agent in inflammatory and fibrosing states.The aim of the study is to investigate the effects of MMF in EPS.

Method

Thirty-three non-uremic wistar albino rats were divided three groups: CG group, IP 2 ml/200 g injection of chlorhexidine gluconate(CG)(0.1%) and ethanol(%15) dissolved in saline, for 3 weeks(w), Resting group, CG(0-3rd w)+peritoneal resting(4th-6th w). MMF group, CG(0-3rd w)+125 mg/L MMF in drinking water(4th-6th w). At the end, a one-hour PETwas performed. Dialysate cytokine levels were measured and morphological changes of parietal peritoneum were examined.

Results

CG has yielded to significant increase in peritoneal thickness (130±7 µm) as compared to control peritoneum (26±5, µm). During resting period peritoneal thickness has continued to increase as compared to CG group (from 130±7 to 230±12 µm, p< 0.05) and significantly improved with MMF treatment (from 230±12 to 164±18 µm). Peritoneal resting has no beneficial effect on dialysate TGF-β1, VEGF and MCP-1 levels as compared to CG group (4882±665 vs 2580±90; 99±29 vs 38±4 and 1062±259l vs 996±165 pg/ml, respectively). MMF treatment significantly improved dialysate TGF-β1, VEGF and MCP-1 levels as compared to resting (2426±213 vs 4882±665; 2.5±0.86 vs 99±29 and 104±14 vs 1062±259 pg/ml, respectively).

Discussion

EPS is a dynamic process; peritoneal thickness and inflammation were getting worse by peritoneal resting. MMF treatment has effective in about regression of EPS via inhibiting inflammation and neovascularisation. In conclussion, we suggest that MMF treatment is seems to be an promising choice in the management of long term peritoneal membrane derangements due to EPS via reducing the dialysate cytokine over-expression.

P-113

INFLAMMATORY CYTOKINE PROFILE IN BASELINE DIALYSATE AND PLASMA SAMPLES FROM INCIDENT AND PREVALENT PATIENTS IN THE GLOBAL FLUID STUDY

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Introduction
There is accumulating evidence from small, single centre studies of the importance of inflammatory cytokines in peritoneal dialysis, both systemically and intra-peritoneally. The Global Fluid Study was set up in 2002 to establish the value of systemic and intraperitoneal biomarkers as predictors of clinical endpoints, including membrane injury. We report the first analysis of inflammatory cytokines from this study.

Methods
941 incident and prevalent patients from 10 centres in the UK, Canada and Korea were included. The initial plasma and 4-hour dialysate samples were assayed by electrochemiluminescence using a commercial kit (Meso Scale Discovery Pro-Inflammatory Multiplex I). Clinical data stored in an Access database was combined with cytokine levels and extracted to SPSS. As some cytokines had a substantial number of values below the limit of detection, 1 was added prior to log transformation, obtaining a normal distribution for plasma γ-IFN, TNF-α and IL-6 and dialysate IL-6. IL-1β remained significantly skewed.

Results
To test for the effect of cytokine dilution in dialysate, levels were correlated with input volume, but the association was weak, or insignificant (R=-0.040 to -0.145, p=0.012 to 0.488). All dialysate samples auto-correlated (R=0.295 to 0.826, p<0.001), as did plasma samples (R=0.136 to 0.510, p≤0.001). IL-6 had the weakest correlations within dialysate or plasma, but was the only cytokine to correlate between dialysate and plasma (R=0.259, p<0.001). Generally dialysate concentrations were much lower than plasma, but ranged up to 35882 times that of plasma. IL-6 had the highest dialysate to plasma ratio, with a median of 3.49.

Conclusions
Plasma and dialysate cytokines vary independently, but auto-correlate within dialysate or plasma compartments. Dialysate IL-6 correlates with plasma, but concentrations despite dilution are far higher. Intraperitoneal and systemic inflammation is uncoupled with evidence of local production within the peritoneal cavity.

P-114

PERITONEAL LOCAL INFLAMMATION IS CORRELATED WITH THE BASELINE PERITONEAL SOLUTE TRANSPORT RATE IN PERITONEAL DIALYSIS PATIENTS

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Introduction
In recent years, several studies showed that a high baseline peritoneal solute transport rate was associated with reduced patient and technique survival in continuous ambulatory peritoneal dialysis (CAPD) patients. However, determinants of baseline peritoneal solute transport rate remains uncertain. The aim of this study is to investigate relationship between peritoneal local inflammation and angiogenesis, and baseline peritoneal permeability.

Methods
We explored the expression of CD68-positive macrophages, chymase-, and tryptase-positive mast cells, IL-6-positive cells, CD31- and PAL-E-positive blood vessels by immunohistochemistry as local inflammation and angiogenesis in 39 frozen sections of human peritoneal specimens of pre-PD uremic patients and control samples from living kidney donors. We also analyzed correlations in these markers and clinical inflammation and nutritional parameters.

Results
Macrophages infiltrate predominantly in pre-PD uremic peritoneum as compared with control peritoneum (110.77±77.68 vs. 19.39±6.37 /mm^2, p<0.001). The dialysate-to-plasma ratio for creatinine (D/P Cr) was positively correlated to macrophage density (R=0.679, p<0.001). The number of IL-6-positive cells was correlated with D/P Cr (R=0.454, p<0.01). The number of chymase-positive mast cells was predominant in uremic peritoneum as compared with control peritoneum (25.42±11.70 vs. 11.42±7.01 /mm^2, p<0.05). However, we could not find the correlation between the number of chymase-positive and tryptase-positive mast cells, and baseline D/P Cr. There was a significant correlation between the number of CD31-positive (R=0.584, p<0.001) and PAL-E-positive blood vessels (R=0.612, p<0.001), and baseline D/P Cr. Serum albumin level was significantly correlated with peritoneal macrophage density (R=0.456, p<0.01) and baseline peritoneal permeability (R=0.338, p<0.05) in pre-PD uremic patients. However, serum CRP level showed no correlation with either angiogenesis or peritoneal local inflammation.

Discussion and Conclusion
We found that extent of peritoneal local inflammation and angiogenesis was correlated with baseline peritoneal solute transport rate. Low albuminuria might affect peritoneal local inflammation and peritoneal permeability.

P-115

PERITONEAL DIALYSIS IN RATS SCALING FOR IN VIVO PERITONEAL SURFACE AREA RECRUITED: IMPACT OF BIOCOMPATIBILITY ON ULTRAFILTRATION

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The impact of new, more biocompatible PDF's on peritoneal ultrafiltration (UF) remain discussed in clinical studies. The in vivo peritoneal surface area (ivPSA) recruitment is important to include in peritoneal transport capacities analysis. We conducted a study in 5/6 nephrectomized male Wistar rats (N=27) body weight (BW): 345-542g. Randomized PET tests (90 min) were performed using either a conventional lactate dialysate (L) or a new biocompatible bicarbonate dialysate (B), with a fill volume of 10 mL / 100g BW.

The actual intraperitoneal volume (aIPV) was assessed by direct volume recovery techniques through fluid sampling, weighing the collected fluid and residual volume assessment (Twardowski method). This aIPV allows the determination (micro computerized tomography) of the recruited ivPSA at 90 min of PET, and the UF calculation. Purification capacities (urea, phosphate) were calculated using mass transfer coefficient (Garred formula), scaled for ivPSA. Net UF was scaled for the absorbed glucose.

Transcellular fluid removal (La Milia method) was calculated.

Recruited ivPSA in cm²/mL didn't differ between L (6.53) and B (6.65). Main significant results (P<0.01) for B versus L were:

Net UF (mL) = 6,14 vs 9,04

UF/ glucose absorbed (mL/mmol) = 0,17 vs 0,32

MTAC phosphate/ivPSA = 0,0451 vs 0,0295

Free water proportion (%) = 42 vs 29

Despite lower net UF achieved with B, D/D0 glucose profiles were similar. MTAC phosphate increased using B, more than MTAC urea. UF differs in terms of free water proportion, enhanced using B. UF differencies may imply both the impact of B on the "pores", the aquaporins and the impact of L on the hydrostatic capillary pressure (elevated, due to hyperperfusion). Nevertheless, transport capacities changes could be more affected by the effects of B (neutral pH) on the endothelial glycocalyx or the matrix density.

