Welcome message

With great pleasure we invite you back to beautiful Würzburg where the first meeting was held in 1977. We invite you to join us in May 2014 for the 17th meeting of our Society.

The Congress is dedicated to disseminating the latest scientific advances in the field of renal nutrition and metabolism as they relate to patients with kidney diseases including chronic kidney disease (CKD) and acute kidney injury (AKI). Both the Scientific and Program Committees have made significant efforts to assemble an outstanding scientific and clinical program which includes scientific sessions, satellite symposia and free communication sessions. Particular emphasis is placed on free standing poster sessions. Our pre-congress events on Monday and Tuesday include educational courses for renal dietitians and the inaugural TNT Renal Course.

Overall, there will be over 50 scientific lectures that will be delivered by highly accomplished experts. The 17th ICRNM represents an unparalleled opportunity to communicate relevant clinical and scientific information amongst a highly devoted group of individuals dedicated in the care of patients with kidney disease.

We are glad you are participating and glad to be your host in this outstanding event.

With warm regards,
Christoph Wanner, MD
Professor of Medicine
Congress and ISRNM President

Christiane Drechsler MD, PhD
Congress Secretary
17th ICRNM
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Organization XVII International Congress on Nutrition and metabolism in renal disease

Congress President
Christoph Wanner, Germany

Past Congress President
Kamyar Kalantar-Zadeh, USA

ISRNM Council
Christoph Wanner, Germany (President)
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Jürgen Floege
Martin K. Kuhlmann

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Karen Manley, Australia
Maria Chac, Australia
Chistia Nagel, The Netherlands
Carla Avesani, Brazil
Marianne Vennegoor, UK

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Christoph Wanner, Germany

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Tim Goodship, USA
Marianne Vennegoor, UK
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Tina Kibale, USA
Lilian Cupari, Brazil
Maria Chac, Australia
Yoshiki Nishihara, Japan
Nathan Levin, USA
Francis Dumler, USA
Philippe Chauveau, France
Carla Avesani, Brazil
Jonathan Himelfarb, USA
Noel Cano, France
Vladimir Teplan, Czech Republic

List of Faculty
Geoffrey A. Block, USA
Enrico Fassikutieri, Italy
Orlando Gutierrez, USA
David Warnock, USA
Bert Kasoke, USA
Joachim Ix, USA
Kitty Jager, The Netherlands
Nick Vari, USA
Shoji Tetsuo, Japan
Giovanni Strippoli, Italy
Ravi Thadik, MA
Roberto Pecot-Filho, Brazil
Olov Heimburger, Sweden
Alejandro Terevito, Mexico

Host city information
The Unique Würzburg Flair

Why is Würzburg so popular? Many people come for visit Würzburg again and again, not because of the location alongsite the Main River and the ease of getting there. No, it has everything to do with the unique atmosphere that simply makes you feel good. It’s a special mix of culture and ambiance, of world of heritage and wine festivals, of modern and classical music, of avant-garde and age-old traditions, of sciences and party atmosphere that makes this town so popular. The stunning historical architecture provides the perfect setting for everything Würzburg has to offer.
## Overview TNT Renal Course

<table>
<thead>
<tr>
<th>Monday May 5, 2014</th>
<th>Tuesday May 6, 2014</th>
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<tbody>
<tr>
<td><strong>07:00</strong></td>
<td>Registration (Passage Level)</td>
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<td>Room Balthasar Neumann</td>
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<td><strong>08:00</strong></td>
<td>Welcome / Course Overview &amp; Rationale / Pre-Test</td>
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<td><strong>08:30</strong></td>
<td>Lecture 1: Physiology and Metabolism</td>
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<td>Lecture 6: Nutrient and Fluid Requirements of CKD patients and Rationale for Medical Nutrition Therapy</td>
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<td>Lunch</td>
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<td>Workshop 1: Nutrition Screening and Assessment and Nutrient and Fluid Requirements</td>
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<td><strong>13:00</strong></td>
<td>Case Study 1: Non-dialysed Stage 3-5 CKD (room Balthasar Neumann)</td>
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<td><strong>14:15</strong></td>
<td>Case Study 2 (room Tiepolo)</td>
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<td>Case Study 3 (room Bossi)</td>
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<td><strong>15:15</strong></td>
<td>Case Study 4 (room Peter Wagner)</td>
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<td>Closing Ceremony</td>
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<td>Opening and Welcome</td>
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<td>Session 1</td>
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<td>TNT Renal Post-Test</td>
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<td><strong>16:00</strong></td>
<td>Opening of the Congress and Reception</td>
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## Overview Dietitians and Physician Sessions

### International Dietitians and Physician Session

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### German Dietitians and Physician Session

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### Overview Wednesday May 7, 2014

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<tr>
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<tr>
<td>07:30</td>
<td>Plenary Session 1: Intestinal microbiome and its relation to kidney diseases</td>
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<td>08:00</td>
<td>Plenary Session 2: Challenges in the treatment of protein-energy wasting</td>
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<td>Poster Session 1: Poster numbers: P001 - P 082 (Passage + Hall level)</td>
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<td>09:00</td>
<td>Free Communication 1</td>
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<td>09:30</td>
<td>Scientific Session 1: Obesity and CKD</td>
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<tr>
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<td>Free Communication 2</td>
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<td>10:30</td>
<td>Break</td>
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<td>11:00</td>
<td>Scientific Session 5: Nutritional Vitamins in CKD</td>
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<td>Scientific Session 3: Uric acid: what do we know?</td>
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<td>Scientific Session 7: Biomarkers for Protein Energy Wasting</td>
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<td>Scientific Session 2: CKD-MBD and vascular calcification</td>
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<td>Scientific Session 4: Inflammation and nutrition in the elderly (Frailty)</td>
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<td>Scientific Session 6: Diagnose and treatment of rare diseases</td>
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<td>Scientific Session 8: Physician feed thyself: Nutrition for doctors and other &quot;normal&quot; people</td>
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<td>Scientific Session 9: Sarcopenia and Physical activity</td>
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<td>Scientific Session 10: Clinical Nutrition Session 2: Potential hazardous dietary practice to renal patients</td>
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<td>17:00</td>
<td>Scientific Session: Hydration and Kidney Disease</td>
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<td>Lunch Satellite Symposium</td>
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### Overview Thursday May 8, 2014

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<tr>
<td>08:00</td>
<td>Plenary Session 2: Challenges in the treatment of protein-energy wasting</td>
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<td>Poster Session 2: Poster numbers: P083 - P 163 (Passage + Hall level)</td>
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<td>Free Communication 3</td>
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<td>Scientific Session 6: Diagnosis and treatment of rare diseases</td>
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<td>Break</td>
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Overview Friday May 9, 2014

07:00  Registration (Passage level)
07:30  Hall Franconia  Hall Barbarossa
08:00  Plenary Session 1: Calcium and phosphate in CKD - old players with new opportunities?
08:00  Dietitian scientific session
08:00  Business meeting and cultural considerations of a renal diet
08:30  Free Communication 5
10:00  Free Communication 6
10:00  Break
11:00  Scientific Session 10: Ketoanalogues for pre-dialysis and dialysis patients
11:00  Scientific Session 11: Psychological influences on food choice and intake: implications for dietary compliance in renal patients. Psychology of eating; Interaction between stress and food choices
11:30  Break
12:00  Lunch
12:00  Scientific Session 12: Lipids in renal disease
12:00  Scientific Session 13: Salt, a key nutritional element
12:30  Break
13:00  Workshop 1: Nutrition Screening and Assessment and Nutrient and Fluid Requirements
14:00  Break
14:30  Scientific Session 12: Lipids in renal disease
15:00  Scientific Session 13: Salt, a key nutritional element
15:30  Closing Ceremony
16:00  Prize awards
17:00  08:00 – 12:00  Room Balthasar Neumann
TNT Course – Day 1
08:00 – 08:30  Welcome / Course Overview & Rationale / Pre-Test
  Alp Ikizler, Nashville/USA
08:30 – 09:00  Lecture 1: Physiology and Metabolism
  Juan Jesus Carrero, Stockholm/S
09:00 – 09:30  Lecture 2: Etiology of PEW in CKD
  Alp Ikizler, Nashville/USA
09:30 – 10:00  Lecture 3: Nutritional Screening and Assessment
  Juan Jesus Carrero, Stockholm/S
10:00 – 10:15  Break
10:15 – 10:50  Lecture 4: Epidemiology & Consequences of PEW
  Kamyar Kalantar-Zadeh, Irvine/USA
10:50 – 11:25  Lecture 5: Nutritional considerations in non-dialysis CKD patients
  Denis Fouque, Pierre Benite/F
11:25 – 12:00  Lecture 6: Nutrient and Fluid Requirements of CKD patients and Rationale for Medical Nutrition Therapy
  Daniel Teta, Lausanne/CH
12:00 – 13:00  Break
11:00 – 12:00  Room Balthasar Neumann
Workshop 1: Nutrition Screening and Assessment and Nutrient and Fluid Requirements
Program Monday May 5 2014

14:15 – 16:15  Case Studies: Part 1 - Screening and Assessment of Nutritional Status
14:15 – 14:45  Case Study 1: Non-dialyzed Stage 3-5 CKD (Room Balthasar Neumann)
14:45 – 15:15  Case Study 2: HD (Room Auvera)
15:15 – 15:45  Case Study 3: PD (Room Bossi)
15:45 – 16:15  Case Study 4: AKI (Room Peter Wagner)

Case studies will be conducted in a group setting. Please see your group assignment sheet.

Program Tuesday May 6 2014

08:00 – 10:50  Room Balthasar Neumann

TNT Course - Day 2

08:00 - 08:15  Welcome and Recap of Day 2
  Alp Ikizler, Nashville/USA

08:15 – 08:50  Lecture 7: Enteral Feeding for Dialyzed and Non-dialyzed CKD patients
  Denis Fouque, Pierre Benite/F

08:50 – 09:25  Lecture 8: Other Nutrition Interventions in CKD Patients
  Kamyar Kalantar-Zadeh, Irvine/USA

09:25 – 10:00  Lecture 9: Hospitalized Patients: AKI and CKD
  Alp Ikizler, Nashville/USA

10:15 – 10:50  Lecture 10: Insulin Resistance, Diabetes and Obesity in Kidney Disease
  Daniel Teta, Lausanne/CH

11:00 – 12:00  Room Balthasar Neumann

Workshop 2: Developing and Implementing Nutrition Care Plans

15:15 – 16:00  Room Balthasar Neumann

Course Summary

15:15 – 15:30  Course Summary and Closing Remarks
  Alp Ikizler, Nashville/USA

15:30 – 16:00  TNT Renal Post-Test
  Alp Ikizler, Nashville/USA

16:00 – 17:00  Room Neumann

Closing Ceremony

Certificates, Photos, Reception
Program Tuesday May 6 2014

09:00 – 17:00 Room Auvera/ Bossi/ Wagner
International Dietitian-Physician Session

Moderation:  Tilakavati Karupaiah, Kuala Lumpur/MAL; Marianne Vennegoor, London/UK
Clinical Renal Nutrition, translating research to practice

09:00 – 09:10 Clinical Renal Nutrition, translating research to practice: Opening and Welcome
Karen Manley, Melbourne/AUS

09:10 – 09:30 Protein in CKD what is too much, not enough or does origin matter?
Denis Fouque, Pierre Benite/F

09:40 – 10:00 Nutrition in critically ill patients with acute kidney injury (AKI):
The European Guidelines
Enrico Fiaccadori, Parma/I

10:10 – 10:30 Nutrition Status at commencement of RRT and outcomes
Bruce Cooper, St Leonards/AUS

10:40 – 11:00 Coffee Break

11:00 – 11:20 Uremic symptoms - any solutions?
Karen Manley, Melbourne/AUS

11:30 – 11:50 Role of nutrition education in improving the adherence to a diet restricted in protein
Carla Avesani, Rio de Janeiro/BR

12:00 – 13:00 Lunch break

13:00 – 13:20 Is patient knowledge of and attitudes to the medical complications of renal disease and its dietary management related to dietary compliance in haemodialysis patients?
E. Leigh Gibson, London/UK; Ines Held, Wrexham/UK; Dina Khawnekar, London/UK; Peter A. Rutherford, Zurich/CH

Peter Stenvinkel, Stockholm/S

14:00 – 14:30 Controversy:
How to manage the old renal patients with diet and conservative treatment avoiding dialysis
Alejandro Trevino Becerra, Mexico City/MEX
Nutritional Care for the Conservatively Managed CKD patients - Dietitians’ Perspectives
Maria Chan, Kogarah/AUS

15:00 – 15:20 The EQUAL Cohort study: when to start dialysis in the elderly?
Kitty Jager, Amsterdam/NL

15:30 – 16:00 Adjourn

Program Tuesday May 6 2014

09:00 – 16:00 Room Tiepolo
German Dietitians-Physician Session

Moderation:  Roman Fiedler, Halle (Saale); Tobias Marsen, Köln

09:00 – 09:10 Deutscher Part zur Fortbildung von Ernährungsberatern und Diätassistenten
Begrüßung

09:10 – 09:35 Stoffwechselprozesse bei Gesunden und bei Nierenkranken
Jörg Ferber, Leverkusen

09:40 – 10:05 Ursachen und Folgen einer Mangelernährung
Tobias Marsen, Köln

10:10 – 10:35 Wie wird eine Mangelernährung bei Dialysepatienten erfasst? - Methoden zu Screening und Assessment des Ernährungsstatus
Angela Jordan, Grebenstein

10:40 – 11:00 Kaffeepause

11:00 – 11:25 Enteral Ernährung
Martin K. Kuhlmann, Berlin

11:30 – 11:55 IDPE und parenterale Ernährung
Roman Fiedler, Halle (Saale)

12:00 – 13:00 Mittagspause

13:00 – 13:25 Ernährungstherapie in der praktischen Anwendung
Doerthe Weber, Dillenburg

13:30 – 13:50 Spezielle Aspekte der Ernährung: Natrium
Helmut Mann, Aachen

13:55 – 14:15 Spezielle Aspekte der Ernährung: Phosphat
Christine Langer, Aachen

14:20 – 14:40 Kaffeepause

14:40 – 15:05 Ernährungsmanagement bei chronischer Niereninsuffizienz (CKD2-5) und Nierentransplantierten
Irmgard Landthaler, München

Christiane Drechsler, Würzburg

15:30 – 15:55 Ethische Aspekte der Ernährungstherapie
Sonja Rothärmel, Augsburg
Program Tuesday May 6 2014

18:00 – 21:00 Hall Franconia
Opening ceremony and reception

Moderation: Christoph Wanner, Würzburg; Christiane Drechsler, Würzburg

18:00 - 18:15 Welcome

18:15 – 18:45 37 years later: ISRNM is back to Würzburg
August Heidland, Würzburg

18:45 - 19:00 In Memoriam Walter H. Hörland

19:00 – 19:30 Biomimicry - a Rediscovered Scientific Field that Could Provide Hope to Patients with Kidney Disease
Peter Stenvinkel, Stockholm/S

Program Wednesday May 7 2014

08:00 – 09:20 Hall Franconia
Plenary Session 1

Intestinal microbiome and its relation to kidney diseases

Moderation: August Heidland, Würzburg; George A. Kayser, Davis/USA

08:00 – 08:10 Co-Chair introduction

08:10 – 08:30 Intestinal epithelial barrier disruption in uremia: the nature, mechanisms, consequences and potential treatments
Nick Vaziri, Irvine/USA

