body fat for men, 25.0 ± 6.9% and for women, 36.0 ± 3.3% were analysed. All patients were originally prescribed low-protein diets and energy according to NKF-K/DOQI recommendations. One month later, their body mass index, creatinine, urea and creatinine clearance (calculated by Cockcroft-Gault) were evaluated (Table). The patients reported good adherence to dietary records. In spite of the short period of time, the dietary protein restriction during conservative treatment seems slowing the progression of kidney disease.

### Parameters

<table>
<thead>
<tr>
<th></th>
<th>Before (n=26)</th>
<th>After (n=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (kg/m²)</td>
<td>28.6 ± 6.8</td>
<td>28.0 ± 6.9</td>
</tr>
<tr>
<td>Creatinine (mg/dL)</td>
<td>2.1 ± 0.8</td>
<td>2.0 ± 0.9</td>
</tr>
<tr>
<td>CrCl (mL/min)</td>
<td>35.8 ± 15.7</td>
<td>40.9 ± 20.0</td>
</tr>
<tr>
<td>Urea (mg/dL)</td>
<td>85.5 ± 29.4</td>
<td>77.4 ± 32.3</td>
</tr>
</tbody>
</table>

*p < 0.005

In general, both the physical and psychological conditions were severely deteriorated in most components as compared to the non-renal population. Physical fitness was below the normal range of standard values, or to its lower limits, particularly in the tests requiring some degree of muscular strength of the lower limbs and physical efficiency. QoL results showed that in SFSi ESRD patients coincided with the normal range only in the domain of “physical health”. The most important domains of WHOQOL-100 were the domain of “independence” (the ability to take care of everyday needs - 4.5 and the ability to move - 4.3), “environment” (especially items related to the quality of health care - 4.4). The ESRD patients, especially the elderly, should be encouraged to pay attention to increased physical activity levels in order to maintain functional independence and high quality of the life for as long as possible.

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### 153

THE IMPORTANCE OF AN EARLY EXERCISE AND NUTRITION INTERVENTION AMONG RENAL TRANSPLANT RECIPIENTS

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Typical long-term inactivity due to the dialysis, necessarily leads to a decline of the recipient’s fitness level. In our study we assessed the impact of regular exercise and nutrition intervention on physical fitness and the quality of life (QoL) in the first year after kidney transplantation (Tx). Group of patients: (M/F, n=11/10, age 59.1 ± 10.8 years)/57.0 ± 6.4 years; 69.9 ± 25.4/65.1 ± 17.8 days post-Tx), randomized into 4 subgroups: exercise (E), exercise + nutrition (E+N), nutrition (N), control (C). For testing the physical fitness and QoL we used the “Senior Fitness Test Manual” and KDQOL-SF questionnaire. Exercise intervention focused mainly on the joint mobility, muscle strength, nimbleness, dynamic stability, and cardio respiratory endurance (3 times/week; 60 minutes; 6 months). Nutrition intervention included substitution with keto-amino-acides. Results were analysed with the non-parametric Wilcoxon and Kruskal-Wallis Test.

Both physical fitness as well as QoL in the first year after Tx improved in all patients. Statistically significant differences in the dynamics of physical fitness were observed 1-4 months post Tx in four from six tests (p ≤ 0.01) and 1-8 months post Tx in five from six tests (p ≤ 0.05). The greatest improvement in physical fitness was achieved by the E + N group followed by E, N and C groups. QoL improved in the groups E+N and N in seven of the eight dimensions, however the results were statistically insignificant.

In conclusion, the combination of an exercise and nutrition intervention was the most effective and could give each patient an opportunity to achieve an optimal physical and psychological level almost equal to their original condition.

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### 155

GHRELIN AMELIORATES WASTING, CARDIOVASCULAR COMPLICATIONS, INFLAMMATION AND MORTALITY IN CHRONIC KIDNEY DISEASE

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1 Department of Pediatrics, Cardiovascular Institute, Department of Medicine, UCSD, San Diego, CA, USA.
2 Wasting, cardiovascular complications and inflammation are known risk factors associated with high mortality in patients with chronic kidney disease (CKD). Ghrelin is an appetite-regulating hormone with additional effects in the modulation of systemic inflammation and the cardiovascular system. CKD patients with low serum ghrelin have high mortality risk and may benefit the most from ghrelin therapy.

Aim to investigate the effects of ghrelin on cachexia, muscle wasting, cardiovascular complications, inflammation and mortality in CKD.