P-116

CYSTATIN C AND CATHEPSIN B IN PERITONEAL EFFLUENTS AND PERITONEAL SOLUTE TRANSPORTER IN PERITONEAL DIALYSIS PATIENTS

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Background
During peritoneal dialysis (PD), exposure to the nonphysiologic PD solutions cause peritoneal fibrosis which is associated with the changes in solute transport and with ultrafiltration failure. Cathepsin B is a potent cysteine protease that degrades the extracellular matrix and also known as a proapoptotic regulator. We studied whether the cathepsin B, with its inhibitor cystatin C, in peritoneal effluents are associated with the peritoneal membrane characteristics.

Methods
A total of 30 PD patients at 2 centers in Korea were analyzed. Cystatin C (by nephlometry), procathepsin-B (by sandwich enzyme immunoassay) and CA 125 (by electrochemiluminescence) in the peritoneal effluents were measured. Peritoneal solute transport was assessed with the peritoneal equilibrium test.

Results
The cystatin C and procathepsin B in effluents were significantly correlated with the dialysis/plasma creatinine (D/P_{cr}) ratio (R=0.60, P=0.001 and R=0.51, P=0.017, respectively), and the ratio of procathepsin B to cystatin C was negatively correlated with D/D0 glucose (R=-0.41, P=0.04). CA 125 in effluents was correlated with D/P cystatin C (R=0.416, P=0.022).

Conclusions
Procathepsin B and cystatin C levels in peritoneal effluents reflect peritoneal solute transport. The ratio of procathepsin B to cystatin C ratio in effluents may be a useful marker of increased peritoneal transport.

P-117
CA 125 AND PERITONEAL MEMBRANE FUNCTION

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Mesothelial changes occur during peritoneal dialysis. CA-125 has been used as a marker of peritoneal mesothelial cell mass or turnover.

To analyse CA125 levels, longitudinal changes and relationship with peritoneal permeability, we reviewed retrospectively a cohort of patients treated with peritoneal dialysis.

We evaluated 182 measurements, in 62 patients. Thirty-six (58,1%) were male. At the time of the first CA-125 determination patient's mean age was 56.6±16.9 years, 9 (14,5%) patients were on PD for more than 2 years, 40 (64.5%) were being treated with low glucose degradation products (GDP) solutions, 14 (22%) were high transporters and 17 (27.4%) had history of documented peritonitis. Median CA125 concentration was 13.5 U/ml (range 0.4 to 95), CA125 appearance rate (AR) was 113 U/min (range 3.3 to 792). Both CA125 concentrations and appearance rates were inversely related to the duration of PD treatment (r = -0.19, p=0.01). Evaluations made 2 years after the beginning of PD showed significantly lower CA125 AR (p=0,001). Treatment with low GDP solutions was associated with higher CA125 AR (p<0,001). In 47 patients with at least 2 measurements, an individual longitudinal trend was determined, which did not correlate with the glucose exposure, type of solution, time in PD or peritonitis incidence. Likewise, solute clearances, type of peritoneal transport and ultrafiltration rate did not correlate with CA125 AR nor with its changes over time. However, in the subset of patients which changed from conventional to low-GDP solutions a trend to higher CA125 AR was noticed.

The correlation between CA125 AR and time on PD, and the higher CA125 AR when more biocompatible solutions are used, suggest that CA125 is a marker of mesothelial cell homeostasis. However, with respect to its definite place as a marker of membrane integrity and function, the data are still scarce and deserve further investigation.

P-118
EFFLUENT FIBRIN DEGRADATION PRODUCTS (FDP) IS A USEFULL MARKER FOR THE PERITONEAL DAMAGE

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Introduction
It is quite important to find a useful marker to evaluate the peritoneal damage.

Methods
Twenty-five patients (male 17: female 8) were enrolled in this study. The average age was 63.0 years and the average duration of peritoneal dialysis was 18.0 months. Thirteen patients with chronic glomerulonephritis, three with nephrosclerosis, one with diabetes, and eight with others were comprised. FDP and interleukin-6 (IL-6) concentrations in the effluent were measured. Indices of the peritoneal permeability such as D/P Cr, D/P albumin, D/P IgG, D/P alpha2-macroglobulin (MG) were also measured.

Results
Effluent IL-6 significantly correlated with D/P Cr (r2=0.052, p=0.0388), D/P albumin (r2=0.014, p<0.0001), D/P IgG (r2=0.321, p<0.0001), and D/P alpha2-MG (r2=0.349, p<0.0001. Effluent FDP significantly correlated with effluent IL-6 (r2=0.392, p<0.0001), D/P albumin (r2=0.017, p=0.0004), D/P IgG (r2=0.477, p<0.0001), and D/P alpha2-MG (r2=0.579, p<0.0001). The correlation between effluent FDP and D/P Cr was not significant (r2=0.093, p=0.059).

Discussion
Both FDP and IL-6 increased as the elevation of the peritoneal permeability. The stronger correlation was observed with the larger molecular weight of the solute. FDP can be determined at a smaller cost than IL-6. Therefore, it would be clinically relevant to monitor FDP as a marker for the peritoneal inflammation and permeability.

P-119
BETA2MICROGLUBULIN (B2M) CONCENTRATION AND DIALYSIS MODALITY.

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Abstract
Every time its must taken into account B2M concentration in patients with chronic kidney disease (CKD) in dialysis programs, as a marker of big molecules disposal and forecast index. B2M concentration depends on many factors, but the influence about dialysis modality, Hemodialysis (HD) or Peritoneal Dialysis, has not been studied. The purpose of this study was to analyze the modality dialysis repercussion on B2M concentration.

Patients and Methods
Transversal study with 94 patients (63 males, 31 females) with CKD (53 in hemodialysis program and 41 in peritoneal dialysis program). Every patient on the HD group used synthetic membrane dializators: 21 with medium flow and 32 with high flow.

Results
B2M concentration in the total group was 35.6 mg/L, showing a strong bilateral correlation with residual renal function (0.68; p<0.001).

In the group of HD patients, those with residual renal function, showed B2M concentration lower than those without it: 43.2 vs 26.1 (p<0.05). In the other hand, the group treated with high flow membranes, had lower B2M levels than the one treated with medium flow: 34.1 vs 42.8 mg/L (p=0.056), and there were not differences on diuresis not even in residual urea clearance.

Among patients in PD, when we stratified them in cuartils attending to residual renal function, the ANOVA analysis and the "T" test showed different B2M concentrations in the groups (p< 0.01).

Patients in HD group, had lower diuresis: 361 vs 791 ml/day, (p=0.018) and lower residual urea clearance: 0.94 vs 2.27 ml/min (p=0.07). However, B2M concentration was similar with both dialysis modalities: 37 mg/L in HD and 33.7 mg/dL in DP.

Conclusions
Selectively permeable membrane has a paper in B2M concentration in patients treated with HD. We have not observed differences in B2M concentration looking at dialysis modality, even patients on PD had a higher residual renal function.

P-120
PERITONEAL EQUILIBRATION TEST (PET): EVALUATION METHOD OF PERITONEAL TRANSPORT

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Introduction
The PET is a common technique used to explore peritoneal function, thus to evaluate peritoneal membrane transport capacity.

Purpose of the study: To describe the membrane permeability in PD patients.

Material and Methods
We realized a prospective study in the dialysis unit of Ibn Sina Hospital –Rabat between July 2006 and April 2009, including 24 patients in CAPD followed at least after a month. We determined PET results and the clinical characteristics of our patients [arterial hypertension, leg oedema, diuresis, peritoneal ultrafiltration (PU)].