08:35 – 08:55 Intestinal microbiota metabolism of L-carnitine and its relation to atherosclerosis
Robert Koeth, Cleveland/USA

09:00 – 09:20 TMAO and outcomes in dialysis patients
George A. Kaysen, Davis/USA

09:30 – 10:30 Passage + Hall level
Poster Session 1

Poster numbers 001 - 081

10:30 – 11:30 Hall Franconia
Free Communication 1

Moderation: Stefan Pöhl, Graz/A; Nick Vaziri, Irvine/USA

10:30 – 10:42 Minilecture: Intradialytic parenteral nutrition – can it be evaluated by national registries?
Christoph C. Haufe, Erfurt/D; Doreen Brodmann, Visp/CH

10:45 - 10:52 FC01 Calcdiol (25 OHD) levels increase in HD patients treated with a calcium and magnesium containing phosphate binder

10:55 - 11:02 FC02 Klotho genomic variants impact on serum klotho and patients survival in hemodialysis: the Arnogene study
Dennis Fouque; Delphine Maucourt-Boulech; Jocelyne Drai; Leslie Genet; Guillaume Jean ; Christoph Marcais
Service de Néphrologie-Dialyse-Nutrition, Centre Hospitalier LYON-SUD, Pierre Benite/F;
1 NephroCare Tassin-Charcot, Sainte Foy Les Lyon/F;
Program Wednesday May 7 2014

11:05 - 11:12 FC03
Hypervolemia and Blood Pressure in Prevalent Kidney Transplant Recipients

11:15 - 11:22 FC04
Omega-3 Fatty Acids Inhibit the Up-Regulation of Endothelial Chemokines in Maintenance Hemodialysis Patients
A. M. Hung, E. Siew, C. Booker, A. Graves, A. Shintani, C. Ellis, A. Ikizler; Nashville/USA

10:30 – 11:30 Hall Barbarossa (Maritim Hotel)
Free Communication 2

Free Communication 2 Moderation: Annika Wernerson, Stockholm/S

10:30 - 10:37 FC05
Serum menaquinone-4 (MK-4) concentration and daily vitamin K2 intake in hemodialysis patients with chronic kidney disease

10:40 - 10:47 FC06
Dietary Intake of Vitamins in Patients with Stages 3-5 of Chronic Kidney Disease
M. Jankowska, N. Szupryczynska, S. Malgorzewicz, M. Wiktor, B. Rutkowski; Gdansk/PL

10:50 - 10:57 FC07
Salt restriction in Chronic Kidney Disease: a meta-analysis
E. McMahon, K. Campbell, J. Bauer, D. Mudge; St Lucia/AUS, Wooloongabba/AUS

11:00 - 11:07 FC08
Loss of Amino Acids during intradialytic nutritional therapy - Preliminary results
A. Rytter, M. Rix, J. R. Andersen; Copenhagen/DK

11:10 - 11:17 FC09
Blood Makes Noise: A film project with dialysis patients. Coghlan.R. County Hospital Renal Unit, Arts in Hospital Project
R. Coghlan, A. Ledgard, P. Snelling, A. Coulter, J. Fernandes, J. Taylor; Dorchester/UK

Program Wednesday May 7 2014

11:40 – 12:50 Hall Franconia
Scientific Session 1

Obesity and CKD

Moderation: Csaba P. Kov esdy, Memphis/USA; Vladimir Teplan, Praque/CZ

11:40 – 12:00 Obesity Paradox in CKD, ESRD and Kidney Transplantation
Kamyar Kalantar-Zadeh, Irvine/USA

12:00 – 12:30 Abdominal adiposity and CKD
Renée de Mutsert, Leiden/NL

12:30 – 12:50 The impact of the myostatin pathway on muscle mass in CKD
William E. Mitch, Houston/USA

11:40 – 13:10 Hall Barbarossa (Maritim Hotel)
Scientific Session - Clinical Nutrition Session 1

Appetite and Taste in renal Failure

Moderation: Denise Mafra, Rio de Janeiro/BR; Mary Cay Hensley, Schererville/USA

11:40 – 12:00 Appetite and outcomes in the renal population
Jerrilynn Burrowes, New York/USA

12:10 – 12:30 Taste changes in renal failure
Karen Manley, Melbourne/AUS

12:40 – 13:00 Nutrition at commencement of dialysis and outcomes
Christiane Drechsler, Würzburg
Program Wednesday May 7 2014

14:30 – 16:00  Hall Franconia
Scientific Session 3

Uric acid: what do we know?

Moderation:  Eberhard Ritz, Heidelberg; Allon Friedman, Indianapolis/USA

14:30 – 14:50  Genetic epidemiology of hyperuricemia
Gerjan J. Navis, Groningen/NL

14:55 – 15:15  Update in uric acid handling
Olivier Bonny, Lausanne/CH

15:20 – 15:40  The role of uric acid in the progression of CKD
Mehmet Kanbay, Istanbul/TR

15:45 – 16:00  Minilecture: Fructose metabolism in chronic kidney disease
Björn Anderstam, Stockholm/S

16:10 – 17:30  Hall Franconia
Scientific Session

Hydration and Kidney Disease

Moderation:  Olivier Bonny, Lausanne/CH

16:10 - 16:35  Hydration, vasopressin antagonism and kidney disease prevention: Rationale
Lise Bankir, Paris/F

16:40 - 17:05  Increased Water Intake Slows Progression of CKD: Examination of Current Evidence
William Clark, London/CDN

17:10 - 17:25  Minilecture: Phosphate in beverages
Elizabeth Lindley, Leeds/UK

14:30 – 16:00  Hall Barbarossa (Maritim Hotel)
Scientific Session 4

Inflammation and nutrition in the elderly (Frailty)

Moderation:  Bruce Cooper, St Leonards/AUS; Harold Franch, Atlanta/USA

14:30 – 14:45  Minilecture: Nutritional stimulation of the Nrf2-KEAP pathway - is that possible?
Denise Mafra, Rio de Janeiro/BR

14:50 – 15:10  CKD, frailty and unsuccessful aging
Navdeep Tangri, Manitoba/CDN

15:20 – 15:40  The role of uric acid in the progression of CKD
Mehmet Kanbay, Istanbul/TR

15:45 – 16:00  Minilecture: Fructose metabolism in chronic kidney disease
Björn Anderstam, Stockholm/S

16:10 – 17:30  Hall Barbarossa (Maritim Hotel)
Scientific Session - Pediatric Nutrition

Nutritional aspects in pediatric chronic kidney disease

Moderation:  Kitty Jager, Amsterdam/NL; Martin Konrad, Münster

16:10 – 16:30  What I tell families about renal diets for children with CKD
Pearl Pugh, Nottingham/UK

16:35 – 16:55  Renal calcification in children: origin and outcome
Martin Konrad, Münster

17:00 – 17:20  Nutrition and growth in paediatric RRT
Marjolein Bonthuis, Amsterdam/NL
Program Thursday May 8 2014

08:00 – 09:20 Hall Franconia

Plenary Session 2

Challenges in the treatment of protein-energy wasting

Moderation:  Shaul Massry, Los Angeles/USA; Olof Heimburger, Stockholm/S

08:00 – 08:20  The consensus statement by ISRNMF for Prevention and treatment of PEW CKD: An overview
  Alp Ikizler, Nashville/USA

08:30 – 08:50  Is it important to give food during dialysis?
  Pieter ter Wee, Amsterdam/NL

09:00 – 09:20  Optimal treatment of protein energy wasting in peritoneal dialysis patients
  Olof Heimburger, Stockholm/S

09:30 – 10:30 Passage + Hall level

Poster Session 2

Poster numbers 082 - 162

10:30 – 11:30 Hall Franconia

Free Communication 3

Moderation:  Kirsten Johansen, San Francisco/USA; Joachim Ix, San Diego/USA

10:30 – 10:45 Minilecture: PTH-specific deletion of the klotho-gene unravels a novel calcineurin-dependent FGF23 signalling pathway that mediates suppression of PTH
  Tobias Larsson, Stockholm/S

10:45 - 10:52  FC10
  Toll-Like Receptor 4 links skeletal muscle with the innate immune system to mediate atrophy in patients with chronic kidney disease (CKD).
  G. Garibotto, G. Brunori, A. Sofia, A. Laudon, A. Bonanni, C. Venturelli, E. D’Amato, E. L. Parodi, V. Cademartori, D. Verzola; Genoa/I, Trento/I

10:55 - 11:02  FC11
  Omega-3 polyunsaturated fatty acids attenuate the atrophy-inducing effects of saturated fatty acids in skeletal muscle
  M. Woodworth-Hobbs, H. Franch, R. Price; Atlanta/USA

11:05 - 11:12  FC12
  Effects of a Low Protein Diet on Skeletal Muscle Protein Synthesis and Degradation in Patients With Chronic Kidney Disease
  G. Garibotto, A. Sofia, V. Cademartori, E. L. Parodi, D. Verzola; Genoa/I

Program Thursday May 8 2014

11:15 - 11:22  FC13
  Specific phenotypes influencing physical activity in hemodialysis patients.
  Marine Panaye; Anne Kollo-Labadens 1; Catherine Lasseur 2; Jean Louis Paillassey 3;
  Marie Paule Guillodo 4; Martial Levavannier 5; Daniel Teta 6; Denis Fouque 7
  Néphrologie, Hospices Civils de Lyon, Hôpital Edouard Herriot, Lyon/F; 1 Hémodialyse, AURA Nord, St Ouen/F; 2 Aurad-Aquitaine, Gradignan/F; 3 Effi-Stat, Paris/F; 4 Centre de Dialyse, AUB Santé, Brest/F; 5 Amgen, Neulilly/F; 6 Département de Médecine, Service de Néphrologie, Centre Hospitalier Universitaire Vaudois, Lausanne/CH; 7 Service de Néphrologie-Dudly-Nutrition, Centre Hospitalier LYON-SUD, Pierre Benite/F;

10:30 – 11:30 Hall Barbarossa (Maritim Hotel)

Free Communication 4

Moderation:  Daniel Teta, Lausanne/CH; Kunitoshi Iseki, Okinawa/J

10:30 – 10:45 Minilecture: P-cresylsulphate: a new clue to adipocyte dysfunction in CKD
  Laetitia Koppe, Montreal/CDN

10:45 - 10:52  FC14
  Fructose intake: is there association with uric acid levels and inflammation in chronic kidney disease patients on conservative treatment?
  D. Mafra, F. O. Vieira, V. O. Leal, J. C. Lobo, M. B. Stockler-Pinto; Rio de Janeiro/BR

10:55 - 11:02  FC15
  Habitual adherence to the mediterranean diet is negatively associated with hospital infection in kidney transplant patients during the early post-transplant period.
  K. A. Poulia, L. Tzirigotti, M. Darema, N. Altounis, V. Iatridi, G. Zavos, J. Boletis, M. Kowtogianni; Athens/GR, Kallithea, Athens/GR

11:05 - 11:12  FC16
  Acute weight loss in chronic kidney disease: A new tailored approach for overweight/obese patients gives good results

11:15 - 11:22  FC17
  Effects of Pomegranate Extract Supplementation on Cardiovascular Disease Risk and Physical Function in Hemodialysis Patients
11:40 – 12:50 Hall Barbarossa (Maritim Hotel)
Scientific Session 6
(Session support by genzyme)

Diagnosis and treatment of rare diseases

Moderation: David G. Warnock, Birmingham/USA

11:40 – 11:55 Diagnosis of rare and inherited kidney diseases
Christoph Wanner, Würzburg

12:00 – 12:15 Getting the guts to the matter
Karen Manley, Melbourne/AUS

12:20 – 12:40 Enzyme replacement therapy for Fabry Disease
Ana Jovanovic, Manchester/UK

12:45 – 13:00 Minilecture: Mesoamerican Nephropathy: have we identified the cause?
Annika Wernerson, Stockholm/S

11:40 – 12:50 Hall Barbarossa (Maritim Hotel)
Scientific Session 6

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Annika Wernerson, Stockholm/S
Program Thursday May 8 2014

16:10 – 17:30 Hall Franconia
Scientific Session 2
(Session support by Amgen GmbH)

CKD-MBD and vascular calcification

Moderation: Markus Ketteler, Coburg; Ziad Massy, Paris/F

16:00 – 16:20 Cardiovascular Calcification: The epidemiologist's point of view
Joachim Ix, San Diego/USA

16:25 – 16:45 Current and next generation calcimimetic treatment
Geoffrey Block, Denver/USA

16:50 – 17:10 The European Calciphylaxis Registry
Vincent Brandenburg, Aachen

16:10 – 17:30 Hall Barbarossa (Maritim Hotel)
Scientific Session 9

Sarcopenia and Physical activity

Moderation: Pieter ter Wee, Amsterdam/NL; Bengt Lindholm, Stockholm/S

16:10 – 16:30 Associations between body composition and physical activity and function
Kirsten Johansen, San Francisco/USA

16:10 – 17:00 Increasing physical activity in patients with CKD: what are the next steps?
Daniel Teta, Lausanne/CH

17:00 – 17:20 Low muscle strength, rather than muscle mass, associates with mortality in dialysis patients;
revisiting the concept of sarcopenia
Abdul R. Qureshi, Stockholm/S

Program Thursday May 8 2014

16:10 – 17:20 Room Neumann
Scientific Session - Clinical Nutrition Session 2

Potential hazardous dietary practice to renal patients

Moderation: Carla Avesani, Rio de Janeiro/BR; Maria Chan, Sidney/AUS

16:10 – 16:30 Vegetarianism in renal disease
Philippe Chauveau, Gradignan/F

16:35 – 16:55 Diet-induced Metabolic Acidosis: a cause of progression and CKD?
Caroline Passey, Portsmouth/UK

17:00 – 17:20 Metabolomics in renal practice
Zulfitri Azuan Mat Daud, Putra/MAL
Program Friday May 9 2014

08:00 – 09:15 Hall Franconia
Plenary Session 3

Calcium and phosphate in CKD - old players with new opportunities?