C56BL/6J mice underwent 2-stage 5/6 nephrectomy (CKD) or sham operation (S). Ghrelin (150 nmole/kg/day) or saline was given to CKD or S mice. Over 90-days, mortality rates of 9 month old ghrelin-treated CKD mice (15%) and S mice (0%) were significantly better than those of CKD mice (57.5%). The cumulative food intake of the CKD - ghrelin mice was significantly increased than CKD mice (p < 0.01). CKD + ghrelin mice gained more weight than CKD mice (p < 0.01). CKD + ghrelin mice gained lean body mass and fat mass while CKD mice lost lean and fat mass (p < 0.01). 24 hr metabolic rate was increased and efficiency of food consumption was decreased in CKD mice as compared to S mice (p < 0.001). Ghrelin normalized these abnormalities in CKD mice (p > 0.01).

Ghrelin significantly improved systolic hypertension in CKD mice (p < 0.01). Left ventricular hypertrophy (LVH) was ameliorated in CKD + ghrelin mice as compared to CKD mice (p < 0.01). TNF-α and IL-6 mRNA levels were significantly increased in gastrocnemius and cardiac muscles of CKD mice and ghrelin significantly decreased the expression of these inflammatory cytokines in CKD mice (p < 0.01).

Our studies indicate that ghrelin ameliorates wasting, systemic hypertension and LVH with associated improvement in inflammation and mortality in CKD.

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### 156

ASSESSMENT OF MALNUTRITION IN AN INCENTRE HAEMODIALYSIS UNIT: SINGLE CENTRE EXPERIENCE

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Malnutrition is highly prevalent among haemodialysis patients, but the best method for assessing nutritional status remains unclear. Historically, Dietitians’ use the Subjective Global Assessment (SGA) or Patient Generated Subjective Global Assessment (PG-SGA) tool to assess nutritional status. Historically, the use of the Subjective Global Assessment (SGA) has been the gold standard for assessing nutritional status, with the objective of Global Assessment (SGA) tool to assess nutritional status. In 2001 a new tool called the Malnutrition Inflammation Score (MIS) was developed by Zadeh et al.

We conducted an annual malnutrition audit on patients who regularly attend the in-centre haemodialysis units at Gold Coast Hospital District using MIS and SGA. SGA.

An annual malnutrition audit was conducted over a 2 month period with 100 patients in centre Haemodialysis patients across 2 centres. For each patient a nutritional assessment using the SGA tool was conducted.
assessment was conducted using SGA or PC-SGA and MIS assessment tool. The MIS tool was adapted to suit Australian laboratory measurements and units (Alb, TIBC); and the BMI scale adapted to be inline with current guideline recommendations.

Overall the malnutrition rate using PG-SGA/SGA was 28% of patients classified as “malnourished” (26% scored B- moderate malnutrition and 2% scored C-severe malnutrition). According to MIS the rate of malnutrition was 94% (30%-mild malnutrition; 22% moderate malnutrition; 33% severe malnutrition).

In conclusion there is discrepancy in the rate of malnutrition when assessed according to different tools. MIS has been shown to be a better predictor of survival in dialysis patients. We need interventional studies to assess the utility of MIS in improving patient outcome and survival in dialysis patients

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157 SALIVA COMPOSITION AND UPPER GASTRO-INTESTINAL SYMPTOMS IN CHRONIC KIDNEY DISEASE

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Many chronic kidney disease (CKD) patients experience uremic symptoms including dry mouth, taste changes, nausea, vomiting and dry retching. Saliva is composed of a number of active compounds that play vital roles in taste stimulation. Salivary composition differs in CKD and patients have an impaired ability to recognise basic tastes. The purpose of this cross-sectional study was to determine any associations between changes in salivary composition, upper gastrointestinal (GI) symptoms and altered taste perceptions in chronic renal failure patients.

Thirty CKD patients (24 males, 6 females, age 69.7 ± 14.2yrs) were recruited from the Austin Health outpatient renal clinic. A saliva sample was collected to determine biochemical composition. Participants performed a taste identification task to assess perception of the five basic tastes and completed a symptom questionnaire regarding taste changes and upper GI symptoms experienced.

Only 3 (10%) CKD patients reported no upper GI symptoms while 63% complained of a dry mouth, 56% had a change in taste, 30% complained of nausea and 20% vomited or dry retched. Saliva bicarbonate concentration was inversely related to both dry mouth (p < 0.003) and dry retching (p < 0.01). Nausea was reported with higher saliva sodium levels (p < 0.05). Salivary urea was associated with taste perception, while higher sodium levels and a greater sodium/potassium ratio are associated with bitter taste (p < 0.03) and a higher glutamate taste and to the intensity of sour taste (p < 0.005). Salivary urea was linked to the perceived intensity of bitter taste (p < 0.05). Forty-three percent of patients indicated their symptoms contributed to decreased food intake.