Results
the mean age of our patients is 51,1 ±15,2 years (20 - 79) with a male prevalence (sex ratio= 1,4). A PET has been realized after a mean PD follow-up of 6,4 ±4,4 months. 41,7 % of the patients had a low-average permeability, 54 % had a high-average permeability, one patient had a high permeability and another a low permeability. 87% of our population had a residual renal function ≥2ml/min. 83,4% were under 2 or 3 peritoneal exchanges. The arterial hypertension prevalence was 45,8% and 2 patients had leg oedema. The mean diuresis was 1452± 689 ml/24h. The mean PU was 720± 484 ml/24h. 50% had PU ≥ 750cc/24h.

Discussion
The majority of our patients has a high-average or low-average permeability, which agrees with most of the previous studies. A regular control of the peritoneal permeability is necessary in order to evaluate the membrane transport capacity.

Conclusion
PET allows to specify PD modalities for an efficient dialysis.

P-121
INFLUENCE OF RESIDUAL DIURESIS AND FRACTIONAL EXCRETION OF SODIUM ON BLOOD PRESSURE IN PERITONEAL DIALYSIS PATIENTS

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Blood pressure in peritoneal dialysis (PD) patients may be related to hypervolemia, preservation of residual renal function, clirens of vasoactive substances, patients cooperation or to administration of erythropoietin.

The aim of the study is to compare influence of residual diuresis (RD) and fractional excretion of sodium (FeNa) on blood pressure control in PD patients.
The study is retrospective analysis of 30 patients who are divided in 3 subgroups by volume of RD and ultrafiltration (UF). In the first were 12 patients with RD<500 ml/day (40%), in the second 7 patients with RD between 500 and 1000 ml/day (23.3%) and in the third 11 patients with RD>1000 ml/day (36.7%). By increased RD volume linear trend of blood pressure was decreasing with statistical significant coefficient of linear correlation with sistolic pressure (R2=0,7106), diastolic pressure (R2=0,7106) and mean arterial pressure - MAP (R2=0,8467).
In the first subgroup correlation RD with UF, FeNa totally and blood pressure was inverse. Higher sistolic pressure had statistical significant correlation with less loss of sodium in dialysate, urine and totally (urine and dialysate). Diastolic pressure and MAP had statistical significant correlation with less loss of sodium in dialysate.
In the second subgroup correlation RD with UF, diastolic pressure and loss of sodium in dialysate and totally loss was inverse. Small RD volumes in these interval were correalate with higher UF rate, higher diastolic pressure and higher totally FeNa, but without statistical signification.
In the third subgroup correlation RD with UF, loss of sodium in dialysate and totally was inverse, but without statistical signification.
We can conclude that RD and FeNa have important role in better blood pressure control in PD patients no metter of RD volume. Totally FeNa has positive influence on better blood pressure control no metter of RD volume and inverse.

P-122
THE PREVALENCE AND THE IMPACT OF ABDOMINAL WALL- MECHANICAL COMPLICATIONS ON LONG-TERM OUTCOME IN PD PATIENTS

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It has been suggested by previous studies that as many as 10%-20% of PD patients may develop an abdominal wall-mechanical complications, as hernia, leak, hemoperitoneum and pain at some time on peritoneal dialysis.

The objectives of our study were to assess the prevalence of hernias during PD and the impact of abdominal wall-mechanical complications on long-term outcome in PD patients.
62 PD patients were included in the study (mean age=52.3yrs(18-83), M/F:34/28, CAPD/IPD:51/11. Mean follow-up of the patients was 21.2months(1-48). 7/62(11.3%) patients developed hernias: inghinal hernia in 3 cases, epigastric hernia in 1 case and in the incision of a previous operation in 3 cases. All patients were in CAPD program. 3/7 patients developed two episodes of hernia: in 1 patient the second hernioplasty is performed; in 2 patients the first hernia episode was treated by conservative measurements. Surgical intervention consisted in application of tension-free hernioplasty. At the surgical moment 5/7 patients were temporary transferred to hemodialysis on central venous catheter and 2/7 patients required conservative treatment of kidney failure until the reinsertion in PD program. Evolution was favorable in all patients and they restart peritoneal dialysis in 14 to 21 days after hernioplasty. For a mean follow-up of 8.9 months (2-16) after hernia repair, 6/7 patients didn't developed other abdominal-wall complication. One patient presented relapse of hernia after 16 months which also requires surgical intervention, temporary hemodialysis and switch from CAPD to IPD-CCPD program without any other complications during the next 25 months.

Hernia is considered a complication of peritoneal dialysis that can be safely solved using a careful technique with application of tension-free hernioplasty. In our study the prevalence of hernia is similar to the literature. PD program was maintained after surgery in all patients without any unfavorable impact on long-term PD outcome.

P-123
PERITONEAL MEMBRANE STATUS: STUDY ABOUT 34 CASES

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Introduction
Peritoneal permeability differs between patients at the time of starting peritoneal dialysis and it can increase along with time on the technique.This fact is related to different factors.

The aim of the present study is to characterize peritoneal membrane status from the time of dialysis peritoneal initiation

Methods
It's a single center retrospective study that has included 34 patients. A peritoneal transport kinetic study at the time of starting peritoneal dialysis was performed for all patients.

Resultants
Thirty four patients were starting peritoneal dialysis (PD). The means age was 46 +_ 16, 4 years. Twenty tow patients (64,7%) were male. the causes of chronic kidney disease were diabetes mellitus in 38,2% of cases, tubulointerstitial nephropathy in 20,6% of cases and Glomerulonephritis 8,8% of cases. The proportion of patients with High, High average, Low average, Low is respectively 20,6% , 47,1% , 23,5% , 8,8%.Seven patients had a low average were diabetic. Peritonitis was diagnosis in 29, 4% of patients. The number of patients who had a second PET test was 11. Eight patients changed their transport category. Among all patients 5, 9% used corticotherapy, 5, 6% antagonist receptor bookers and 11, 8% statins.
The means of C reactive protein was at a value of 10mg/l and the alpha 2 gamma globulins was 8,35

Discussion
The characteristics peritoneal membrane may differ from patient to patient at the start of dialysis, may also vary during the curse of PD.approximately 20% of patients on PD develop a high transport state. Peritoneal transport may be related to inflammation, diabetes mellitus and biocompatibility of dialysis solution.

Conclusion
different factors can change peritoneal membrane status. Kinetic studies performed 6 and 12 months after the start of dialysis may be more representative of peritoneal function in the long term.

P-124
MAINTENANCE OF HAEMOGLOBIN CONCENTRATION ON A DARBEPOETIN ALFA Q2W DOSING SCHEDULE IN PERITONEAL DIALYSIS PATIENTS: RESULTS FROM ALTERNATE, A LARGE OBSERVATIONAL STUDY IN EUROPE AND AUSTRALIA

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Introduction
There is a limited amount of observational data, retrospective and prospective, currently available in peritoneal dialysis patients. ALTERNATE was designed to evaluate in routine clinical practice the use of darbepoetin alfa (DA) administered every two weeks (Q2W) for the treatment of anaemia in dialysis patients. We report here the results in the peritoneal dialysis (PD) cohort.

Methods
Eligible patients were ≥18 years of age, already on PD treatment and initiating treatment with DA Q2W. Data were collected 6-months prior to and 12-months after DA Q2W initiation. The primary endpoint was Hb concentration at 12-months.

Results
Of the total 6104 dialysis patients evaluated, 741 were PD patients: mean (±SD) age was 61 (±15) years; 57% were male. Before DA Q2W initiation, 9% were ESA naïve, 15% on other epoetins [alpha or beta], and 76% on DA; 78% of those receiving an ESA were on QW. 86.5% patients received DA via subcutaneous route and 14% via intravenous route. At month 12, 70% of the patients were receiving DA Q2W and 6% DA once-monthly (QM).