Moderation: Tobias Larsson, Stockholm/S; Angela Yee-Moon Wang, Hongkong/HK

08:00 – 08:20 Using Heart Healthy Diets for Kidney Stone Prevention
Harold Franch, Atlanta/USA

08:30 – 08:50 FGF23 in CKD and ESRD: Regulator of phosphorus balance, or much more than that?
Csaba P. Kovesdy, Memphis/USA

08:55 – 09:15 Calcium balance and negative impact of calcium loading on calcification
Angela Yee-Moon Wang, Hongkong/HK

08:00 – 09:20 Hall Barbarossa (Maritim Hotel)
Dietitian scientific session - business meeting and cultural considerations of a renal diet

Moderation: Lilian Cuppari, São Paulo/BR; Tilakavati Karupaiah, Kuala Lumpur/MAL

08:00 – 08:20 Introduction of Nominees for election of Associate Council Membership 2014-2016 and election

08:20 – 08:25 Introduction

08:25 – 08:35 Asian Diets
Tilakavati Karupaiah, Kuala Lumpur/MAL

08:40 – 08:50 South American Diets
Carla Maria Avesani, Rio de Janeiro/BR

08:55 – 09:05 African Diets
Cecile Verseput, Johannesburg/ZA

09:10 – 09:20 European Diets
Christa Nagel, Groningen/NL

Program Friday May 9 2014

10:00 – 11:25 Hall Franconia
Free Communication 5

Moderation: Angela Yee-Moon Wang, Hongkong/HK; Solenne Pelletier, Lyon/F

10:00 - 10:15 Minilecture: Sclerostin: the missing link in the bone-vessel cross-talk
Solenne Pelletier, Lyon/F

10:15 - 10:22 FC18 The effect of nutritional counseling in maintenance hemodialysis patients
C. Garagarza, A. Valente, C. Caetano, T. Oliveira; Lisboa/P

10:25 - 10:32 FC19 Comparison of 3 methods of sarcopenia in chronic kidney disease: prevalence and association with mortality
R. Antunes, A. Cordeiro, F. Amparo, C. Avesani, J. J. Carrero, B. Lindholm, C. Amodeo, L. Cuppari, M. Kamimura; São Paulo/BR, Rio de Janeiro/BR, Stockholm/S

10:35 - 10:42 FC20 The malnutrition-inflammation score predicts mortality in chronic kidney disease patients on conservative therapy
F. Amparo, M. Kamimura, J.-J. Carrero-Roig, L. Cuppari, B. Lindholm, C. Amodeo, A. Cordeiro; São Paulo/BR, Stockholm/S

10:45 - 10:52 FC21 Assessment of protein energy wasting on elderly on hemodialysis: An analysis of methods and cutoffs associated with mortality
J. Cordeiro Dias Rodrigues, F. Santos Barbosa Brito, F. Galvão Pascalli de Oliveira, C. Avesani; Rio de Janeiro/BR

10:55 - 11:02 FC22 Comparison of indirect calorimetry and prediction equations in estimating the resting energy expenditure in critically ill acute kidney injury patients
C. Góes, A. Balbi, M. Berbel-Bujarah, P. Xavier, A. Paes, D. Ponce; Botucatu/BR

11:05 - 11:12 FC23 Change of clinical and nutrition profiles of patients at enrollment to the multidisciplinary pre-dialysis assessment clinic, April 2002 to March 2007 vs. April 2007 to March 2012
M. Chan, J. Kelly, M. Batterham, L. Tapsell; Kogarah/AUS, Wollongong/AUS

11:15 - 11:22 FC24 Demographic associations of high estimated sodium intake and frequency of consumption of high sodium foods in people with CKD stage 3 in England
F. Nerbass, R. Pecois-Filho, N. McIntyre, C. McIntyre, F. Willingham, M. Taal; Joinville/BR, Curitiba/BR, Derby/UK, Nottingham/UK
10:00 - 11:20 Hall Barbarossa (Maritim Hotel)
Free Communication 6

Moderation: Anna Witasp, Stockholm/S; Martin Wagner, Würzburg

10:00 - 10:07
FC25
Association of Trans Fatty Acids and Clinical Long-term Outcome - The Ludwigshafen Risk and Cardiovascular Health Study
M. Kleber, G. Delgado de Moissl, W. März, C. von Schacky; Mannheim, Munich

10:10 - 10:17
FC26
The effect of exercise and nutrition interventions on physical fitness, metabolic adaptation and blood oxygen capacity in the first year after kidney transplantation
A. Mahrova, K. Svagrova, M. Stollova, V. Teplan; Prague/CZ

10:20 - 10:27
FC27
Effects of Regular Protein Diet Supplemented with Ketoacids on Insulin Resistance in Patients on Peritoneal Dialysis
J. Dong, Y-J. Li, R. Xu, A. Kizler, H-Y. Wang; Beijing/CN, Nashville/USA

10:30 - 10:37
FC28
Reverse epidemiology and body composition in dialysis patients - Towards resolving the enigma
D. Marcelli, L. Usvyat, I. Bayh, B. Canaud, M. Etter, E. Gatti, A. Grassmann, P. Kotanko, C. Marelli, L. Scatizzi, A. Stopper, F. van der Sande, J. Kooman; Bad Homburg, New York/USA, Hong Kong/CN, Buenos Aires/BR, Maastricht/NL

10:40 - 10:47
FC29
Comparison of four different tools in diagnosing uremic anorexia in chronic hemodialysis patients and their relationship with Protein Catabolic Rate
A. Molfino, K. Johansen, G. Chertow, J. Doyle, F. Rossi Fanelli, G. A. Kayser; Rome/I, San Francisco/USA, Palo Alto/USA, Davis/USA

11:00 - 11:07
FC31
Oral Nutritional Supplements in Hemodialysis Patients
D. Benner, S. M. Brunelli, B. Broach, J. Wheeler, A. R. Nissenson; El Segundo/USA, Minneapolis/USA

11:10 - 11:17
FC32
Ghrelin variants, nutrition and obesity in patients after renal transplantation
V. Teplan, J. A. Hubacek, A. Mahrova, M. Stollova; Prague/CZ

11:30 – 12:30 Hall Franconia
Scientific Session 10
(Session support by Fresenius Kabi Deutschland GmbH)

Ketoanalogues for pre-dialysis and dialysis patients

Moderation: Denis Fouque, Pierre Benite/F

11:30 – 11:55
Protein restriction for pre-dialysis CKD patients: safety and effectiveness for renoprotection and nutrition
Joel D. Kopple, Torrance/USA

12:00 – 12:25
Ketosteril in dialysis patients: experiences from China
Jing Chen, Shanghai/CN

11:30 – 12:30 Hall Barbarossa (Maritim Hotel)
Scientific Session 11

Psychological influences on food choice and intake: implications for dietary compliance in renal patients. Psychology of eating: Interaction between stress and food choices

Moderation: Ines Held, Wrexham/UK; E. Leigh Gibson, Roehampton/UK

11:30 – 11:45
Emotional eating: mediating the impact of stress on food choice
Michael Macht, Würzburg

11:50 – 12:05
Psychological contributions to managing diets in chronically ill patients
Claus Vögele, Walferdange/L

12:10 – 12:25
Stress, personality traits, and attitudes to health as predictors of dietary compliance in haemodialysis patients
E. Leigh Gibson, London/UK; Ines Held, Wrexham/UK; Dina Khawnekar, London/UK; Peter A. Rutherford, Zurich/CH
Program Friday May 9 2014

13:00 – 14:20 Hall Franconia
Lunch Satellite Symposium
(Session support by Keryx Biopharmaceuticals, Inc.)

Phosphate binding and Iron supplementation

Moderation: Nick Vaziri, Irvine/USA; Abdul Rashid Qureshi, Huddinge/S

13:00 – 13:20 Phosphate: pleiotropic vascular toxicity
Ziad Massy, Paris/F

13:25 – 13:55 Phosphorus in CKD: To treat or not to treat, and how?
Markus Ketteler, Coburg

14:00 – 14:20 Intravenous iron may be hazardous
Nick Vaziri, Irvine/USA

14:30 – 16:00 Hall Franconia
Scientific Session 12
Lipids in renal disease

Moderation: George A. Kaysen, Davis/USA; Vera Krane, Würzburg

14:30 – 14:50 High-density lipoprotein - the myth of the “good cholesterol”
Thimoteus Speer, Homburg/Saar

14:55 – 15:10 Relationships between HDL and LDL cholesterol and cardiovascular and infections outcomes in dialysis patients.
George A. Kaysen, Davis/USA

15:15 – 15:35 Dietary fat and chronic kidney disease: what do we know?
Juan Jesus Carrero, Stockholm/S

15:40 – 15:55 Renal lipotoxicity: a kidney disease progression factor?
Fitsum Guebre-Egziabher, Lyon/F

16:00 – 17:00 Hall Franconia
Closing Ceremony and Poster prize awards

Moderation: Christoph Wanner, Würzburg; Kamyar Kalantar-Zadeh, Irvine/USA

16:00 – 16:30 CKD in Japan: an invitation to the island of centenarians (ICRNM 2016)
Kunitoshi Iseki, Okinawa/J

16:30 – 16:40 ICRNM 2013 Award for the best poster, general programme
ICRNM 2013 Award for the best poster, dietitian’s programme
ICRNM 2013 Award for the best poster, young investigators

16:40 – 16:50 What did we achieve?
Christoph Wanner, Würzburg

17:00 – 17:10 Closing remarks
Kamyar Kalantar-Zadeh, Irvine/USA
Lunch Satellite Symposia
Wednesday May 7 2014

13:15 – 14:15 Hall Franconia

Lunch Satellite Symposium - Fresenius Kabi

Evolving role of ketoanalogues in the management of CKD

Moderation: William E. Mitch, Houston/USA

13:15 – 13:40 Is there a risk of wasting during a LPD?
   Denis Fouque, Pierre Benite/F

13:45 – 14:10 A simplified approach to a keto acid supplemented low protein diet
   Giorgina Piccoli, Turin/I

Fresenius Kabi - caring for life

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Lunch Symposium
Evolving role of protein restriction in the management of CKD
Wednesday 7th May, 13:15 – 14:15h, Room Franconia

www.fresenius-kabi.com
Lunch Satellite Symposium - Abbott Nutrition

Should CKD patients have PEW preventive oral nutrition support?

Moderation: Harold Franch, Atlanta/USA

13:10 – 13:15 Welcome/Symposium overview – Dialysis patient story video #1
13:15 – 13:30 Yes, CKD patients should have PEW preventive ONS intervention
   Allon Friedman, Indianapolis/USA
13:35 – 13:50 No, CKD patients should not have PEW preventive ONS intervention
   Alp Ikizler, Nashville/USA
14:00 – 14:15 Nutrient profile of renal-specific ONS and tube-feed formulae
   Owen Kelly, Columbus/USA
14:20 – 14:30 Closing – Dialysis patient story video #2

Thursday May 8 2014

Oral Nutritional Supplements Help Improve Survival Rates¹

In a large U.S. study² (n=8,708), supervised ONS, including Nepro HP®, given to dialysis patients 3 times per week was associated with a 34% reduction in one-year mortality (p<0.001).

Recommend Nepro with KidneyCare

Nepro HP and Nepro LP are scientifically designed to help improve CKD patient nutrition status and outcomes.

- Clinically studied in 14 trials in acute and chronic kidney disease patients
- Nepro HP increased serum albumin³
- Nepro HP and LP support improved nutrition status¹³
- Powered by the unique KidneyCare Nutrition System to support heart health and management of blood glucose and electrolytes
- Low in phosphorus and potassium


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Thursday May 8 2014

13:00 – 14:30 Hall Barbarossa (Maritim Hotel)

Lunch Satellite Symposium – Berlin Chemie

Therapeutic goals and risks of symptomatic hyperuricemia

Moderation: Wolfgang Gröbner, Wertingen

13:00 - 13:45 Treat to Target: Up to date options for diagnosis and therapy of symptomatic hyperuricemia
Bernhard Manger, Erlangen

13:45 - 14:30 Symptomatic hyperuricemia – Uric acid a renal and cardiovascular risk factor
Eberhard Ritz, Heidelberg

Lösung in Gicht.

Adenuric® 80 mg Filmtabletten; Adenuric® 120 mg Filmtabletten.

Wirkstoff: Febuxostat.

Zusammensetzung: 1 Filmtablette enthält: Febuxostat 80 mg bzw. 120 mg; sonstige Bestandteile: Tablettenkern: Lactose-Monohydrat, mikrokristalline Cellulose, Magnesiumstearat (Ph. Eur.), Hyprolose, Croscarmellose-Natrium, Siliciumdioxid-Hydrat.

Filmüberzug: Opadry II gelb, 85F42129 bestehend aus: Poly(vinylalkohol), Titandioxid (E171), Macrogol 3350, Talkum, Eisen(III)-hydroxid-oxid x H2O (E172).

Anwendungsgebiete: Behandlung der chronischen Hyperurikämie bei Erkrankungen, die bereits zu Uratablagerungen geführt haben (einschließlich eines anamnestisch bekannten oder aktuell vorliegenden Gichtknotens und/oder einer Gichtarthritis) bei Erwachsenen.

Gegenanzeigen: Überempfindlichkeit gegen Febuxostat oder einen der sonstigen Bestandteile.


Signifikant wirksamer als Allopurinol bei der Erreichung des Serum-Harnsäure-Zielwertes von ≤ 6,0 mg/dl (≤ 360 µmol/l)1,2

Reduziert in der Dauertherapie konsequent Gichtanfälle und Tophi1,4

Keine Dosisanpassung bei leicht oder mittelschwer eingeschränkter Nierenfunktion oder älteren Patienten3

Social program

Opening ceremony and reception

Congress Centrum Würzburg
May 6, 2014, 6.00 pm

Free admission

Boat tours to the Rococo Gardens in Veitshöchheim (Half-Day Trip)

Float downstream from the boat dock Alter Kranen in Würzburg, past vineyards and the monastery Oberzell to Veitshöchheim.
The picturesque old town of Veitshöchheim is the location of the former summer residence of the Würzburg prince bishops. Take a leisurely stroll through the most beautiful rococo garden in all of Europe. Also enchanting is the newly renovated castle.

Date: May 7, 2014, 10.00 am
Price per person: 20.00 € incl. Guide and boat trip
Meeting point: Congress Center Würzburg
Duration: 5 hours

Guided Strolls through the Old Town

A stroll through the Old Town of Würzburg explores a number of great places. The program includes the Marienkapelle and its sandstone sculptures by Tilman Riemenschneider, the Falkenhaus and its elaborate rococo facade, the historical town hall and the Kiliansdom. The program concludes with a view from the Alte Mainbrücke (Old Main River Bridge) of the Fortress Marienberg, the pilgrimage church Kapelle, and the surrounding vineyards.

Date: May 7, 2014, 10.00 am
Price per person: 5.00 € incl. Guide
Meeting point: Congress Center Würzburg
Duration: 2 hours

Congress Dinner - wine tasting -

Residence Palace wine cellar

Deep inside the Würzburg Residenz, the rambling and labyrinthine underground cellar aisles of the Fuerstbischöflicher Hofkeller (Prince-Bishop's Court Cellar) are to be found.
In 1719, Prince-Bishop Johann Philipp Franz von Schönborn commissioned the architect Balthasar Neumann to build a new residence in Würzburg with the explicit instruction to include an „excellent wine cellar“. The residence is one of the most important baroque palaces north of the Alps - with spacious court gardens, light and rich Neumann architecture and stunning frescoes by the Venetian artist Giovanni Battista Tiepolo. Aware of this great heritage, the Staatliche Hofkeller Würzburg (state owned court cellar of Würzburg) continues the institution of the Prince-Bishop’s Court Cellar not as a museum, but as a living memorial with all the functions of a modern wine cellar.

Genzyme is proud to support the XVII International Congress on Nutrition and Metabolism in Renal Disease.

Please join us for the scientific session 6 on Diagnosis and Treatment of Rare Diseases
Thursday May 8, 2014, chaired by Professor David G. Warnock

Genzyme has pioneered the development and delivery of transformative therapies for patients affected by rare and debilitating diseases for over 30 years. With a focus on rare diseases and multiple sclerosis, we are dedicated to making a positive impact on the lives of the patients and families we serve.
Social program

Those who wander through the softly lit corridors and vaulted ceilings of the wine cellar today are confronted with one of the finest wine cellars in the world. The overwhelming impression of the wooden casks immediately captivates visitors not only in the „Stückfass“ cellar, which houses wooden casks with a capacity of 120 litres each. Every year festive wine tasting and cultural events attract thousands of wine lovers from all over the world to this unique vault. In the annals of the court cellar, huge casks, the so-called „Beamtenweinfässer“, play a very special role. More than 200 years ago, these giant casks held nothing less than the liquid salaries of the court servants. The tale of the Swedish barrel takes visitors back to the dark years of the Thirty Years’ War and recaps the story of the legendary millennium wine of the year 1540. A particular gem, the treasure chamber, is located in the Bacchus cellar. In the „wine library“ of the court cellar, valuable wines that were cherished to maturity bear visible and tangible testimony to past vintages. The red wines are matured in the southern wing of the residence under the court chapel. Wine is one of life’s great pleasures - why not experience the unique atmosphere of this cultural monument during a tour of the wine cellar or an exclusive wine tasting in the festively illuminated vaulted cellar.