In conclusion this study provides evidence that active compounds are present in the saliva and impact upper GI symptoms in CKD. In particular lower saliva bicarbonate concentration was inversely related to liking and intensity of glutamate taste and to the intensity of sour taste (p < 0.005). Salivary urea was linked to the perceived intensity of bitter taste (p < 0.05). Forty-three percent of patients indicated their symptoms contributed to decreased food intake.

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158 THINKING OUTSIDE THE SQUARE: NUTRITION SUPPORT IN 18 YR OLD WITH CHRONIC RENAL FAILURE, GASTRECTOMY AND COLECTOMY USING A PAEDIATRIC FORMULA

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18 yr old female with EBV lymphoproliferative disorder, B cell lymphoma on background of Crohn’s disease, sclerosing cholangitis/autoimmune hepatitis overlap underwent total colectomy and gastoenterectomy due to life-threatening bleed. During her 132 day PICU stay, she lost 14kg (23% body weight) and developed CRF. Energy requirements were estimated using Schofield Equation, ideal body weight for height, light activity. Several formulae were compared for total energy, goal rate (jejunal feeds without a colon), osmolarity, protein allowance and micronutrient requirements for an 18 yr old female. No adult formulae were suitable in this case. Initially, diluted Sufrena® (1.7kCal/ml) was used, but weight gain was too rapid and protein intake too low (0.7g/kg/d). Nutrini Energy® (1.5kCal/ml) met requirements for: energy, protein (~1g/kg), micronutrients (except K, Mg and P [see tableau]). Feed rate (90ml/hr) was well-tolerated; stool output remained 200-300ml/day. Feeds were given over 16/24 for flexibility. Skinfold measurements (TSF, MAC) were 25th-50th percentile and she reached goal weight in 4 months.

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159 SERUM ALBUMIN LOSSES TO DIALYSATE AFFECT SERUM ALBUMIN LEVELS IN MAINTENANCE HEMODIALYSIS PATIENTS?

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Serum albumin (s-Alb) is not reliable marker of nutritional status in maintenance hemodialysis (MHD) patients, because s-Alb levels are not only affected by nutritional intake but also other factors including inflammation, age, comorbidity and albumin loss to dialysate. In this study we evaluated the influence of albumin losses to dialysate on s-Alb levels.

The sixty-four patients who have received MHD were analyzed (39 males, 45 females; diabetes 14; mean age 65.5 ± 10.9 years; duration of HD treatment 13.2 ± 6.8 years). All patients received four-hour HD session three times per week with ultra-pure dialysate. Pre-dialysis levels of s-Alb were measured at the first HD session in the week. Based on two-day dietary records and photographs, the accomplished dietitians calculated dietary energy intake (DEI) and dietary protein intake (DPPI). LBM, fat mass and ECF/TBW (as an index of fluid overload) were measured using BIA (Inbody 3.0) after the first post-dialysis. Albumin losses to dialysate were measured by collecting total amount of dialysate during one dialysis session.

The mean levels of s-Alb and albumin losses to dialysate were 3.46 ± 0.26 g/dl (2.8-4.1) and 0.87 ± 1.03 g/session (0.00-4.84). The s-Alb levels were not correlated with albumin losses, but correlated with CRP, sex, age, DEI/post-BW and LBM. The multiple regression analysis with s-Alb levels showed CRP and sex were independent variables, but not DEI/post-BW, nPCR, Kt/Vurea, LBM, fat mass, ECF/TBW and Albumin losses (p = 0.61, p < 0.01).

In conclusion, pre-dialysis s-Alb levels were affected by albumin losses to dialysate, but sex and CRP reflecting the inflammatory status.

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160 CLINICAL CHARACTERISTICS OF PATIENTS TREATED BY HEMODIALYSIS

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The main cause of death among dialysis is cardiovascular. The development of atherosclerosis involves several classical risk factors such as diabetes mellitus, hypertension and dyslipidemia. Knowing their characteristics allows planning therapeutic actions aimed at reducing mortality. The aim was to characterize clinically a sample of HD patients. Forty-nine patients on HD for at least 6 months were included. Individuals with malignant disease, active inflammation, in use of omega-3 oil or anticoagulants were excluded. Clinical data were collected from medical records. Albumin, urea, creatinine, total cholesterol, triglycerides (TG), phosphorus and potassium were measured. The average age of patients (27 men and 22 women) was 49.9 ± 14.3 years. The mean duration of the HD