Mean [Hb] (95% CI) (g/dl) values 6-months before initiation were 11.69 (11.53-11.86), 1-month before initiation 11.92 (11.79-12.05), at initiation 12.25 (12.13-12.38), 11.88 (11.74-12.02)12-months after initiation. The geometric mean ESA dose normalised to a weekly equivalent (µg/wk) was 25.2 6-months before initiation; 21.3 immediately before initiation; 18.9 at initiation and 19.0 12-months after initiation.

The proportion of patients with haemoglobin levels >11.0 g/dL was 69.3% 6-months prior to initiation, 76.2% at initiation, and 72.3% 12-months after initiation.

Conclusion
In this diverse PD cohort that included patients switched from other ESAs, dose regimens or with no previous ESA treatment, our findings show that the mean Hb level was maintained between 11-12 g/dL with no increase in ESA dose after initiation of DA Q2W schedule.

P-125
GLUCOSE MONITORING IN NON-DIABETIC CAPD PATIENTS

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Background
Peritoneal dialysis (PD) is obligatory associated with glucose absorption from dialysis solution. The aim was to assess the long-term course of interstitial glucose concentration (IGC) in non-diabetic PD patients using dialysis solution with various glucose concentrations.

Methods
The Continuous Glucose Monitoring System (CGMS, Guardian RT, Medtronic) was used in 8 stable non-DM patients on PD with identical dialysis prescription using glucose based (G) dialysis solution (2000 ml each bag). IGS was recorded in 5minutes intervals for a period of 72 hours and 48-hours period consisted from 8 dwells (1st, 3rd, 5th and 7th with 1,5% G; 2nd, 4th and 6th with 2,5% G and 8th with 4,25% G) was analysed. Absorbed glucose was calculated. Body composition monitor (BCM, Fresenius) served for analysis of fat and lean tissue indexes. Two healthy persons served as controls for CGMS. Statistical software SigmaStat, descriptive statistics and ANOVA analysis were applied, with $p < 0,05$ significant. The Institutional Review Board approved the study and each patient expressed written consent.

Results
In controls, the ICG did not exceed the acceptable concentration (7,8 mmol/l), while in all patients elevations above 7,8 mmol/l were observed for 5-30% of time of study (mean 20%; SD 12%). Mean ISG from in all patients was 6,8 mmol/l. Mean daily absorption of glucose was 109 g (dwell 1-4) and 139 g (dwell 5-8) and correlated with the period of ICG above 7,8%. Dwell with 4,25% dialysis elevated glucose concentration inversely with D/Do in PET test. No relation between CGMS data and body composition (BMI, LMI and FMI) was observed.

Conclusion
Non-diabetics patients on chronic ambulatory peritoneal dialysis display elevated concentration of glucose in interstitial fluid, which in daily practice may not be recognized. Further studies are needed to assess the clinical significance of this observation.

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P-126
IS QUANTIFERONTB-GOLD SUPERIOR TO TUBERCULIN SKIN TEST TO DETECT TUBERCULOSIS INFECTION IN PERITONEAL DIALYSIS PATIENTS?

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Background
The risk for tuberculoses (TB) is increased in patients with chronic renal failure and dialysis. Tuberculin skin test (TST) is the classical diagnostic method for screening in such patients, in spite of its low sensitivity and specificity. New diagnostic methods based on interferon gamma production after stimulation with Mycobacterium tuberculosis antigens have been developed. The aim of this prospective study was to evaluate if QuantiferonTB-gold (QFT-G) is superior to tuberculin skin test in diagnosing TB infection in patients on Peritoneal Dialysis (PD).

Methods
A total of 54 patients on peritoneal dialysis were included in the study. They were evaluated for latent tuberculosis infection with QFT-G, TST and an expert physician. Two booster injections were given with a 10 day interval to patients not responding to the first test. Concordances between test results were determined.

Results
The prevalence of a positive TST was 29.6% for the first test and 31.5% for the second. A positive chest radiography increased the detection of patient with latent TB infection up to 42.6% and expert physician to 44.4%. The level of correlation between QFT-G and TST was just fear (κ 0.39, p 0.006), as it was between TST and expert physician evaluation (κ 0.257, p 0.06).

Conclusions
According to our experience QFT-G is not superior to TST in the diagnosis of TB in the patients on PD. It does not seem cost-effective to use QFT-G as a routinely screening method in this group of population.

P-127
MONCRIEF POPOVICH TECHNIQUE IS AN ADVANTAGEOUS METHOD OF PD CATHETER IMPLANTATION

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Team skills concerning peritoneal access management is a key factor for PD success. Peritoneal catheter implantation by Moncrief-Popovich (MP) technique might add several clinical advantages besides allowing timely access implantation.

The aim of this study was to investigate the rate of complications and catheter survival in a single centre University Hospital PD Unit, according to the method of catheter implantation.

Data were collected from January 1989 to December 2008, 467 consecutive Tenckhoff catheters were implanted, by a committed team, after antibiotic prophylaxis and in an operating room: surgical minilaparotomy (ML) was used in 211 (45%), Seldinguer technique (S) in 76 (16%) and minilaparotomy with MP method in 180 (38.5%). Catheter failure occurred in 135 (30%) cases due to: peritonitis 65%, leak (9%), exit site infection (ESI) 12% and obstruction (9%). Catheter survival by MP technique was 97%, 95% and 89% at 12, 24 and 60 months respectively, significantly superior in comparison with the previous methods (Log Rank, P =0.045). Correcting for the subcutaneous "buried" catheter time, in the MP group, the advantage was still documented but lost statistical significance (Log Rank, P=0.16). Diabetes status did not significantly influence catheter survival. Early (<4 months after implantation) peritonitis events and peritonitis free survival did not differ significantly among the compared implantation techniques. MP technique was significantly associated with lower rate of early ESI (P=0.02), lower rate of leak (P <0.0001) and also lower rate of obstruction (P= 0.034) in spite of prolonged break-in (median 55 days, range 0-991 days). Longer break-in (>6 months) with "buried" catheter was not associated with significantly higher rate of obstruction after exteriorization (P=0.067).

In conclusion, our experience documented improved PD clinical outcomes with the Moncrief Popovich technique method of catheter implantation, while assuring timely access management and logistic advantages.

P-128
OUTCOMES OF RENAL TRANSPLANTATION IN PATIENTS ON CHRONIC PERITONEAL DIALYSIS: ARE THEY DIFFERENT FROM PATIENTS ON REGULAR HAEMODIALYSIS PROGRAMMES?

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Background
The influence of pretransplantation dialysis modality on kidney transplant outcomes has been the subject of longstanding interest. It was suggested that renal transplantation outcomes could be worse in peritoneal dialysis (PD) patients. Nowadays it is well accepted that these are at least similar to haemodialysis (HD) patients. However, in accordance with some studies, there could be some differences between these two groups
of patients, namely concerning the incidence of delayed graft function (DGF) and acute rejection (AR).

Objective: To review the outcomes of kidney transplantation in a group of patients treated with chronic PD and to compare the results with those of a matched population on HD.

Methods
We retrospectively reviewed the clinical data of 48 PD patients who received a kidney transplant from a cadaveric heart-beating donor in our unit between January 2000 and December 2008 and compared the results to those of 48 HD patients who received a graft from the same donor.

Results
Gender, age, time on dialysis, aetiology of chronic kidney disease and comorbidities were similar between the groups; there were also no differences in cold ischemia time, HLA matches, pre-sensitization degree and use of calcineurin inhibitors. Patients on PD received more frequently induction with monoclonal antibodies (41,7 vs 20%, p=0,047) and showed a lower rate of DGF (8,3 vs 27,1%, p=0,015) and a lower incidence of AR (6,3 vs 31%, p=0,003). Graft and patient survivals were better on patients from PD programmes, but this difference didn't attain statistical significance.

Conclusions
Patients on PD do well after kidney transplantation. In this study, the incidence
of some complications (as DGF and acute rejection) was lower than in patients on HD.
The use of induction with monoclonal antibodies could overcome the better immunocompetence associated with patients on PD and thus, result in lower rates of AR.