Date: May 7, 2014, 7.00 pm
Price per person: 30.00 €

The Main River Loop at Volkach (Half-Day Trip)

The trip first goes to the Vogelsburg overlook where you can enjoy wonderful views of the vineyards around the Main River Loop. Then, after a walking tour of the town of Volkach, you will visit the pilgrimage church „Maria im Weingarten“ and its famous Madonna sculpture by Riemenschnieder. Upon request, you can then learn a lot about the Franconian wine over a glass of it at one of the innovative “vinotheques”.

Date: May 8, 2014, 10.00 am
Price per person: 21.00 € incl. Guide and bus transfer
Meeting point: Congress Center Würzburg
Duration: 5 hours

Old Town and UNESCO World Heritage Site Residence Palace

The highlight of the tour through the Würzburg Old Town is a visit to the former residence of the prince bishops of Würzburg. Balthasar Neumann built the Residence Palace at the beginning of the 18th century. It was officially declared a UNESCO World Heritage Site in 1981. Most impressive are the magnificent grand staircases with the breathtaking frescos by the Venetian artist Tiepolo and the mirror cabinet.

Date: May 8, 2014, 10.00 am
Price per person: 12.00 € incl. Guide and admission to the Museum
Meeting point: Congress Center Würzburg
Duration: 3 hours
Social program

Gala Dinner
Juliusspital garden pavilion

The history of the Stiftung Juliusspital spans 430 years. The Prince-Bishop Julius Echter von Mespelbrunn founded the hospital in 1576, as he was aware of the fact that many poor and sick people in the country were without help. However, this idea from hundreds of years ago is still valid now. Today the foundation manages a large hospital, a home for the elderly, a nursery school, farms, forests and the renowned vineyards.

The “Fürstenbau” is a palatial building designed by the architect Antonio Petrini and built in the baroque style. The historical cellar vaults, garden pavilion and the fountain statues of Jacob van der Auvera make the Juliusspital a unique monument to art and culture in the centre of the city of Würzburg, at the heart of the famous Franconian wine region.

The garden pavilion, once the „Theatrum Anatomicum“ of the University of Würzburg, is an architectural jewel in the park of the Juliusspital (Julius Hospital), built in 1705. The garden pavilion is an example of the Juliusspital’s unique ambience. It is located in the centre of the park of the Stiftung Juliusspital (Julius hospital foundation) opposite the Zehntscheune (tithe barn) and function rooms. A number of famous doctors worked here, for example Virchow, Koelliker and Siebold Wilhelm Conrad Roentgen detected the X-rays opposite of the pavilion but had his famous discussion rounds within the building. Many details of its beautiful facade, the stonemasonry and the stuccoed ceiling in the hall add to the pavilion’s architectural charm.

Date: May 8, 2014, 7.00 pm
Price per person: 80.00 €

Guided Tours Fortress Marienberg (Festung Marienberg) and Mainfränkisches Museum

The walking tour around the Fortress Marienberg takes you to the Marienkirche (approx. 704 AD), the temple above the deep well (104m) as well as the Fürstengarten (open April-Oct). that offers fantastic views of the city and the Main River Valley. The tour concludes with a visit to the Mainfränkische Museum, home to a world-renowned collection of works by Tilman Riemenschneider. Also on display are outdoor sculptures from the Veitschochheim Rococo Gardens, as well as witnesses of Franconian folk art and wine culture.

Date: May 9, 2014, 10.00 am
Price per person: 17.00 € incl. Guide, admission to the Museum and bus transfer
Meeting point: Congress Center Würzburg
Duration: 2 hours
Wednesday May 7 2014

FC01  •  Calcium (25 OH) levels increase in HD patients treated with a calcium and magnesium containing phosphate binder

Barbara Marzell, Angel Luis Martín de Francisco 1; Hans-Jürgen Arens; Jutta Passlick-Deetjen 2; Oliver Ploen 3; Angel Luis Martin de Francisco 1; Hans-Jürgen Arens; Jutta Passlick-Deetjen 2

Objective: Total, dietary and supplemental magnesium intake is associated with a lower risk of vitamin D deficiency in the general population (Deng X et al., BMC Medicine 2013, 11:187). We performed a secondary analysis of the CALMAG Study in order to evaluate the influence of a calcium and magnesium containing phosphate binder on vitamin D status in HD patients.

Method: The CALMAG Study was a randomized, investigator masked, multicentre trial to investigate the effect of calcium acetate (110mg Ca)/magnesium carbonate (60mg Mg) [CaMg] on lowering of serum phosphorus. After a washout period of 2-3 weeks, 255 patients were randomized to either CaMg or sevelamer HCl (Sev) for a period of 24 weeks. Phosphate binder doses were titrated to lower sP to the K/DOQI target. 40 patients in the CaMg group and 29 in the Sev group received any kind of vitamin D therapy without treatment changes during the study period (p = 0.1841).

Results: Levels of 25-OHD increased significantly in the CaMg group (week 1: 41.5 ± 27.2 ng/mL, week 25: 51.2 ± 33.7 ng/mL, p = 0.0001), but not in the Sev group (week 1: 46.2 ± 33.7 ng/mL, week 25: 49.1 ± 30.4 ng/mL, p = 0.5396). ANCOVA between groups: p = 0.0372). Similarly, calcitriol (1,25(OH)2D levels slightly increased in patients on CaMg (p = 0.0673) and remained unchanged in those treated with Sev (p = 0.5481). ANCOVA: p = 0.0245). Subgroup analysis of patients with and without vitamin D therapies revealed that the observed differences were mainly driven by those patients who did not receive any form of vitamin D. There were significant increases of 25-OHD and 1,25(OH)2D in this subgroup of CaMg patients and a between-group difference for 1,25(OH)2D (p = 0.0195), but not among patients on vitamin D therapy. Changes in 25-OHD were associated with changes in total calcium after 9 weeks (r = −0.2082, p = 0.0037) and with changes in serum phosphorus (r = 0.21860, p = 0.0029) and eFGF23 (r = −0.16046, p = 0.0294) after 25 weeks.

Conclusion: In summary, CaMg contributed to an improved vitamin D status in HD patients in this study, especially in those who did not receive any vitamin D therapies. An activating effect of vitamin D metabolism may be a beneficial effect of magnesium.

Wednesday May 7 2014

FC02  •  Klotho genomic variants impact on serum klotho and patients survival in hemodialysis: the Arnogene study

Denis Fouque, Delphine Maucort-Boulch, Jocelyne Drai, Leslie Genet, Guillaume Jean 1; Chirstoph Marcais 2; Denis Fouque 3

Objective: Whether attempts to increase serum a-KL will improve survival should be tested in future trials.

Method: The design was double-blind randomized placebo controlled pilot trial (NCT00655525). Thirty-eight (38) patients were randomly assigned in a 1:1 fashion to receive 2.9 gm of eicosapentaenoic acid (EPA, C20:5 n-3) plus docosahexaenoic acid (DHA, C22:6 n-3) versus placebo for 12 weeks. The primary outcome was change in pro-inflammatory chemokines measured by lipopolysaccharide (LPS)-stimulated peripheral blood mononuclear cells (PBMC). Secondary outcomes were changes in systemic inflammatory markers. Analysis of covariance (ANCOVA) was used to compare percent change from baseline to 12 weeks.

Results: Thirty-one patients completed 12 weeks and 3 patients completed 6 weeks of study. Median age was 52 (interquartile range 45, 50) years, 74% were African American and 79% were male. Supplementation of omega-3 PUFA’s effectively decreased LPS-induced expression of RANTES and MCP-1 (unadjusted p = 0.04 and p = 0.06, adjusted for demographics p = 0.02 and p = 0.05, respectively). There was no significant effect of the intervention on serum inflammatory markers C-reactive protein and Interleukin-6.

Conclusion: The results of this pilot study suggest that omega-3 PUFA’s are beneficial in decreasing the levels of endothelial chemokines RANTES and MCP-1. Studies of larger sample size and longer duration are required to further evaluate effects of omega-3 PUFA’s on systemic markers of inflammation, other metabolic parameters and clinical outcomes in MHD patients.
The aim of the study was to assess the risk of an inadequate dietary intake of vitamins in a group of CKD patients, not receiving dialysis treatment. Dietary intake is a potentially modifiable factor that may have a role in prevention of vitamin depletion during renal replacement therapy. However, the vitamin status of CKD patients before the initiation of dialysis treatment receives little attention. Menaquinone-4 (MK-4) deficiency seems to be an important risk factor of vascular calcification in haemodialysis (HD) patients. Optimal vitamin K1 and K2 intake as well as serum MK-4 reference value in HD have not been determined yet. The aim of the present study is to assess ascorbed serum MK-4 concentration in relation to daily vitamin K1 and K2 intake in HD patients. Method: Daily vitamin K1 and K2, micro- and macronutrients and energy intake were assessed using 3-day food diary completed by patients and serum MK-4 concentration was measured by HPLC (sensitivity 0.055ng/mL) in 85 HD patients (51 males) and 22 apparently healthy subjects. Results: Daily K2 intake was significantly lower (by 29%) among HD patients, while K1 consumption was similar in both groups. Daily K2 intake in HD patients was significantly associated with fat and protein consumption (r=0.43, r=0.33, respectively). In HD serum MK-4 concentration was frequently detectable in (59% HD and 95% controls, p<0.001) and in those with detectable levels was lower than in the controls (by 42%). A correlation between serum MK-4 levels and mean daily K2 (r=0.38) but not K1 consumption in HD patients. In multiple regression analysis the variability of serum MK-4 levels in MK-4 levels in HD patients were explained by daily K2 intake. Conclusion: Low K2 consumption, mainly due to diminished meat intake, recommended for low phosphorous diet, is the most important cause of decreased serum MK-4 concentrations in HD patients. Low circulating MK-4 level may be enhanced by decreased K1 conversion.

Dietary Intake of Vitamins in Patients with Stages 3-5 of Chronic Kidney Disease

Magdalena Jankowska, Natalia Szupryczynska, Sylwia Malgorzewicz; Michal Wiktór; Bolesław Rutkowski

Method: Micronutrient deficiency affects morbidity and mortality in chronic kidney disease (CKD). There are numerous factors predisposing to vitamin depletion during renal replacement therapy. However, the vitamin status of CKD patients before the initiation of dialysis treatment receives little attention. Dietary intake is a potential modifiable factor that may have a role in prevention of the vitamin deficiency and in an improvement of the prognosis.

Objective: The aim of the study was to assess the risk of an inadequate dietary intake of vitamins in a group of CKD patients, not receiving renal replacement therapy.

Method: 50 CKD patients (22F/28M, age 21-87 year) were enrolled. Mean time of the disease duration was 11.9 year. 19 patients were in stage 3 of the disease, 25 in stage 4 and 5 in stage 5. Mean BMI was 27.5. The vitamin intakes were evaluated using a 24-hour dietary questionnaire, and processed using a computerized database. RDA (recommended dietary allowance) was used as an indicator of an adequate intake, according to the current local dietary norms. 51 healthy volunteers were recruited as a control group.

Results: The adequate dietary intakes of thiamine were found in 38% of CKD patients, riboflavin in 58%, niacin in 66%, pyridoxine in 58%, folic acid in 58%, cyanocobalamin in 58% and vitamin C in 62%. As far as fat soluble vitamins were concerned, adequate vitamin A intakes were found in 62% of patients, vitamin D in 4% and vitamin E in 32%. The adequacy of dietary intakes declined with an increase of the CKD stage. Mean vitamin intakes were significantly higher in a control group. However, several cases of intakes below RDA were identified even in this group.

Conclusion: The prevalence of an inadequate vitamin intakes was high in a studied population of CKD patients. Folic acid, thiamine and vitamin D were the most deficient vitamins in a diet of CKD patients. A dietary surveillance and a supplementation of micronutrients may be advocated since early stages of CKD.
**Conclusion**: The project has contributed to the growing body of knowledge about the effectiveness of art as a method in building secrecy about living with renal disease.

**Results**: Three interventions have been considered:

1. Making a series of short films, blogs and online forum with patients.
2. Using flip cameras or phones enabling full participation. Patients in satellite units in Dorset were encouraged to participate in online programmes. In consultation with a renal consultant and dietitian, a film and new media project was devised with film maker Peter Snelling working with patients attending dialysis sessions. The aims were:
   1. Making a series of short films, blogs and online forum with patients.
   2. Exploring the effectiveness of the film experience in providing a channel for self expression, improved communication and enhanced well being.
   4. Improving patient autonomy, patient and carer understanding and management of diet.
   5. Creating a film about renal disease and management for education purposes.

**Method**: Peter Snelling introduced a range of creative methods involving patients including; film making, online blog, designing and cooking renal recipes with local chef Jyoti. Over six months Peter worked with five patients visiting homes, interviewing family, friends and filming one patient’s journey from dialysis to transplant. Peter filmed without crew encouraging participants to use flip cameras or phones enabling full participation. Patients in satellite units in Dorset were encouraged to participate in online blog and food activities.

**Results**: The films explore tensions between hospital, home life, pressures of diet and fluid restrictions, lost time and different experiences of transplantation. Interim results revealed significant behaviour changes in attitude to managing diet and medication evident in blood results. Anecdotal evidence suggests that artistic process has encouraged more open communication about living with dialysis; improved communication with staff; improved communication with family about diet and fluid management; less evident in blood results. Anecdotal evidence suggests that artistic process has encouraged more open communication about living with renal disease.

**Conclusion**: The project has contributed to the growing body of knowledge about the effectiveness of art as a method in building understanding and communication about chronic health issues and improving patient well-being. The films represent the voice of the patient and has complimented existing renal education practice.

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**FC09 • Blood Makes Noise: A film project with dialysis patients. Coghlan.R. County Hospital Renal Unit, Arts in Hospital Project**

**Renuka Coghlan, A. Ledgard; P. Snelling; A. Coulter; J. Fernandes; J. Taylor**

**Objective**: Chronic kidney disease has a deep impact on family life and patient ability to lead a full and productive life. Issues for patients are: boredom, lack of control, low family awareness of diet, fluid restrictions, low mood. The hospital has a vibrant arts programme. In consultation with a renal consultant and dietitian, a film and new media project was devised with film maker Peter Snelling working with patients attending dialysis sessions. The aims were:

1. Making a series of short films, blogs and online forum with patients.
2. Exploring the effectiveness of the film experience in providing a channel for self expression, improved communication and enhanced well being.
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**Conclusion**: The project has contributed to the growing body of knowledge about the effectiveness of art as a method in building understanding and communication about chronic health issues and improving patient well-being. The films represent the voice of the patient and has complimented existing renal education practice.

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**FC08 • Toll Like Receptor 4 links skeletal muscle with the innate immune system to mediate atrophy in patients with chronic kidney disease (CKD)**

**Giacomo Garibotto, Giuliano Brunori; A. Ledgard; A. Sofia; A. Bonanni; C. Venturaelli; E. D’Amato; E. Parodi; E. Cademartori; D. Verzola**

**Objective**: Muscle atrophy is a frequent complication of CKD and is associated with increased morbidity and mortality. A low-grade systemic inflammatory response is common in CKD patients and is associated with a wasting, suggesting that innate immunity plays a major role. Toll-like receptors (TLRs) play a pivotal role in pathogen recognition and cytokine synthesis in several cell types and tissues, including immune cells and skeletal muscle.