P-129

SATISFACTION SURVEY OF THE ADVANTAGES OF A MONTHLY MEDICATION TO TREAT ANAEMIA FOR PERITONEAL DIALYSIS PATIENTS

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Patient preferences are increasingly incorporated as an important measure in health outcomes assessment. The objective of this observational study was to determine the aspects that dialysis patients were more concerned about the ESA therapy they received.

A cross-sectional multicentre survey of the advantages of a monthly ESA anti-anaemia medication was carried out at the Dialysis Units of 20 acute-care Spanish hospitals. An ad-hoc questionnaire with 15 questions was administered by the nurses over a 3-month period to patients who voluntarily agreed. Dosing frequency (once a week, once every 2 or 4 weeks), choice of a monthly medication, concern about the change of medication, reduction of laboratory tests and office visits, injection-site pain and fear, advantages of once-a-month injection, importance of reminders, safety features to prevent accidental needlestick injuries, and convenience of Braille labelled syringes were assessed.

We studied 312 patients (mean age 59±10 years, 40% women). A monthly medication was preferred by 75.3% of patients and would be selected by 93%. A change in dosing frequency was not a matter of worriment for 71%, 78.5% assessed positively a decrease in the need of tests and consultations, 84.2% a reduction of injection-site pain, and 84.9% the fact that medication could be administered by means of a single injection every month. Easy of use was a very important aspect for 84% of patients, 53.8% considered that once-a-month treatment was easy to remember, and to get a reminder had a minimal importance for 23%. Advantages of room-temperature storage and transportation were recognised by 73% and 64% of patients, respectively. Safety features were considered very necessary by 76% and the convenience of Braille-adapted kits by 80.4%.

Conclusions
A large majority of dialysis patients preferred monthly dosing frequency for ESA therapy, which further strengths the usefulness of CERA in routine daily practice.

P-130

PERITONEAL DIALYSIS (PD) PATIENTS' EXPERIENCE OF THE PD "COFFEE MORNING" AS A FORM OF PEER GROUP SUPPORT

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There are many physical, psychological and social problems associated with chronic illness. Government guidelines have highlighted the merits of peer support groups for people who have experienced life-changing events. Such groups have been shown to help patients with chronic disease cope with their treatment/illness. Patients on peritoneal dialysis can often feel socially isolated as they do not have many opportunities to meet other patients. We therefore decided to set up a peer support group in the form of an informal coffee morning, held every two months.

Invitations are sent to all patients. The meeting takes place on the PD unit. One nurse acts as a facilitator to introduce patients to one another and prompt discussion. Guest speakers are invited to discuss relevant issues such as transplantation, social support, and counselling. Between 7 and 15 patients attend and the age range is between 45-80 years. Some of the older patients find it difficult to attend because of transport problems.

After the meeting, questionnaires are given to patients asking for feedback regarding usefulness of the discussion, relevance of such an event to their situation and the impact it might have on their general attitude to their treatment.

Patients expressed that they are more confident and had learned some new coping strategies. By not letting their dialysis take over their lives they are more empowered. Patients shared their own experiences regarding diet and fluid balance e.g. by exchanging recipes. Some patients have even found the courage to go on holiday after attending and talking to other patients.

This new initiative has received positive feedback. The next step is to invite predialysis patients who are interested in peritoneal dialysis as it has been shown that patient choice is often enhanced by meeting patients on different treatments.

P-131

ACUTE START IS NOT A TREATMENT; "CONSCIOUS CHOICES": AN IMPROVEMENT PROCESS

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Introduction
'Acute patients' who start dialysis through an acute line have little access to information and receive often HD as a permanent form of dialysis.

Ee started a pilot, part of European project launched by Baxter, to optimise information to acute patients.

A baseline measurement showed that 28 of 47 new patients admitted could be classified as 'acute', 6 of these received a permanent HD-line without getting information.

Methodology: We set up a pilot that comprised the selection of competent information officers, the development of training focusing on conversation, and information materials geared towards patients' learning styles. Core questions 1) When is the appropriate time to provide information? 2) How many sessions are needed? 3) shift in the type of treatment?

Results
Over a 2-month period, 29 acute patients were admitted, 17 of whom only had an acute catheter on a temporary basis. Of the remaining 12 patients, 3 were given talks based on the scenario, 4 had contraindications for PD, and 1 patient was transferred due to a shortage of HD capacity without giving chance to get an acute PD catheter. 4 patients had PD failure or no access alternatives to an acute catheter.

In response to the core questions: 1) First session with a patient is held approximately two weeks after an acute line has been inserted; 2) Three information sessions are sufficient 3) 1 patient opted for PD. Patients were satisfied with the information.

Conclusion
We showed that patients with acute lines can be identified and supervised appropriately by competent information officers. Flow chart, scenario and training provided improve final result.

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INDICATORS OF PERITONEAL DIALYSIS (PD) PATIENT TRAINING

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Patient training by nurse is a fundamental component of PD program: the relationship between nurse and patient (pt) is essential for the success of therapy.There is no large consensus about the indicators to verify the efficacy of training process of pts on PD. In 2006 Bernardini et al (PDI, 2006) published their guidelines/recommendations approved by ISPD. On that base we (arbitrarly) chose: (1) rate of peritonitis episodes;(2) exit-site infection rate and (3) drop-out rate as indicators of efficacy of pts training in PD unit. Retrospectively we examined the clinical charts of PD pts enrolled in the last 5 years (ys) in a PD program in our unit, especially regarding the reports of the teaching program diary to which everyone has been subjected. The examined group was of 24 patients (M: 14; F: 10), aged 64.16±17.04 ys; the causes of uremia were: 1) unknown etiology: 49.27% ; 2) glomerulonephritis: 26% ; 3) vascular disease: 8.6% ; 4) diabetic nephropathy: 7.69% ; 5) ADPKD: 7.24% .During the observational period we registered: a) 18 episodes of peritonitis; b) 50 exit-site infection, 16 of them in the same 2 patients, followed by subcutaneous cuff extrusion; c) 14 drop-outs: 6 (42.85%) for death; 4 (28.57%) for kidney transplant; 2 (14.29%) for UF loss; 2 (14.29%) tunnel infection by Pseudomonas spp. Peritonitis rate of examined populations was 0.2 episodes/pts/ys less than 0.5/pts/ys, accepted figure by Italian Nephrology Society. Exit-site infection rate was 0.6 episodes/pts/ys: we don't know an accepted reference figure. The average length of time in months of PD treatments was 43.16±56 compared to about 50% technique survival at 5 ys reported by Lameire (NDT,1994).

Conclusion
The teaching program for training pts to PD adopted in our unit is efficient and reliable regarding short and mid-term complications and for preventing drop-out. Further experiences are necessary to detect some other indicators for evaluating the quality of «peritoneal teaching».

P-133
BONE MINERAL DENSITY AND DIALYSIS MODALITY

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The aim of the study was to assess differences in bone mineral density (BMD) parameters in patients treated with peritoneal dialysis (PD) and hemodialysis (HD).

The study was performed in 26 patients treated with PD (15 women, age 55.7±17.7 years, dialysis vintage 16.6, 6.3-45.5 months) and 57 treated with HD (24 women, age 55.4±15.4 years, dialysis vintage 36.7, 6.0-279.6 months). There were no differences between groups with regard to age and gender. BMD was measured in femoral neck (N) and L2-L4 lumbar spine (L). Anthropometric measurements were used to asses nutritional state. Routine laboratory parameters were also taken into consideration. BMD was compared in both groups taking into account possible influence of most often mentioned BMD determinants, for which differences between examined groups were shown.

There were no differences between PD and HD patients with regard to frequency of osteopenia and osteoporosis, but HD patients had lower N BMD (0.807±0.211 vs 0.842±0.137 g/cm^2, p=0.001), T-score (-2.04, -4.96-2.79 vs -1.28, -3.39-2.37, p=0.009) and BMD as % young adults (BMD%YA) (78.7±19.8 vs 85.7±17.7%, p=0.009) with adjustment to dialysis vintage, fat body mass as % of total body mass and plasma concentrations of parathyroid hormone, albumin and cholesterol. After adjustment to coffee drinking (1-3 cups per day during at least 2 years preceding the BMD measurement), total leukocyte count, blood concentrations of uric acid, ferritin and bicarbonates, HD patients displayed also significantly lower L BMD (1.026±0.202 vs 1.223±0.244 g/cm^2, p=0.016) and BMD%YA (86.2±15.8 vs 94.6±18.8%, p=0.029).