**Method**: We used both ex vivo and in vitro approaches to examine whether TLRs can contribute to the development of inflammatory changes in skeletal muscle of CKD patients. In ex vivo studies, TLRs (TLR2, TLR3, TLR4), as well as their downstream proinflammatory cascade, including IL-6 (RT-PCR and immunohistochemistry), p-p65 and p38 (immunohistochemistry) were evaluated in muscle biopsies (rectus abdomenis) of patients with CKD stage 5 (n=20; age 69±11 yrs, eGFR 7±11) and in 10 controls (7±3; age 63±4 yrs).

As a next step, to study if circulating factors can cause the observed inflammatory events in muscle we studied the effects of uremic serum in a mouse myoblast cell line (C2C12 cells).

**Results**: Muscle from CKD patients showed significantly elevated TLR4 (mRNA and protein +30-50%, p<0.05), but not TLR3 and TLR2. In addition NF-kB signalling (p-p65 and p-p38) was ~6 fold increased (p<0.01) and was associated with elevated expression of the NF-kB-regulated genes IL-6 and phosphorylated p38 (p<0.005-0.02).

In myotubes, uremic serum increased both TLR4 mRNA and protein expression (~2-3 folds vs. basal, p<0.01), as well as protein kinase C (PKC) and phosphorylated p38 (by 2-3 fold vs. basal, p<0.01). TLR4, and also P38 and PKC inhibition significantly abrogated serum-induced TLR4 upregulation, NF-kB activation and inflammatory cytokine secretion.

**Conclusion**: The data indicate that in Stage 5 CKD patients, before the dialytic stage, skeletal muscle recognizes circulating molecules with specific TLRs to initiate an IL-6 transcriptional response via PKC-a dependent pathway. Thus, abnormal TLR4 expression may play a role in the susceptibility of such patients to protein wasting and altered energy regulation.

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**FC11 • Omega-3 polyunsaturated fatty acids attenuate the atrophy-inducing effects of saturated fatty acids in skeletal muscle**

**Myra Woodworth-Hobs, Harold Franch; Russ Price**

**Objectvie**: Saturated fatty acids like palmitate contribute to muscle atrophy in chronic kidney disease, Type II diabetes and other chronic diseases by altering insulin/IGF-1 signaling. Akt is a key modulator of protein balance that inhibits the FoxO transcription factors (e.g., FoxO3) which induce the expression of atrophy-inducing genes (atrogenes) in the ubiquitin-proteasome and autophagy-lysosome systems in skeletal muscle. Omega-3 polyunsaturated fatty acids like docosahexaenoic acid (DHA) have been reported to improve insulin signaling and in some cases, preserve muscle mass in chronic diseases like cancer. This study investigated the effects of DHA and palmitate on Akt/FoxO, atrogene expression and protein degradation in cultured skeletal muscle cells.

**Method**: The effects of palmitate and DHA, alone and in combination, on the rate of protein degradation, atrogene expression and Akt/FoxO signaling were studied in mouse C2C12 muscle cells.

**Results**: Palmitate enhanced protein degradation in myotubes, while co-treatment with DHA prevented the increase. Palmitate reduced the activation state of Akt and increased the nuclear localization of FoxO3 protein. It also increased the mRNAs of two FoxO3 atrogenes targets, the atrogin-1/MAFbx E3 ubiquitin ligase as well as the autophagy mediator Bnip3. DHA attenuated all of these responses. Furthermore, DHA, alone or in combination with palmitate, decreased the ratio of LC3B-II/LC3B-I protein as well as the rate of autophagosomal formation, as indicated by reduced LC3B-II protein in the presence of 10mM methylamine, suggesting an independent effect of DHA on the macroautophagy pathway.

**Conclusion**: These data indicate that palmitate induces myotube atrophy, at least in part, by activating multiple proteolytic system and that DHA counters the wasting effects of palmitate by restoring Akt/FoxO signaling.
Effects of a Low Protein Diet on Skeletal Muscle Protein Synthesis and Degradation in Patients With Chronic Kidney Disease

Giacomo Garibotto, Antonella Sofia, Valeria Cademartori, Emanuele Luigi Parodi, Daniela Verzola
Department of internal medicine, Nephrology Division, Genoa University, Genoa/IT;

Objectives: Chronic kidney disease (CKD) is characterized by progressive loss of muscle mass, an effect which could be accelerated by a low protein diet (LPD). However, to what extent skeletal muscle protein metabolism adapts to a low LPD in CKD patients is still unexplored.

Methods: To assess the effect of LPD on muscle protein metabolism in CKD patients, forearm [2H]phenylalanine kinetics and amino acid balance were evaluated in six CKD patients (4M/2F, age 54±5 yrs, eGFR 18±2 ml/min) assigned to a usual-protein diet (1.2 g/kg/day, 32 kcal/kg/day) (4 weeks), followed by a 4-week LPD (0.55 g/kg/day) period. Studies were performed after an overnight fast (post-absorptive state) and results express basal rates of protein turnover.

Results: After LPD: (a) whole body protein turnover declined only slightly (0.57 ± 0.2 vs. 0.65 ± 0.2 µmol/min/kg, LPD vs. usual protein diet, p = 0.06); (b) forearm protein net balance, i.e. the difference between protein synthesis and degradation decreased markedly (−41%, from 21±2 to 12±2 nmol/min/100 ml, p<0.02); (c) the efficiency by which amino acids are cycled back from protein degradation into protein synthesis increased by 30% (p<0.05); (d) muscle protein degradation underwent a marked decline (from 65±4 to 48±4 nmol/min/100 ml, p<0.02). c) Protein synthesis was unchanged (from 43±4 to 37±4 nmol/min/100 ml, p = NS).

Conclusion: Our data show that CKD patients achieve muscle protein adaptation to a LPD through a marked decrease in muscle protein degradation and enhanced recycling of amino acid derived from catabolism. Protein synthesis appears to be remarkably preserved, which suggests that a 0.55 g/kg LPD is nutritionally safe.

Free communication session 3 • Thursday May 8 2014

Fructose intake: is there association with uric acid levels and inflammation in chronic kidney disease patients on conservative treatment?

Denise Mafra, Fernanda O. Vieira, Viviane O. Leal, Julie C. Lobo, Milena Barzca Stockler-Pinto
Clinical Nutrition, Federal Fluminense University, Antonio Pedro University Hospital, Rio de Janeiro/BR;

Objectives: Fructose is the monosaccharide predominant in honey, fruits and vegetable and is has been used as a sweetener and its consumption increased in the last years. Researchers suggest that high fructose intake has a strong association with plasma uric acid levels and worse prognosis of chronic kidney disease (CKD). The aim of this study was to determine whether patients with CKD on conservative treatment have high fructose intake and if could influence the plasma uric acid levels and inflammation and cardiovascular markers.

Methods: Fifty-two patients with CKD on conservative treatment on stages 3-5 (64.2 ± 9.6 years, 24 men, CrCl 30.5 ± 10.3 mL/min, BMI, 27.3 ± 4.4 kg/m2), were divided into two groups: 1 high fructose intake (> 50 g/day), N=29, 16 men, 13 women, 61.7 ± 9.3 yr and 2. Low fructose intake (< 50 g/day, N=23, 8 men, 15 women, 65.8 ± 9.7 yr). Blood samples were collected to determine plasma levels of uric acid, glucose, inflammatory (interleukin-6 –IL-6, tumor necrosis factor- alpha - TNF-alpha, C-reactive protein - CRP) and cardiovascular markers (monocyte chemotactic protein-1 - MCP-1, intercellular adhesion molecule-ICAM-1 and vascular cell adhesion molecule-VCAM-1). The energy and protein intake were estimated by 24-hour recall by 3 days and fructose intake was estimated by semi-quantitative food frequency questionnaire.

Results: The uric acid levels were 7.7 ± 1.3 mg/dl in patients with high fructose intake and 6.2 ± 1.6 mg/dl in the patients with low fructose intake (p<0.05). There was no association between fructose intake and inflammation and cardiovascular markers, however, fructose intake was significantly associated with uric acid plasma levels (r = 0.38, p<0.007) after adjustment for BMI, energy intake and protein, lipid profile and concentration of adhesion molecules (ICAM-1 and VCAM-1) and MCP-1.

Conclusion: In conclusion, fructose intake is positively associated with serum uric acid levels in patients with CKD on conservative treatment.

Free communication session 4 • Thursday May 8 2014

Habitual adherence to the Mediterranean diet is negatively associated with hospital infection in kidney transplant patients during the early post-transplant period.

Kalliopi A. Poulia, Lydia Tsioul et al.
Department of Nutrition and Dietetics, Laiko Hospital, Athens/Greece;

Objectives: The aim of the present study was to evaluate the level of adherence to MD and its association with hospital infections (HI) and delayed graft function (DGF), in kidney transplant patients, during the early post-transplant period.

Methods: Fifty six patients that received transplant from a deceased donor were included in the present prospective study. Dietary habits were evaluated with a food frequency questionnaire and habitual adherence to the MD with MedDietScore, during the first post-transplant week. Patients were followed till their discharge and data regarding HI and DGF were recorded.

Results: Patients had 50±12 years old and 36(64%) of them were males. Mean MedDietScore was 28 ± 4.0. Patients with HI had significantly lower MedDietScore (25.8±2.5 vs. 28.4±1.4, p<0.015). In multivariate models, MedDietScore was negatively associated with HI, after adjusting for gender, age, body mass index and pre-transplant diabetes mellitus (DM) (OR=0.739, 95%CI: 0.555-0.984). This association remained significant after further adjusting for the development of DM during the post-transplant period (OR=0.753, 95%CI: 0.571-0.992).

Conclusion: In conclusion, patients had medium adherence to the MD. Greater adherence to the MD was negatively associated with HI during the early post-transplant period, after adjusting for several confounders.
Objectives: To report on the preliminary results of an observational study (called “Renire”) in which a cohort of overweight/obese CKD patients was followed up during an intensive, highly personalized weight loss program.

Method: A cohort of 41 CKD patients were followed up on their attempts to lose weight. The patients were left free to choose between 3 different dietary approaches: 1) “self made”, 2) traditional, 3) “Coaching Biomis”, and were followed up by the same nephrologist through periodical clinical evaluation, biomimicry test and biochemical controls. Data were collected prospectively.

Results: Out of 41 patients only 16 majorly chose the “Coaching Biomis” diet, a coach-assisted, intensive weight loss program, consisting in periods of rapid weight loss and maintenance, the diet is completely salt and sugar free, and combined different foods on the basis of their biochemical properties. Of them, 19/31 completed at least 2 months of follow up; they were aged 32-74 yrs, with a median BMI 31.6 kg/m2 (range 29-44.7), median serum creatinine 1.3 mg/dl (range 0.5-3.7), Kidney disease: glomerular 5/19, vascular-intestinal 11/19, ADPKD 2/19, diabetes 1/19. After a median follow up of 7 months (range 2-10), median weight loss in this subgroup of patients was 9.6 Kg (5.6-24) and median delta BMI of -3.3. Bioimpedance assessment demonstrated a stability of lean mass throughout the diet (median delta Lean Tissue Index =+1 Kg/m2).

Conclusion: This data suggests that while pomegranate extract supplementation may reduce blood pressure in MHD patients, it does not improve other markers of cardiovascular risk, physical function or muscle strength.

Free communication session 4 • Thursday May 8 2014

FC17 • Effects of Pomegranate Extract Supplementation on Cardiovascular Disease Risk and Physical Function in Hemodialysis Patients

Kenneth Wilund, Pei-Tzu Wu, Peter Fitchen, 1 Brandon Kistler, Mohamed Ali 1, Hae Ryong Chung, Jin-Hee Jeong, Shane Phillips 1, Bo Fernhall 1

Department of Kinesiology and Community Health, 1 Division of Nutritional Sciences, University of Illinois at Urbana-Champaign, Urbana,USA; 2 Department of Physical Therapy, University of Illinois-Chicago, Chicago,USA

Objectives: A recent study in hemodialysis (HD) patients found that consumption of pomegranate juice significantly lowered serum markers of inflammation and oxidative stress, cardiovascular atherosclerosis, and hospitalizations due to infection. Despite these potential benefits, pomegranate juice is normally contraindicated in hemodialysis patients because its high potassium content could potentially contribute to hyperkalemia-induced cardiac dysfunction. The purpose of this study was to evaluate the effect of 6-month oral supplementation with a pomegranate extract containing a high concentration of antioxidant polyphenols, but low potassium content, on cardiovascular risk, physical function, oxidative stress and inflammation in patients with renal failure undergoing maintenance hemodialysis (MHD) therapy.

Method: 33 MHD patients (age =54.3±6.2 years) were randomized to receive either a 1000mg pomegranate extract (POM, n=16) or placebo (CON, n=17) daily for 6 months. At baseline and 6 months, cardiovascular risk was assessed by measuring arterial structure and function using a combination of vascular ultrasound and arterial tonometry, as well as circulating markers of oxidative stress and inflammation. In addition, a variety of tests were used to assess muscle strength and physical function.

Results: Systolic and diastolic blood pressure (BP) were reduced by 24.2±13.7 mmHg and 10.9±5.3 mmHg, respectively, in POM (p<0.05), but did not change in CON. However, the BP differences in the POM group were no longer significant after controlling for baseline BP and the 21% increase in activity, a measure of antioxidant capacity, was decreased by 26% (p=0.05) in POM, compared to CON. However, pomegranate supplementation had no effect on other markers of CVD risk (e.g., B-stiffness index, augmentation index, pulse wave velocity, or carotid intima-media thickness (CIMT)), serum markers of inflammation and oxidative stress, or measures of physical function and muscle strength.

Conclusion: This data suggests that while pomegranate extract supplementation may reduce blood pressure in MHD patients, it does not improve other markers of cardiovascular risk, physical function or muscle strength.

Free communication session 5 • Friday May 9 2014

FC18 • The effect of nutritional counseling in maintenance hemodialysis patients

Cristina Garagarza, Ana Valente; Cristina Caetano, Telma Oliveira; Lisboa/P

Objective: Monitoring nutritional parameters is an integral part of hemodialysis (HD) patient’s treatment program. The purpose of this study was to evaluate the impact of the nutritional counseling on the biochemical parameters and fluid overload in HD patients.

Method: This was a longitudinal, multicenter study with 419 patients on maintenance HD. The study intervention consisted of personalized nutritional counseling (NC) with the subsequent evaluation of the clinical parameters before and after the consultation.

The statistical analysis was performed with SPSS®. A p<0.05 was considered significant.

Results: The patient’s mean age was 64±13.8 years, mean BMI was 26.2±6.05 kg/m2 and mean HD time was 53±61±7.9 months. Of the whole sample, 53.9% were male and 38.8% were diabetics. Regarding the data collected before NC, one and three months after we obtained respectively, the following values: normalized protein catabolic rate (nPCR) >1 g/Kg/d = 67%, 74.2%, 73.7% (p=0.004); potassium < 5.5mmol/l = 49.5%, 53.9%, 60.1% (p=0.001); phosphorus between 3.5 and 5.5 mg/dl = 45.8%, 47.2%, 58.8% (p=0.002); Calcium/Phosphorus ratio = 50 mg/dl = 68.8%, 75.3%, 80.4% (p=0.001); presence of overhydration (OH/ECW pre-15%) = 23.2%, 23.7%, 22.4% (p=0.878); mean interdialytic weight gain % (IDWG%) = 3.4±1.75, 3.4±1.71, 3.4±1.78 (p=0.310). Before NC serum albumin mean was =3.9±0.41 g/dl and three months after the mean remained the same (p=0.383).

Conclusion: NC resulted in significant decrease in the prevalence of hyperkalemia, hypophosphatemia, hyperphosphatemia and also showed an improvement in the Calcium/Phosphorus ratio and nPCR. Our study suggests that dietetic intervention contributes to the improvement of important nutritional parameters in patients receiving dialysis treatment.

FC19 • Comparison of 3 methods of sarcopenia in chronic kidney disease: prevalence and association with mortality

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Objective: Sarcopenia is a syndrome characterized by progressive decline in both muscle mass and muscle function, and it has been associated with adverse outcomes. Chronic kidney disease (CKD) has particular aspects related to skeletal muscle impairments predisposing patients to sarcopenia; however, this condition has been scarcely investigated in this population. Standardized and reliable methods for the diagnosis of sarcopenia in CKD are still warranted. Thus, we aimed to investigate the prevalence of sarcopenia and compare the prognostic power of three different methods to predict mortality in non-dialysis-dependent (NDD) CKD patients.

Method: We evaluated 287 NDD-CKD stage 3-5 patients (59.9±10.5 years; 62% men; 49% diabetics; BMI 29.3±5.9 kg/m2). Sarcopenia was defined as reduced handgrip strength (<30th percentile of a population-based reference adjusted for sex and age) in combination with: A) midarm muscle circumference adequacy (≥90%); B) presence of muscle atrophy by subjective global assessment (SGA) or C) reduced skeletal muscle mass index (<16.76kg/m2 men; <9.76kg/m2 women) estimated by bioelectrical impedance analysis. Patients were followed during 23 (13-32) months for all-cause mortality.

Results: The prevalence of sarcopenia was 9.8% (A); 9.4% (B) and 5.9% (C). The kappa agreement between the methods were 0.69 (A vs B), 0.49 (A vs C) and 0.46 (B vs C). During the follow up 51 (18%) patients died. The frequency of sarcopenia was significantly higher among non-survivors regardless of the method. Moreover, the non-survival group showed lower values of albumin, nPNA, phase angle, hemoglobin and GFR. Sarcopenia, diagnosed by the three methods, was associated with lower survival according to the Kaplan-Meier analysis. In the Multivariate Cox-regression adjusted for age, BMI, GFR, albumin and Charlson comorbidities index, only sarcopenia diagnosed by method C was an independent predictor of mortality (hazard=3.0; 95% confidence interval 1.3-7.1;P<0.01).

Conclusion: The prevalence of sarcopenia in NDD-CKD patients varied depending on the method applied. Sarcopenia defined as reduced handgrip strength in combination with reduced skeletal muscle mass index estimated by bioelectrical impedance analysis was the one that best predicted mortality in this population.
The malnutrition-inflammation score predicts mortality in chronic kidney disease patients on conservative therapy

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Objective: Although the malnutrition-inflammation score (MIS) has been extensively studied and validated as a marker of poor outcomes in chronic kidney disease (CKD) patients undergoing renal replacement therapy (RRT), its applicability for this purpose was still not tested in CKD patients on conservative therapy.

Method: We evaluated 300 CKD stages 3-5 patients (median age 61 [53-68] years; 63% men) before RRT initiation. Patients were followed during 23 (13-32) months for all-cause mortality.

Results: Patients were divided into two groups (MIS < MIS = 4) and those with higher MIS (191 patients, 64%) had a worse nutritional status (i.e. lower, lean body mass index, fat body mass index, handgrip strength, phase angle, body cell mass and n/PNA). Additionally, patients with MIS = 4 had a worse glomerular filtration rate (GFR), lower hemoglobin levels, and a higher inflammatory status (i.e. higher levels of fibrinogen and C-reactive protein). During the follow-up there were 56 deaths, and MIS (considered as continuous or categorized variable) was associated with mortality in the Cox analysis, in the crude model (HR: 1.10 [95% CI: 1.03 - 1.18], and HR: 2.42 [1.22 - 4.79]; respectively for continuous and categorized MIS) and this association remained even after the adjustment for potential confounders such as age, gender, GFR, and Charlson comorbidity score (HR: 1.08 [95% CI: 1.01 - 1.16], and HR: 2.07 [1.02 - 4.23]; respectively for continuous and categorized MIS).

Conclusion: The malnutrition-inflammation score was associated with a higher hazard for death in CKD patients before the initiation of renal replacement therapy.

Free communication session 5 • Friday May 9 2014
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Objective: Despite consistent evidence linking excessive dietary sodium intake to adverse outcomes in people with chronic kidney disease (CKD), studies indicate that approximately 80–90% consume more than recommended amounts. Determinants of excessive intake are difficult to assess and likely vary in different populations. We aimed to investigate sodium intake in a large cohort of people with CKD stage 3 in England to identify the demographic characteristics of subgroups with high sodium intake as well as the specific foods that contribute to excessive sodium intake.

Method: 1,729 patients with CKD stage 3 were recruited from 32 general practices for the Renal Risk in Derby Study (RRID). Sodium intake was estimated from early morning urine specimens using an equation validated for this study population. Frequency of intake of 12 salty foods was assessed by a food frequency questionnaire (FFQ).

Results: Mean estimated sodium intake was 110 ±33.8 mmol/day and 60% had an intake above the National Kidney Foundation recommendation (<100 mmol/day or <6g/salt/day). Subgroups that had a greater percentage of participants with sodium intake above the recommendation were: men, those aged less than 75 years, with central obesity or diabetes as well as people with some formal educational qualification and previous or current smokers. In a multivariable analysis gender, age, waist to hip ratio (WHR) and diabetes mellitus (DM) status were the main independent determinants of an excessive sodium intake. Specific food items that contributed to excessive intake were table and cooking salt, salted snacks, hard cheeses, processed meet and tinned fish. The most important sources of sodium varied by subgroup.

Conclusion: A high prevalence of sodium intake above the recommendation was detected and the independent determinants were age, gender, WHR ratio and DM. Specific food items that contributed to excessive intake were also identified and varied in different subgroups. These data will be helpful in informing strategies to target dietetic advice to those most likely to have high sodium intake and will allow dieticians to focus on the most likely sources of sodium in different subgroups.
and for the 10-90th percentiles, respectively). Remarkably, 4.5% of patients had 
LTI > 90th percentile and this was associated with increased mortality (1.550 and 1.286 for the <10th 
Hazard ratios (HR) were estimated by Cox proportional Hazard model (Table): highest 
47% of patients had low LTI despite having around normal BMI (18.5 - 24.9 kg/m2). Main predictors of low LTI were male gender, 
We studied 37,350 HD patients. Median (IQR) LTI and FTI were 12.2 (10.3-14.5) and 9.8 (6.6-12.4) kg/m2, respectively. 
Results: We studied 246 HD patients (154M:92F; 60.7±14.6 yrs). The prevalence of anorexia assessed by patients' self-assessment 
Intradialytic protein supplementation reduces inflammation and improves physical function in maintenance hemodi-
Conclusion: In the relationship between BC and outcome in hemodialysis patients, increases of LTI or FTI up to the 90th percen-
tile appear to be protective regardless of the corresponding FTI or LTI levels.

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*p<0.05


tation is an affordable intervention to improve the health and quality of life of MHD patients.

Free communication session • Friday May 9 2014

FC28 • Reverse epidemiology and body composition in dialysis patients - Towards resolving the enigma

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Objective: In hemodialysis (HD) patients, low body mass index (BMI) is related to mortality whereas high BMI appears to have a protective effect, a phenomenon labelled “reverse epidemiology”. However, it is unknown which components of body composition (BC), fat or lean body mass, contribute to outcome. Direct measurements of BC are now available for a large cohort of HD patients, a population prone to protein-energy wasting. In this international observational study we explored the associations of lean and fat tissue mass with mortality.

Method: We analysed data from the Fresenius Medical Care (FMC) Europe subset of the international MONitoring Dialysis Outcomes (MONDO) initiative. FMC Europe archives a unique repository of BC measurements in HD patients from 17 countries determined by whole-body multifrequency bioimpedance. Lean Tissue Index (LTI) and Fat Tissue Index (FTI) are the respective tissue masses normalized to height in meters squared. Age and gender-adjusted LTI and FTI below the 10th percentile of normal population were defined as “low”. The relationship between low LTI and FTI and all-cause mortality was studied by Kaplan Meier analysis and Cox regression with appropriate adjustments.

Results: We studied 37,350 HD patients. Median (IQR) LTI and FTI were 12.2 (10.3-14.5) and 9.8 (6.6-12.4) kg/m2, respectively. 47% of patients had low LTI despite having around normal BMI (18.5 - 24.9 kg/m2). Main predictors of low LTI were male gender, HD vintage, diabetes, and inflammation. Hazard ratios (HR) were estimated by Cox proportional Hazard model (Table): highest HR was for the combination of low LTI and low FTI (2.856); lowest HR was for LTI and FTI in the 10-90th percentile (1.000). Interestingly, 4.5% of patients had LTI > 90th percentile and this was associated with increased mortality (1.550 and 1.286 for the <10th and for the 10-90th percentiles, respectively).

Conclusion: In the relationship between BC and outcome in hemodialysis patients, increases of LTI or FTI up to the 90th percentile appear to be protective regardless of the corresponding FTI or LTI levels.
**FC31 • Oral Nutritional Supplements in Hemodialysis Patients**

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**Objective**: Protein-energy malnutrition (PEM) occurs frequently among end-stage renal disease patients undergoing hemodialysis (HD); estimates are PEM occurs in about 50% to 70% of HD patients. PEM is associated with increased risk of hospitalization and mortality, while provision of supplemental protein in the form of a single serving oral nutritional supplement (ONS) during HD has been associated with improved outcomes. We assessed the impact of ONS on mortality, morbidity (indexed by missed dialysis sessions), and nutritional status (indexed by longitudinal albumin levels, normalized protein catabolic rate [nPCR], and body weight) in HD patients at a large dialysis organization (LDO).

**Method**: A pilot program providing ONS to 3,399 patients with serum albumin ≥3.5 g/dL was launched in 408 LDO facilities from September 2012 through January 2013. ONS patients (those who received at least 1 dose) were propensity matched 1:1 to similarly hypoalbuminemic controls who dialyzed at facilities in which ONS was not offered on the basis of baseline albumin, hemoglobin, and phosphorus; month of entry; modality; demographics (age, sex, race, etiology of ESRD, access type, body mass index, vintage); and comorbidities (diabetes, Charlson score, hospitalization in prior month). Patients and controls were followed for death, rates of hospitalization and missed treatment, time to albumin recovery, and nutritional markers.

**Results**: Compared to controls, ONS patients had a 69% lower relative risk of death (HR 0.31[0.25-0.39], p<0.001) and 23% lower missed treatment rate (IRR 0.77[0.72-0.82], p<0.001). ONS patients also had higher post-dialysis weights and nPCR throughout follow up. Time to albumin recovery (single value >4.0 or 2 consecutive months values=3.9) was slower among ONS patients versus controls.

**Conclusion**: ONS provided per treatment is associated with markedly and significantly better survival and missed treatment rates, as well as improvements in some nutritional indices. These data argue persuasively for administration of ONS to hypoalbuminemic dialysis patients.

**FC32 • Ghrelin variants, nutrition and obesity in patients after renal transplantation**

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**Objective**: Obesity results from simultaneous effects of negative environmental (abundant energy intake, low physical activity), hormonal and genetic factors. Ghrelin controls growth hormone secretion and affects eating habits and the body's energy balance.

We have analyzed a metabolic effect of ghrelin variants Arg51>Gln and Leu72>Met in renal transplant patients (Tx) on dietary/exercise intervention.

**Method**: For a period of 24 months we monitored a total of 298 transplanted (Tx) pts (M 156/ F142, aged 18-76 yrs, BMI >30 kg/m2) after first cadaveric kidney transplantation (Gt I). Control group (Gt II) consisted of 292 non-obese Tx pts. All pts were treated with standard immunosuppression. Ghrelin polymorphisms were analyzed by PCR (oligos 5’ gctgccacagaagcataaaa and 5’ aggacatgggggcttagagt) and restriction analysis (SacI for Arg51>Gln and BseNI for Leu72>Met). Intervention study involved diet modification and increased physical activity.

**Results**: The ghrelin variant Leu72>Met was associated with elevated levels of HDL-cholesterol. Compared to Leu/Leu homoyzogotes, the Met carriers had lower HDL-cholesterol concentrations both in females (1.44±0.33 mmol/L versus 1.51±0.36 mmol/L, p<0.05) and males (1.18±0.29 mmol/L versus 1.24±0.35 mmol/L, p<0.05).

In interventional part of the study, carriers of Leu72 allele lost a mean of 7 kg whereas Met72Met homoyzogotes only 1.9 kg (p<0.05). Biochemical parameters analyzed (lipid parameters, insulin, blood glucose, NEFA, apo isoform, hs CRP, IL-6, IL-10, TNFa, proteinuria, mean blood pressure and GFR) did not changed in association with the ghrelin variants.

**Conclusion**: Ghrelin variants may have an effect on BMI and waist/hip ratio after renal transplantation. Leu72>Met variant in the ghrelin could be a new determinant of HDL-cholesterol concentration and genetic determinant of body weight loss responsivity to dietary and physical intervention.

The study was supported by Grant IGA NT 13139-3/2012
Higher Dietary Fiber Intake is Associated with Reduced Inflammation and Predicts Better Cardiovascular Outcomes in PD Patients

**Objective:** The UK Renal Association guidelines recommends that all patients diagnosed with Acute Kidney Injury (AKI) receiving renal replacement therapy (RRT) should be seen by a dietician within 24 hours of admission and should be prescribed the recommended nutritional support.

We wanted to identify the percentage of patients with AKI who required RRT, seen by a renal dietitian within 24 hours of their admission, the percentage of patients who were able to meet at least 70% of their energy nutritional requirements and to compare the Malnutrition Universal Screening Tool (MUST) score with the ability of patients to meet their estimated energy requirements.

**Method:** A prospective audit was conducted between October 2011 and January 2012, on all new patient admissions on our renal wards (bed capacity 32) in our hospital (critical care patients were excluded). All patients had to the MUST score recorded by the nursing staff and were assessed individually by a renal dietician who estimated the patient’s nutritional requirements and their actual intake.

**Results:** There were 476 admissions to the renal wards in an in-patient stay greater than 48 hours. Forty-six (10%) patients had AKI who required RRT. Thirty-five (76%) of these patients were seen within 24 hours of admission to the renal wards by a renal dietitian. Twenty-six patients were able to meet more than 70% of their estimated energy requirements. Five out of 20 patients who were meeting less than 70% of their energy requirements were identified at risk of malnutrition using MUST.

**Conclusion:** Forty-three per cent of patients with AKI requiring RRT were meeting less than 70% of their estimated energy requirements, which mirrors current national trends for hospital related malnutrition. MUST appeared to underestimate malnutrition in AKI patients requiring RRT, although these conclusions are based on a small sample size. More research is needed to establish if meeting at least 70% of patients estimated energy requirements in AKI requiring RRT affects clinical outcomes, length of hospital stay and mortality.

Higher Dietary Fiber Intake is Associated with Reduced Inflammation and Predicts Better Cardiovascular Outcomes in PD Patients

**Objective:** Higher dietary fiber intake with inflammation and cardiac markers and determine whether higher dietary fiber intake may be associated with better cardiovascular outcomes in peritoneal dialysis (PD) patients.