Higher parameters of BMD in PD patients than in HD ones may be connected with better nutritional state and less expressed metabolic disturbances in patients treated with PD.

P-134
RENAL TRANSPLANTATION IN HIV POSITIVE PATIENTS TREATED BY PERITONEAL DIALYSIS (PD): THE BRUSSELS EXPERIENCE

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We describe the cases of two African males presenting ESRD due to HIV-associated nephropathy and treated with PD before undergoing cadaveric renal allograft. The latter has been described as a good option in such patients provided viral load is undetectable and CD4 count is > 500/mm^3 under Highly Active Anti-Retroviral Therapy (HAART).

The first one was transplanted at age 55 after 4 years on PD. At the time of transplantation, he was receiving HAARTcomposed of abacavir, lamivudin, and zidovudin. He had no anti-HLA antibodies. The donor was a male aged 25; there were 4 HLA incompatibilities. Initial immunosuppression consisted in basiliximab, tacrolimus, MMF, and corticosteroids. Graft function was immediate. During the hospital stay, Morganella morganii urinary tract infection (UTI) developed, and was successfully treated with temocillin.Two months later, the PD catheter was removed. One month later, the patient was admitted for relapsing UTI. Graft function was stable; the patient was again treated with temocillin and discharged with oral prophylactic nitrofurantoin. One year later, he presented with small bowel occlusion due to an ombilical hernia. Although EPS was suspected, laparoscopic investigation only revealed tiny ileal perforation. Peritoneal fluid cultures were negative. Recovery was uneventful. The patient is still doing very well.

The second patient was 39 when allografted after 5 years on PD. The donor was a woman aged 40. HLA incompatibilities were 2; no anti-HLA antibodies were detected. Initial immunosuppressive drugs were: basiliximab, ciclosporin, MMF, and corticosteroids. Graft function was immediate. HAART, at first interrupted, was picked up on day 7 post-transplantation. Two months later, the PD catheter was removed. Now, after 10 months, everything goes well and Screatinine is 1.4 mg/dl.

This experience, clearly limited albeit probably the "largest in Europe", seems encouraging and will probably expand soon as two more such patients are on the waiting list.

P-135
TELEMEDICINE APPROACH TO IMPROVE MEDICAL CARE FOR PD PATIENTS

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Introduction
We present the experience of 10 years using Diatelic telemedicine system with PD patients and the interest of this approach to prevent health aggravations.

Methods
Diatelic PD telemedicine system transmits daily medical data from home-PD patients. The system improves the follow-up of patients without being overwhelmed by the amount of data generated by this kind of systems. An alert system offers the early detection of patient aggravations. In particular, a Markov based diagnosis system generates alerts to prevent hydration disorders.

Results
From 1999 to 2002, a randomized and controlled study shows that the system allows a better quality of PD therapy. The results are a best control of blood pressure and weight using less quantity of high blood pressure medication; the reduction of the medical consultations and urgencies; and especially the number of hospitalization days has been reduced by half.
From 2002 to 2005, a pilot experience allows to follow-up all PD patients with this system in a region with 2 300 000 habitants. The obtained statistics confirm the results of the first study and shows that system becomes indispensable for users, patients and doctors.

Conclusions
The system improves the PD patient's medical follow-up and reduces global costs. Our experience, as another telemedicine experience, shows that patients are in general enthusiastic and motivated to participate. In the opposite, medical team needs some time to integrate this kind of tools in their practice but when this is done, it becomes necessary. Another major difficulty is that health systems are not yet able to pay for this kind of services.

P-136
A COMPARISON OF TRANSPLANT OUTCOMES IN PERITONEAL AND HEMODIALYSIS PATIENTS

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Introduction
The role of pre-transplant dialysis modality in transplant outcomes has been the subject of long standing interest. The purpose of our study is examining the effect of pre-transplant dialysis modality on graft survival after kidney transplantation.

Materials and Methods
We compare kidney transplant outcomes over a period of 8 years, between 10 patients on hemodialysis (group 1) and 10 on peritoneal dialysis (group 2).

These analyses were adjusted for age, gender, race, body surface area (BSA), estimated glomerular filtration rate (GFR) at 1, 3, 5 and 8 years and co-morbidities.

There were no differences in the type of immunosuppression used in the two groups.

Results
The average age of patients was 31.1 years in group 1 and 30.4 years in group 2.

Two cadaveric donors are in each group. The duration of dialysis was 5.46 years in group 1 and 3.35 years in group 2. We found early complications more frequent in peritoneal dialysis patients: 2 episodes of occlusion, one case of urinary fistula, 5 cases of urinary infection associated in one case to CMV infection (against 2 \ 10 of urinary infection in group 1), 3 cases of acute tubular necrosis in group 1 (against 2 \ 10 in group 2) and one case of acute rejection in each group. Graft survival evaluated by glomerular filtration rate, at 1, 3, 5 and 8 years was similar. The incidence of hypertension was 2 cases in hemodialysis group, attributed in one case to kidney transplant artery stenosis. None case of diabetes was rescenced.

Conclusion
Renal transplantation in peritoneal dialysis patients is more frequently associated with early graft function. Pre-transplant dialysis modality did not affect outcomes delayed graft function. Additional studies are needed to determine what factors may help understand this early risk of graft failure.

P-137

A COMPARISON STUDY OF A NUTRITIONAL PROGRAM EDUCATION EFFECT ON QUALITY OF LIFE IN HAEMODIALYSIS PATIENTS REFERRED IN EDUCATIONAL HOSPITALS IN URMIA-IRAN IN 2008

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Introduction
Patients on maintenance hemodialysis (MHD) experience decreased quality of life (QoL) and significantly greater rates of malnutrition, inflammation, hospitalization, and mortality compared with the normal population. The dietary approach in the different phases of (CRF) is one of the most important, and yet controversial, topics in the whole history of nephrology, when dialysis facilities were not yet easily available. Malnutrition has been cited as a possible contributory factor towards a poor prognosis in patients, and any suggestion of worse nutrition needs to be explored further. Nurses' role in patients' education about a proper diet is essential.

Materials and Methods
70 patients in the educational hospitals in Urmia were divided in two groups and requested to fill in the validated with the SF36 questionnaire QOL questionnaire.

Results
During the follow-up period, no patients died. 35 questionnaires distributed to case control patients and 35 questionnaires distributed to other patients. Nearly, two groups were similar in age, educational level, gender and duration of dialysis treatment. 46.8% of patients were female. The SF-36 total score was slightly higher in men compared with women, but this difference was not statistically significant (P = 0.05). 35 patients were taught a diet for hemodialysis and 35 of them not taught. There were differences between the two groups in terms of physical health or mental health dimensions. Results of the dimensions were better in educated group. But the difference between physical health was statistically significant (t=2.04,df=34,p=0.049), in work activities (t=2.04,df=34,p=0.049) and between their quality of life, too(t=2.28,df=1.96,p=0.43) .

Conclusion
Improvement $^{in\ QOL}$ can be achievable in patients if discomfort could be more effectively treated. One of the methods for this is education about their nutrition program. More research is needed to assess whether interventions to improve quality of life and lower these risks among hemodialysis patients.

P-138

QUALITY OF LIFE: ARE ANY DIFFERENCES BETWEEN PATIENTS ON CAPD AND CHRONIC HAEMODIALYSIS, A SINGLE CENTER CROSS-SECTIONAL STUDY

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Introduction
In last decade number of dialysis patients has been raised quickly in Republic. Aim was to compare quality of life in patients (pts) receiving chronic haemodialysis (CHD) and CAPD with healthy control.