**Method:** We estimated dietary fiber intake in a cohort of 219 chronic PD patients using a locally validated 7-day food frequency questionnaire after which patients were followed prospectively for 4 years. The primary endpoint was first major adverse cardiovascular event (MACE).

**Results:** Higher dietary fiber intake was associated with lower inflammation as denoted by various inflammatory markers including high sensitive C-reactive protein (hs-CRP) (P=0.03), interleukin-6 (IL-6) (P=0.05), fetuin-A (P=0.01) as well as serum albumin (P=0.04). In addition, higher dietary soluble fiber intake was associated with lower cardiac troponin T (P=0.005) and N-terminal pro-brain natriuretic peptide (NT-pro-BNP) (P=0.02). Higher dietary fiber intake was inversely associated with number of components of malnutrition, inflammation and atherosclerosis (MIA) syndrome present (P=0.003). During follow-up, 84 patients had died and 130 developed one or more major adverse cardiovascular events (MACE). On univariate Cox regression, higher dietary fiber intake (every gram increase) was associated with a lower risk of MACE (hazard ratio [HR], 0.87, 95% confidence intervals [CI], 0.80-0.94, P=0.001). In the multivariable Cox regression analysis, higher dietary fiber intake retained significance in predicting a lower risk of MACE (HR, 0.90, 95% CI, 0.81 - 0.99, P=0.03) independent of other clinical, demographic, biochemical, hemodynamic, adequacy parameters as well as after adjusting for dietary protein and energy intake. The significance was well retained (HR, 0.89, 95% CI, 0.81 - 0.97, P=0.008) even after further adjusting for inflammatory markers including hs-CRP IL-6, fetuin-A, serum albumin, and cardiac markers including cardiac troponin T and NT-pro-BNP.

**Conclusion:** Higher dietary fiber intake predicts a lower risk of developing MACE and is associated with lower inflammatory response, less subclinical myocardial injury and MIA syndrome in PD patients. The association between higher dietary fiber intake with a lower risk of MACE appears not entirely explained by decreased inflammatory response and subclinical myocardial injury. Further study is needed to elucidate the exact mechanisms by which high dietary fiber diet may prevent MACE in PD patients.

Sleep quality, daytime sleepiness and their relationship with appetite and nutritional parameters in patients undergoing hemodialysis

**Objective:** Sleep disorders are common among hemodialysis (HD) patients. Although the relationship between sleep quality and nutritional status is well established in other populations, there are only few data regarding this issue in patients undergoing HD. We aimed to evaluate sleep quality and complaints of daytime sleepiness as well as their relationship with anthropometric parameters, appetite and nutritional status in HD patients.

**Method:** This is a cross-sectional study that comprised HD patients from 6 dialysis centres. Sleep disorder was assessed by Pittsburgh Sleep Quality Index (PSQI) and daytime sleepiness by Epworth Sleepiness Scale (ESS). appetite was assessed by Appetite and Diet Assessment Tool (ADAT), nutritional status by Subjective Global Assessments (SGA) and Body Mass Index (BMI - cut points 23 kg/m2 for malnutrition and 30 for obesity). Waist circumference (WC) was also obtained in order to assess central obesity.

**Results:** We evaluated 158 HD patients (57% male; aged 50±13.5 years old, HD vintage 50.7±47.5 months). Mean PSQI score was 6.0±3.9 and 57% were considered poor sleepers (PSQI>5), whereas average ESS score was 7.61±5.3 and 15% were diagnosed with excessive daytime sleepiness (ESS>10). PSQI slightly correlated with age (r=0.16, P=0.05), but no correlations were found between PSQI and ESS scores with the nutritional variables. Prevalence of malnutrition, obesity and central obesity was similar among patients with or without sleep disorders. However, the prevalence of patients who reported fair, poor or very poor appetite was significantly higher among poor sleeper participants (22% versus 9%, P=0.02).

**Conclusion:** The prevalence of sleep disorders was high in this HD population and was not related to anthropometric parameters neither to nutritional status. However, poor sleeper patients were more likely to report impaired appetite.
Objective: Biomedical impedance analysis (BIA) is now largely used in dialysis unit to assess hydration status and body composition. In healthy population it had been shown that results could be influenced by ethnicity: BIA analyzer propose or not validation in various population and/or population-specific equations. Using Body Composition Monitor® (Fresenius medical care) Lean and Fat tissue index of the patient (LTI, FTI) are compared with a database based on a healthy caucasian population. Nutritional support in patients with low LTI could be based on this comparison (LTI lower than 10th percentile of the normal population).

Method: We compared, in 131 HD patients, in good nutritional condition based on standard nutritional evaluation (mean age 57±14 years, BMI 26.5±3 kg/m2, albumin 38±3 g/L, prealbumin 31±0.8 mg/L, median CRP 7 mg/L, nPNA 1 g/kg BW and Kt/V 1.57), BIA analysis using BCM before a mid week dialysis session in African-origin (AF, n=51, 32 male) and in Caucasian patients (CA,n=80, 43 male). Measurements were done by 2 examinators according to the manufacturer quality- procedure good practice.

Results: Predialysis biological values and Kt/V were not significantly different in AF versus CA, except for creatinin in AF vs CA female (84.5 ± 135 vs 68±1±152 umol/L; p< 0.002) and albumin level (male - 39±3 vs 37±3 g/L, female 38±3 vs 36±3 ; p< 0.01). In opposition with these biological results, mean LTI values were significantly lower in AF in male (13.4±2.9 vs 15±3.6 kg/M2) and in female (10.6±2.8 vs 12.3±2.4 kg/M2; p< 0.001). 32/51 AF patients are located under the 10th percentile (median LTI difference to reference: - 85 vs 0.95 in CA patients).

Conclusion: We conclude that in absence of specific equations and/or specific reference range according to ethnicity, BCM results should be interpreted with caution to guide nutritional status evaluation in non-caucasian population.

Poster session 1 • Wednesday May 7 2014

P005

Biomedical impedance analysis (BIA) and ethnicity in dialysis patients

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AURA Nord, St Ouen/E; 1 Aurad Aquitaine, Gradignan/F; 1 Nephrology dialysis unit, Pellegrin Hospital, Bordeaux/F;

Objective: Biomedical impedance analysis (BIA) is an important component of chronic renal failure treatment (CRF). At each stage (conservative, dialysis, transplantation) right and correct nutrient intakes allow to get better results in terms of: control of metabolic alterations, maintenance / achievement of a satisfactory nutritional status, possible reduction of renal disease progression and reduction of complications. More and more patients are looking to the web to search for information regarding their diet.

Method: For this reason we launched a website dedicated to this topic. In this first phase we put all the brochures for patient education developed over the years and distributed at our center. All the information are written in Italian. The website includes a section dedicated to bronomatological evaluation of common foods and of recipes sent by patients. There is a format for contacts and questions regarding diet aimed to be a means for communication with patients.

Results: The website was launched on November 20, 2012 and at the moment it is been visited 2569 times. We hope that the website can be useful for patients and in the same time can increase the public opinion on the importance of the dietician as the professional dedicated in the nutritional management of patient with CRF.

Poster session 1 • Wednesday May 7 2014

P007

A new way to communicate with patients with kidney disease: the web

Franca Pasticci; Antonio Selvi 1

Coccaeno/I; 1 Nefrologia e Dialisi, Ospedale Media Valle del Tevere, USL 1 Umbria, Todi/I;

Objective: Dietary therapy is an important part of chronic renal failure treatment (CRF). At each stage (conservative, dialysis, transplantation) right and correct nutrient intakes allow to get better results in terms of: control of metabolic alterations, maintenance / achievement of a satisfactory nutritional status, possible reduction of renal disease progression and reduction of complications. More and more patients are looking to the web to search for information regarding their diet.

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Poster session 1 • Wednesday May 7 2014

P008

Dietary intake and knowledge about risk nutrients in kidney disease of Dialysis and non-dialysis patients

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Objective: The purpose of this cross-sectional study was to assess dietary intake and knowledge about risk nutrients in kidney disease (potassium and uric acid rich foods) of chronic renal failure patients with and without dialysis.

Method: A total of 105 purposely selected subjects from three different specialized hospitals located in Dhaka city of Bangladesh were included in this study of them 59 patients were on dialysis and 46 patients were without dialysis. An interviewer administered questionnaire was developed to obtain demographic and dietary data. Dietary intake was obtained by 24-hour recall method.

Results: Half of the dialysis and non-dialysis patients were in middle adulthood age group. A female preponderance was observed among the participants. Only 8.5% of the patients on dialysis were overweight and 39% were overweight while prevalence of underweight and overweight in non-dialysis patients was (17.4%). More than 40% of patients have no knowledge about potassium rich foods. Majority (about 70%) of the patients do not have knowledge about uric acid rich foods irrespective dialysis condition. Mean intake of foods from different food groups were not significantly different between dialysis and non-dialysis patients except for egg consumption. Estimated average energy intake was about 17kcal/kg/day in dialysis patients and 18kcal/kg/day in non-dialysis patients. Mean protein intake was 0.95g/kg/day in dialysis and 0.85g/kg/day in non-dialysis patients. No significant difference regarding macro and micro nutrients intake was observed between dialysis and non-dialysis groups. All the patients in dialysis and non-dialysis group had lower intake of energy than the recommended level About 68% of dialysis patients and 76% of non-dialysis patients had protein intake below the recommended level. About 80% of the patients in both group had below intake of other essential nutrients for kidney patients like iron, thiamin, niacin, and vitamin C.

Conclusion: Study findings point out that the prevalence of overweight was high in dialysis patients while malnutrition was prevalent in non-dialysis patients. Knowledge about potassium and uric acid rich foods sources was very poor. Nutrients consumption among both groups was also grossly inadequate and below the recommended level for kidney patients.

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P006

Low Serum Albumin is Associated with Depression in Patients on Maintenance Haemodialysis

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Objective: Depression & Anxiety increase morbidity & mortality in Maintenance Haemodialysis (MHD) patients (pts). We studied their prevalence & relation to serum albumin & other factors in asymptomatic MHD outpts.

Method: Depression & anxiety (40 pts on MHD) were identified by Patient Health Questionnaire (PHQ-9) & Generalized Anxiety Disorder Assessment (GAD-7). We correlated scores with demographics, dialysis duration, adequacy (Kt/v), Charlston Comorbidity Index & Subjective Global Assessment (SGA).

Results: Of 40 pts (mean age 63 yr, 65% male, 55% Chinese) on MHD (median 24 months, range 6-96) ESRD cause: NIDDM 77%, diabetes 23%, obesity 10%, HTN 12%, DM 11%, CKD 44%. Measurements were done by 2 examinators according to the manufacturer quality-procedure good practice.

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Impact of anorexia nervosa on graft survival in transplant recipients

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Objective: Anorexia nervosa (AN) is an eating disorder, which can be associated to end stage renal disease. The impact of AN at the time of kidney transplantation (KT) on graft outcome has not been described.

Method: In this multicenter retrospective study, clinical and biological data from 3 groups were obtained from KT to 5-year follow-up: patients (pts) with AN at time of KT; pts with low BMI at time of KT (LoBMI); pts with normal BMI at time of KT (NoBMI). The 3 groups were matched for age, KT center and period of KT, with a ratio of 3 pts with LoBMI for each pt with AN. Differences between groups were assessed by appropriate statistical tests. Survival analysis techniques were used to identify risk factors for loss of graft function.

Results: One hundred thirty seven pts (all women) were recruited from 4 French centers in this study including 19 AN, 59 LoBMI, 59 NoBMI. AN was significantly associated with lower graft survival (HR 5.5 CI95 [3.4-8.9], p=0.005), while graft survival was not different between LoBMI and NoBMI. In the AN group, BMI increased until 3 months after transplantation and then stabilized during the 1-year follow-up (17.0±1.3 kg/m² vs 17.8±0.9 kg/m², n=9) whereas it increased gradually in both LoBMI and NoBMI (respectively 17.1±1.0 kg/m² vs 21.5±1.5 kg/m² and 19.3±1.9 kg/m² vs 22.7±2.7 kg/m²). There was more cardiovascular disease in the AN group than in LoBMI and NoBMI respectively (37%, 6% and 7% during the 5-years follow-up p=0.001). There were no differences in delayed graft function, biopsy proven acute rejection, CMV infection, bacterial infection, cancer, bone disease, diabetes and in psychiatric diagnosis other than AN among groups.

Conclusion: In this retrospective study, pts with AN had a lower graft survival than pts with LoBMI and NoBMI. Pts with AN gained less weight after KT, and had more cardiovascular events post KT. Anorexia nervosa may be considered as a pejorative factor for renal transplantation.

Intradialytic protein supplementation does not reduce blood pressure, treatment efficiency, or increase gastrointestinal symptoms in maintenance hemodialysis patients

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Objective: Eating during dialysis is often restricted in US clinics due to concerns that include hemodynamic stability, treatment efficiency, and gastrointestinal (GI) symptoms. To evaluate these concerns, the effect of intradialytic protein supplementation during maintenance hemodialysis treatment was compared to control.

Method: Seven maintenance hemodialysis patients (4 males, 4 with diabetes, age 47±13 years) were selected to receive either 0 or 30 grams of whey protein in 4 ounces of water (WHEY) or their normal hemodialysis treatment (CON) in a random order on the same treatment day one week apart. The WHEY beverage was consumed in a 15-minute window starting 30 minutes into hemodialysis treatment. Blood pressure (BP) was measured in duplicate every 15 minutes using an automated cuff throughout the treatment. If duplicates differed by more than 5 mmHg additional measurements were obtained. The efficiency of each treatment was calculated using single pool Kt/V. Finally, at the end of each treatment a 7-point Likert scale was used to determine the severity of GI symptoms experienced during the treatment session. BP and GI symptoms were compared (paired t-test).

Results: There was no difference in the lowest (CON 84.4±19.8 vs WHEY 79.5±15.0 mmHg, p = 0.203) or the final standing mean arterial BP (CON 100.1±20.5 vs WHEY 93.6±25.0 mmHg, p = 0.213). During each treatment, two of seven participants (29%) required saline intervention due to hypotension. Single pool Kt/V was not different between the treatments (CON 1.39±0.35 vs WHEY 1.32±0.31, p = 0.389). For GI symptoms there was no difference in either nausea (CON 1.4±1.1 vs WHEY 2.0±1.7, p = 0.231), cramping (CON 2.6±2.7 vs WHEY 2.1±2.0, p = 0.356), bloating (CON 1.0±0.3 vs WHEY 1.4±1.1, p = 0.356), or hunger (CON 4.0±2.3 vs WHEY 3.1±1.6, p = 0.399).

Conclusion: We found that intradialytic protein supplementation did not reduce BP, treatment efficiency, or induce greater GI symptoms as compared to treatment without supplementation. Additional work should be done to outline best practices in this controversial area.

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Objectives: Foods consumed away from the home are associated with higher augmentation index (Aix) and augmentation pressure (AP).

Protocol: Foods consumed away from the home (FAFH) are of particular concern in maintenance hemodialysis (MHD) patients because they tend to be higher in phosphorus, sodium, and saturated fat. Our objective was to determine dietary intake at the beginning (BM) and the end of the month (EM) and to classify this intake by the location in which food was purchased. Finally, we intended to see if any relationship existed between purchase location and measures of vascular function.

Method: Thirty-two MHD patients underwent baseline testing that included applanation tonometry to measure cardiovascular factors for loss of graft function.