Methods
There were involved 29 pts (M/F=13/16, mean age 51,17±13,36 years, dialysis duration 20,68±10,85 months) on CAPD and 29 pts (M/F=12/16, mean age 51,85±12,97, dialysis duration 19,71±11,28 months) who completed the Short-Form 36 questionnaire for quality of life. We evaluated Physical Health (PH) and Mental Health (MH) in each group and compared with 27 matched age and sex healthy control.

Results
PH of CHD and CAPD pts was significantly worse than control (p=0,0008; p=0,0003 accordingly). There were no any differences between age, sex, duration of dialysis between dialysis groups. The mean PH in CHD and CAPD pts was 37,72±8,39 and 37,06±7,96 respectively and MH was 39,93±10,76 for CHD and 42,70±10,97 for CAPD.

Discussion
It was the first attempt to assess quality of life in dialysis pts in Republic. We concluded that the SF-36 questionnaire is acceptable to pts on dialysis. No difference was found in MH between dialysis and healthy control suggesting that the pts have acceptance and control over the disease process. There were no significant differences in the quality of life between two dialysis modalities in spite of much longer history of using CHD than CAPD in the country.

P-139

HEADACHES IN PATIENTS CHRONICLY UNDERGOING PDBILJANA STOIMIROVIC

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Background
Peritoneal dialysis (PD) along with hemodialysis and transplantation represents a method of replacement kidney function in end-stage renal disease. Objective. The aim of this study was to evaluate and analyze the prevalence and features of headaches in patients chronicly undergoing PD.

Methods
In this prospective study 91 patient, 43 women and 48 men, undergoing chronic PD, were questionned about their problems with headache using a questionnary designend according to the diagnostic criteria of the International Headache Classification of Headache Disorders (ICHD) from 2004. All patients underwent neurological examination. Arterial systolic and diastolic blood pressure and serum levels of hemoglobin, urea nitrogen, creatinine, sodium, potassium, calcium, phosphates were measured.

Results
Non of out of 91 patient complained about headache after starting PD treatment. Two patients complained have had repeated headache even before starting dialysis and they stayed the same caracteristics.

Conclusion
We believe that the results of our investigation could be explained by the abssens of significant changes in volume status of our patients on PD. Further investigation of hemodinamic parameters in these patients are needed in order to explain their role in patophysiology of dialysis headaches.

P-140

PUSHING THE BOUNDARIES - THE EVOLVING ROLE OF THE PERITONEAL DIALYSIS NURSE

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Our renal unit covers approx 5,837 sq kilometres and a population of approx 2 million. There are 100+ Peritoneal Dialysis (PD) patients.

The role of the PD nurse is evolving. At onset we are involved with educating pre dialysis patients about PD. We assist with PD catheter insertions and have an immediate start up protocol. We teach home dialysis either as an outpatient or at home. Our drop in centre is supported by a 24 hour on call service. A guideline enables nurses to treat peritonitis independantly and in addition we support patients with regular home visits.

Many patients describe feelings of lonliness and express a wish to meet others on PD. On recognising this we explored ways of offering support with peer involvement.

- For pre dialysis we started group education sessions. Patients plus partners attend to learn about PD. A patient establised on PD gives a talk about their own experience and answers questions.

- We set up a support group that occurs three monthly at a non clinical venue. This is well attended by all ages. An educational component is given by the nurses or guest speakers.

- We also set up nurse led clinics, these are run in parallel with a consultant's clinic. Nurses make independant assessments, review and adjust PD regimes. These clinics are held away from the centre saving patient travel.

Offering a good support system is essential to patients doing dialysis at home. Our capacity to visit those who find it difficult to travel to the main unit due to work, disabilities or children etc and our support network appeals to all ages and promotes PD as a preferred option for dialysis.

In other words our community based team supports PD for all.

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PERITONEOFILTRATION - PROPOSAL FOR A NEW RENAL REPLACEMENT THERAPY

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We propose to create a surgical controlled portal hypertension in order to increase the efficiency of peritoneal dialysis. This procedure may even be an alternative for hemofiltration as unique modality for chronic renal failure treatment.

Hypothesis and specific aims of the research
1. The surgical induced portal hypertension may allow to create an ascitis which could be produced and eliminated in the same quantities as the diuresis; the research may establish if this controled ascitis can achive a greater concentration of uremic toxins than the blood and obtain an "artificial urine".

2. The study verifies if creating a portal hypertension until ascitis develops - in order to increase the pressure and flow of blood in mesenteric venes - could improve the efficacy of the exchanges between the dialysis fluid and blood vessels in the peritoneum membrane.

3. Creating a portal hypertension until ascitis develops in patients with high degree of peritoneum sclerosis may be a solution to prolonge the dialysis peritoneal therapy.
We hope for an improvement of the efficiency of peritoneal dialysis, decreasing the need of the dialysis fluids and spacing the daily exchanges; the indications of peritoneal dialysis may be extended.

In case 1 - ideal - it would be possible to obtain a continuos peritoneal hemofiltration without the need of a peritoneal catheter or dialysis solutions. The ascitis fluid could be collected in the urinary bladder (using a device which have to be studied further) or in one of the ureters or basinets using a specially designed system. Replacement of losses will be performed by daily monitoring of "diuresis (peritoneal urine)", peritoneal concentrations of ureea, other uremic toxins, aminoacids, proteins or electrolites. Replacements of vital losses may be done administering (daily, weekly,monthly?) - orally or intravenouslly - a solution which will contain proteins, aminoacids, electrolites, bicarbonate, phosphate chelators.

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EFFECTIVENESS OF FONDAPARINUX IN DIALYSIS PATIENTS WITH HEPARIN-INDUCED THROMBOCYTOPENIA

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A 63-year-old woman with Stage 5 chronic kidney disease presented with a severe weakness, nause, and vomiting. A catheter was inserted to right femoral vein for hemodialysis. She received low moleculer weight heparin (LMWH) (enoxaparine sodyum) during two consecutive hemodialysis sessions. Four days after catheter insertion the patient developed swelling of right leg. Heparinisation with unfractionated heparin was initiated because it was thought the patient had femoral venous catheter induced acute deep venouses trombosis. On the first day of heparin infusion, platelets count decreased to 23 $x10^3/mm^3$. When record of platelet numbers were reevaulated it was found that the number of platelet had dropped from 119 $x10^3/mm^3$ to 80 $x10^3/mm^3$ after LMWH. Heparin was stopped and for alternative anticoagulation, patient was given Fondaparinux, a synthetic selective inhibitor of activated factor X, at a dose of 2,5 mg every other day subcutenously and later started on peritoneal dialysis. After 20 days the patient was discharged on warfarin. Venous doppler revealed no thrombosis at the right main deep and surface femoral vein on the 32th day. It seems that deep venous thrombosis was related to Type II heparin induced thrombocytopenia with localized vascular injury due to hemodialysis catheter predisposing to the thrombotic event. In conclusion heparin-induced thrombocytopenia (HIT) can cause of deep venous thrombosis, and should not be overlooked in patients with a reduced platelet count in dialysis patients. Use of Fondaparinux was effective in clearing the thrombosis. Peritoneal dialysis may serve as an alternative treatment of ESRD patients suffering HIT.

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CONTINUOUS FLOW PERITONEAL DIALYSIS (CFPD) IN CHILDREN: A NEW TECHNIQUE FOR ACUTE RENAL FAILURE IN THE INTENSIVE CARE UNIT

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Introduction
Acute renal failure can be treated with different dialysis modalities, depending on patient characteristics and hospital resources. Peritoneal dialysis (PD) can be first choice in clinical situations like hypotension, coagulation difficulties or difficult venous access. The main disadvantage of PD is the relatively limited efficacy. With continuous flow PD (CFPD) higher clearances and ultrafiltration could be achieved.

Aim
to investigate whether CFPD is more effective than conventional PD in acute renal failure.

Methods
A pilot study was performed in the intensive care unit in The Red Cross University Hospital in Cape Town in three patients. Two patients first received CFPD for 8-12 hours and afterwards conventional PD. The 3rd patient only received CFPD. CFPD was performed with two bedside placed catheters; the first conventionally placed in the midline, the second one placed midway between the superior iliac crest and the umbilicus. After initial filling, dialysate flowrate (100 ml/1.73m2/min) was maintained with an adapted CVVH (continuous venovenous hemofiltration) machine, and ultrafiltration flow rate was set at 2.5 ml/1.73m2/min. Every 4 hours ultrafiltration was adjusted if needed.

Results
In patient 1 clearances for urea and creatinine on CFPD versus conventional PD were 11.9 versus 3.5 and 18.0 versus 3.5 ml/1.73m2/min. Ultrafiltration was 1.8 ml/kg/hr versus negative. In patient 2 urea and creatinine clearances were 10.1 versus 6.1 and 16.7 versus 5.1 ml/1.73m2/min. Ultrafiltration was 2.5 versus 1.3 ml/kg/hr. In patient 3 (only CFPD) urea and creatinion clearances were 10.3 and 3.0 ml/1.73m2/min. Ultrafiltration was 4.1 ml/kg/hr.
No complications of dialysis occurred. Patient 1 and 2 had recovery of renal function, patient 3 died of ongoing sepsis.

Conclusions
In this first report of CFPD in 3 pediatric patients with acute renal failure, CFPD has been shown to be more effective for urea and creatinine clearance and ultrafiltration than conventional PD, without complications of dialysis observed.

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ENCAPSULATING PERITONEAL SCLEROSIS - RARE BUT SERIOUS COMPLICATION OF PERITONEAL DIALYSIS

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Encapsulating peritoneal sclerosis (EPS) is a rare but serious complication of continuous ambulatory peritoneal dialysis (CAPD) with high mortality rate. Recurrent peritonitis has been reported as the main contributory factor for EPS. It is associated with obstructivesymptoms and sclerosis of the peritoneal membrane. Anti-inflammatory and immuno-suppressive drugs are recommended for treatment. We report a case with EPS presenting with refractory peritonitis and severe abdominal symptoms.

A 11-year-old patient with end-stage renal disease had been maintained on CAPD for 5 years had six episodes of peritonitis. He was switched back to hemodialysis(HD) because of ultrafiltration failure. He was hospitalized with high fever and acute abdominal pain one month later. Despite vancomycine and cephotaxime he was not improved and referred to our hospital. At admission physical examination revealed abdominal tenderness and palpable mass in the right upper abdomen. Ultrasonography showed thickened peritoneal membrane, a high echogenic mass associated with a small amount of ascites in the right upper and lower abdomen. He underwent laparatomy because of small bowel obstruction findings and biopsies were taken from the peritoneum. He was diagnosed as EPS. Prednisolone 1mg/kg/day po was started. His symptoms improved gradually. After one week he presented with persistant high fever, severe abdominal pain, right lower abdominal tenderness and vomiting. He was operated again, perforated appendicitis was detected and diagnosis was confirmed by histologically. Intraveneous antibiotics were begun and symptoms improved gradually with a decrease of acute phase reactans. During the 6 months of follow up period he had no complaints.

We presented a patient with EPS together with perforated appendicitis. The diagnosis of EPS is based on high suspicion index. Steroid and some immunosupressive drugs can be used in the treatment of patients with EPS. These patients should be followed carefully regarding other abdominal pathologies such as acute appendicitis after surgery.

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CROSS-SECTIONAL ASSESSMENT OF HYDRATION STATUS IN PEDIATRIC PERITONEAL DIALYSIS PATIENTS WITH BIO-IMPEDANCE SPECTROSCOPY

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Background
Dialysis aims to keep water and solute balance within physiologic boundaries.
The hydration status of a patient results from sodium and fluid intake, dialysis and residual renal clearance and medication; is not easy to measure. A strong relationship of hydration status with blood pressure is suspected.

The Body Composition Monitor® is a bioimpedance spectroscopy device that measures overhydration (OH), Total Body Water (TBW), Lean Tissue Mass (LTM) and FAT mass (FAT). It has been validated for children and offers an age dependent normal range for overhydration.

Methods
Cross-sectional measurement and comparison with age dependent normal range of OH in 9 pediatric PD patients aged 2 to 16 years, 3 girls.

Results
Overhydration ranged from -0,5 liter to + 0,7 liter. All values were within normal limits. There was no correlation of OH with systolic blood pressure. While OH was normal in all children, systolic bloodpressure was higher than p95 in 6 children (range 103 - 134% of p95, average 120%) and below p95 in 3 children (range 85-94% of p95, average 90%)

Conclusion
While all patients are within the reference ranges for overhydration, 66% of the population suffers from hypertension.

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EFFECT OF RAPAMYCIN ON PERITONEAL DIALYSIS RELATED PERITONEAL MEMBRANE CHANGES

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Introduction
Peritoneal dialysis is a well established renal replacement therapy worldwide. One of its major limitations are the negative long-term effects of dialysis on the peritoneal membrane, which may subsequently lead to technique failure. Rapamycin, well known as an immunosuppressive agent with antiproliferative properties, was tested regarding its effect on peritoneal membrane changes during dialysis.

Methods
We used C57BL/6J mice (n=12) and performed daily peritoneal dialysis for 4 weeks using twice daily intraperitoneal injections of a sterile pre-warmed dialysis solutions (Physioneal, 3,86%, Baxter). We used 75 ml/kg body weight, on average 1,5 ml, of dialysis fluid for each injection. A treatment group received rapamycin at a concentration of 1,5 mg/kg body weight mixed with the peritoneal dialysis fluid on every single day of treatment. Control groups received the equivalent amount of normal saline (0,9%), rapamycin only or no treatment, respectively.

Results
Our results show the morphological changes associated with dialysate fluid, which are ameliorated by concomitant use of rapamycin. Peritoneal membrane thickness was significantly reduced with rapamycin mixed with dialysate fluid. In the group treated with dialysate and rapamycin, CTGF expression was markedly reduced compared to dialysate alone. In the group treated with dialysate fluid alone, there is a marked expression of α-smooth muscle actin in the mesothelial layer, whereas in the group treated with dialysate fluid and rapamycin there is less expression of α-smooth muscle actin.

Summary
Rapamycin seems to ameliorate dialysis fluid related effects on the peritoneal membrane, such as thickening of the mesothelial layer, expression of CTGF and expression of α-smooth muscle actin in the mesothelial zone. Rapamycin itself shows no negative effects on the peritoneal membrane. These results imply a potential therapeutic use of rapamycin for the prevention of dialysis related changes of the peritoneal membrane.

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PERITONITIS HOME-TREATMENT-KIT

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Purpose
Direct start of antibiotic treatment at home when peritonitis is suspected.

Background
Nordland is one of the biggest counties in Norway and for that reason many patients have a great travel distance to Nordland Hospital in Bodø. As a measurement to prevent delayed start of treatment when peritonitis is suspected the hospital develop a peritonitis home-treatment-kit. The kit was developed in cooperation between PD-nurses, nephrologists and the pharmacy.

Implementation
- Patients/relatives and community nurses where trained in administrating antibiotics.
- Questions relate to infection/peritonitis by patients/relatives and community nurses are addressed to either PD nurse or the unit for nephrology.
- The nephrologists prescribe the start of antibiotics and hospitalization.

Outcome
Patients start their treatment at home and then avoid a delayed start and possible progression of the peritonitis.

In a review of public health data from 152,846 patients with chronic kidney disease (CKD), only 6.5% of patients receiving ESA† treatment maintained stable haemoglobin (Hb) levels between 11-12.5 g/dL over a 6-month period.[1] Hb variability was observed in 89.7% of all patients.[1]

Patients who remained stable with Hb levels 11-12.5 g/dL experienced the lowest adjusted hospitalisation and mortality in the follow-up.[2]

* Defined as consistent Hb levels over time.
† Erythropoiesis-stimulating agents.

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