Results: There was no difference in the lowest (CON 84.4±19.8 vs WHEY 79.5±15.0 mmHg, p = 0.203) or the final standing mean arterial BP (CON 100.1±20.5 vs WHEY 93.6±25.0 mmHg, p = 0.213). During each treatment, two of seven participants (29%) required saline intervention due to hypotension. Single pool Kt/V was not different between the treatments (CON 1.39±0.35 vs WHEY 1.32±0.31, p = 0.389). For GI symptoms there was no difference in either nausea (CON 1.4±1.1 vs WHEY 2.0±1.7, p = 0.231), cramping (CON 2.6±2.7 vs WHEY 2.1±2.0, p = 0.356), bloating (CON 1.0±0.3 vs WHEY 1.4±1.1, p = 0.356), or hunger (CON 4.0±2.3 vs WHEY 3.1±1.6, p = 0.399).

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Physical activity level post kidney transplantation: evolution and impact on body composition. Results from the CORPOS study

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Objective: Physical activity (PA) level after kidney transplantation (KT) is little studied, although it is an important component of quality of life. Recently, it has also been demonstrated that low PA is strongly associated with increased mortality in kidney transplant recipients (KTR).

Method: Using the French version of the Baecke self-administered questionnaire, PA was estimated in 41 patients when listing for KT, 12 months before KT, and 1, 6, 12 and 24 months after KT. At the same time, body composition was assessed using both Dual X-ray absorptiometry and bio-impedancemetry, leading to an estimation of Lean Body Mass (LBM), Fat Mass (FM) and Body Cell Mass (BCM).

Results: Forty one patients (27 men, 14 women aged 50 +/- 12 y) were included. Mean total PA tended to decrease during the waiting time before KT (from 6.6 +/- 2.24 to 5.67 +/- 2.13), and then increased to get maximal level at month 12 post KT (6.37 +/- 1.93) (p < 0.01 for the overall period). We also analyzed the three sub-scores (occupational, leisure time, and sport related PA). Occupational related PA significantly decreased during the waiting time (from 1.58 +/- 1.54 to 0.59 +/- 1.11) and then increased after KT with a maximum level at month 12 (0.94 +/- 1.35). The same pattern was observed for PA related to leisure time whereas sport related PA didn’t change.

During the period post KT, FM and BCM increased significantly (p = 0.007 and 0.04 respectively). LBM increase was nearly significant (p = 0.056). In multivariate analysis, LBM increase was associated with higher PA level before KT (p < 0.0001). On the contrary, PA level was not associated with neither FM nor BCM evolution.

Conclusion: Successful KT is associated with an improvement of PA level, in relation of an increase in occupational activity. Post KT body composition is associated with KT PA level, suggesting that PA should be encouraged in patients on the waiting list, to be developed post KT.

Phosphate in additives and the influences at the total amount of phosphate intake

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Objective: Phosphates can be added at a lot of products, such as meats, dairy and cheese, but also to manipulated products like modified products rich in protein can contain these additives. Additives containing phosphates are currently not being taken into account in diet advice for kidney patients, while a diet rich in protein can offer extra phosphates over the original amount. And phosphate out of additives be better absorbed into the human body than phosphates from animal or plant products. The purpose of this study was to explore where the additives with phosphates are in, how many, and what the influence of the phosphate from additives is on the total phosphate intake through nutrition.

Method: Literature study on phosphate in additives and calculations on example daily menus. For the literature study scientific articles are sought in Pubmed, Cochrane library and Google Scholar. The calculations were made with the permitted amount according to the European regulations.

Results: Little is known about the exact amount of additives, manufactures don’t often release amounts of additives because of the secret recipe. Additives are not included in nutrition charts. European regulations state in which categories additives rich in phosphates are permitted. Most categories display maximum permitted quantities. But some are only described with ‘quantum satis’. This term translates to ‘as much as needed’ which makes it difficult to gain insight upon the quantity of phosphate that has actually been added. Literature study shows that the use of additive doubled since 1990 and that phosphate intake by additives increased to average 1000mg a day. In this study we calculated some daily menus by the usual nutrition charts and added the maximum permitted amount of additives. The results were that the menu quickly contained more than 2000 mg of phosphates, while usually not more than 800-1000mg is advised per day.

Conclusion: Phosphates derived from additives can be an important source of phosphate in our diet. The phosphate intake in a diet rich of protein (1,2g/kg body weight) can be multiplied by three in an unfavorable protein choice. Further research and openness is necessary.
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nutritional factors, PNA=n1,2/OR=2,7; P=0,01; Alb=3,8/OR=1,9;p=0,05); PA=n6,4/OR=3,8;P=0,01) and BCMi=8/OR=3,4;p=0,01) significantly predicted mortality in both Kaplan-Meier and Mantel-Haenszel analysis. Extended Cox regression analysis has selected age, dialysis vintage, SGA<6, PNA<1,2 g/kg and BCMI<8 kg/m² as potential predictors of mortality.

Conclusion: In HD patients, advancing age, associated with worst nutritional status, as estimated by BIA (PA and BCMi), PNA<1,2 g/kg and SGA<6, were associated with significantly increased death risk.

P017

Longitudinal changes in body weight and body-composition in patient undergoing hemodialysis: Role of depression and cognitive dysfunction

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Objective: Weight loss is strongly predictive of mortality in patients with end-stage renal disease (ESRD) and the protective effect conferred by a high body mass index (BMI) seems to be limited to high muscle mass, not high fat mass. The purpose of this study was to examine the changes in body weight (BW), body mass index (BMI), muscle mass and fat mass in patients undergoing hemodialysis.

Method: We observed changes in BW and body composition during a 2-year period in 78 patients undergoing hemodialysis at baseline, and 1-year and 2-year post-follow-ups. The quantification of muscle and fat mass was assessed with a portable whole-body bioimpedance spectroscopy device.

Results: The mean age was 61.2 ± 14.3 years; 44.9% were men and 58.8% had diabetes. Over 2 years average loss of BW was 0.2 ± 2.5 kg. Weight loss, muscle mass loss and fat mass gain were observed in 56.5%, 45.6% and 44.9%, respectively. Changes in BW and BMI are significantly associated with changes in fat mass, not with muscle mass. In the (46.7%) of patients with weight loss, gain of muscle mass was observed. In multivariate analysis, cognitive dysfunction was significant predictor for weight loss and muscle mass loss.

Conclusion: Weight loss and muscle mass loss were prevalent in patients with ESRD. Although weight changes influenced the changes of fat mass, not but muscle mass. Cognitive dysfunction was significantly associated with weight loss and muscle mass loss.

P018

Oxidative- and carbonyl-stress markers in haemodialification patients

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Objective: End stage renal disease (ESRD) is characterized (among others) by enhanced microinflammation, oxidative and carbonyl-stress.

The aim of the study was to investigate the effect of haemodiafiltration (HDF) on the variables associated with the above mentioned conditions in patients (pts) with or without diabetes mellitus (DM).

Method: In 7pts with DM (age: 55±14 yrs) and 14 non(d)M pts (age: 63±12 yrs) standard biochemical parameters, plasma advanced glycation end-products (AGEs) by spectrophotometric method, advanced oxidation protein products (AOPPs), total antioxidant capacity (TAC), fructosamine (FTA), and ferric reducing ability of plasma (FRAP) by photometric methods, tissue inhibitor of metalloproteinases-1(TIMP-1) and macrophages chemoattractant protein-1 (MCP-1) by ELISA methods were determined.

Results: DM and DM groups differed significantly in the pre-HDF AGEs (19.5±3.3 resp. 22.9±4.7 AU/g Alb, p<0,05) and TIMP-1 (114±49 resp. 203±87g/L, p<0,05), and in the post-HDF FRAP (706±233 resp. 466±151 µmol/L, p<0,05) levels. In comparison with basal values post-HDF levels of AGEs, TAC and FRAP were significantly lower in both groups, while those of FTA, TIMP-1 and MCP-1 did not differ significantly. DM patients presented a significant rise in AOPPs levels post-HDF (from 5.2±1.7 to 6±2.0 µmol/g Alb, p<0,05).

Conclusion: Our data suggest that in HDF-treated ESRD-patients presence of DM modulates some markers of oxidative/carbonyl-stress and those of microinflammation. In both subgroups HDF ameliorates only some of the investigated parameters. The effects of HDF were more pronounced in the DM patients. Paradoxical finding of lower pre-HDF levels of AGEs-associated fluorescence of plasma and TIMP-1 in the DM vs. nDM pts remains unclear, but might reflect the adherence of the DM patients to the recommended diet.

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P019

Mar-Potassium Resin (BPR) and inter dialytic weight gain (IDWG), is there a link? A Case report in dialysis patient.

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Objective: Regarding hyperkalemia (HK) several studies show equivalent efficacy of both PBR : Na+ and Ca++-PBR. Na+ based PBR provide 60 mmol of sodium i. e. 1650 mg of sodium chloride. A report from DOPPS indicates a correlation between IDWG and Na+ PBR. The mechanism is mediated by salt intake and thirst. To test this hypothesis we assess short-term consequences after Na+-PBR initiation in hemodialysis patient.

Method: A patient in stable clinical state without good adherence with his Ca++-PBR to control potassium. At “Day 0” his PBR was switched to a Na+-PBR to compare two consecutive periods of one week : period P1 (Ca++-PBR) / period P2 (Na+-PBR). Dry Weight, dialysis prescription, medication and diet were not modified during P1 and P2 to assess impact on dialysis parameters (Ionic Mass Transfer, iMTr, eKtV), biological parameters and clinical parameters.

Results: Our patient was followed during 1 month according to 2 periods P1 and P2 of 15 days. At P2, mean dialysate conductivity increase from 14.08 to 14.34 mS/cm2 (p = 0.05). Changes in dialysis parameters were associated with increase of pre dialysis plasma Na+ from 134 (P1) to 140 mmol/l (P2) (p = 0.04). Post dialysis plasma Na+ was equivalent during both period (p=0.7). Mean IDW increases from 357 +/− 76 to 504 +/- 42 mmol/l (p<0,001), increase of IMTr correlate fairly with salt intake from Na+-PBR during P2. BP (SBP/DBP) evolves from 150/91 (P1) to 161/101 mmHg (P2) (p = 0.001) and IDWG increases from P1 : 3.07 +/- 0.4 P2: 3.66 +/- 0.3 kg (p<0.03). eKtV was higher during the second period.

Conclusion: Na+-PBR is associated with an increase in IDWG, and higher BP in stable chronic HD patients. Moreover, increase of IMTr correlate fairly with salt intake from Na+-PBBR during P2. It should be used in mind for hypertension, CHF, IHD, heart failure, hypoaemia, or renal insufficiency. Long-term studies are needed.

P020

LDL-Cholesterol Lowering in CKD Stage V Dialysis Patients with Hyperphosphatemia: A Comparison of Colestipol (COL) and Sevelamer (SEV)

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Objective: COL is a new non-metallic, non-calcium phosphate binder. This study was undertaken originally to show superiority of COL to placebo in control of serum phosphorus in subjects with CKD Stage V on dialysis whilst also comparing COL to SEV. The aim here was to analyze relative changes in lipids.

Method: It was conducted at 69 sites globally and comprised a 1-4 week washout of phosphate binders, 12-week, open-label, parallel group, flexible-dose period comparison of COL and SEV and a 4-week, double-blind, placebo-controlled withdrawal period comparing COL with placebo. 336 subjects were randomised (1:1) to open-label active 12-week treatment with COL or SEV followed by 4-week, placebo-withdrawal period for subjects taking COL. Results for phosphate lowering and main mineral parameters have already been reported. We show here additional analyses comparing the effect of the two phosphate binders on lipid profiles over the 12 week flexible dose period. Values for 12 weeks are shown as Last Observation Carried Forward (LOCF)

Results: COL-LDL-Cholesterol (LDL-C) and total-cholesterol (total-C) were significantly lowered by both COL and SEV at 12 weeks (P<0.05). LDL-C from 2.71 to 1.69 mmol/L by COL and from 2.72 to 1.87 mmol/L by SEV. Total-C was reduced from 4.68 to 3.47 by COL (-24.3%) and from 4.72 to 3.87 mmol/L by SEV (-17.5%). Additional analysis shows that there was a significant greater fall from baseline with COL treatment compared to SEV in total-C (- 6.8% vs. 001) and LDL-C (- 5.1%, P<0.03). There were no significant differences in HDL-Cholesterol (HDL-C) changes (-1.3% for COL and 1.3% for SEV). Although SEV increased triglycerides by 5.1% while COL decreased triglycerides by 1.8%, this difference did not reach a level of statistical significance.

Conclusion: Thus, although both COL and SEV reduce serum phosphate, COL lowers LDL-C and total-C to a greater extent than SEV in CKD Stage V patients on dialysis.
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P021

Diet quality of patients with non-dialysis dependent CKD

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Objective: Most dietary studies in CKD have focused on the investigation of individual nutrient intake. However, there is a need to examine overall diet quality, as nutrients are not consumed independently but together within a variety of foods. Thus, we aimed to evaluate the diet quality of a group of non-dialysis dependent CKD (NDD-CKD) patients.

Method: Dietary intake by a 3-day food record was evaluated in 85 patients (51% men, 64.3±14.7 years, eGFR = 25.6±11.0 mL/min, 34% diabetics) in their first visit to the renal dietitian. Diet quality was investigated by using the Healthy Eating Index (HEI) adapted to the Brazilian dietary guidelines for healthy population. The eleven diet components analyzed were grains, vegetables, fruits, dairy, meat, legumes, total fat, saturated fat, cholesterol, sodium and dietary variety. Each component was scored from 0 to 10, thus the HEI score ranged from 0 (lowest quality) to 110 (highest quality). A proportion for a maximum of HEI score of 100 was calculated.

Results: The HEI score of the whole group was 71.4 ± 8.8. The majority of the patients (82%) were scored with a HEI ranging from 50-80 (“diet that needs improvement”). No patient was scored with a HEI<50 (“poor diet”) and in 18% of the patients HEI was greater than 80 (“good diet”). In comparison to patients who had a “good diet”, the patients with a “diet that needs improvement” had lower scores of, vegetables (5.3±1.5 vs 7.7±2.5, p<0.01), dietary variety (6.3±3.1 vs 9.3±1.0, p<0.01), fruits (6.5±3.8 vs 8.6±2.2, p<0.01), legumes (6.8±4.0 vs 9.2±2.1, p<0.01), total fat (7.7±2.2 vs 9.4±1.1, p=0.01), saturated fat (8.7±2.3 vs 9.9±0.3, p<0.01), cholesterol (9.3±2.2 vs 10.0±0.0, p=0.01), scores of grains, meat and dairy were similar between the groups. The two groups were not different in regards to gender, age, presence of diabetes, BMI, eGFR, and serum potassium.

Conclusion: Our results show that improvement of diet quality is needed for most of our NDD-CKD patients focusing mainly on increasing the variety of foods, the consumption of vegetables and fruits and decreasing the intake of sodium and fat.
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P025

Lipid disorders in patients on peritoneal dialysis
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Objective: Lipid disorders are a prevalent concomitant disease in patients with chronic renal failure (CRF) on peritoneal dialysis (PD). Assessment of lipid status is a necessary component of the complex treatment of these patients.

Method: Investigation was carried out in 93 patients with CRF (16 with diabetes mellitus) on PD (37 men, 56 women, mean aged 43±13 years) during 19±17 months, 43 - were treated with statins. Control group consisted of 27 healthy volunteers. All patients underwent biochemical blood analysis (total protein, albumin, total cholesterol - TC, high density cholesterol - HDC, low density cholesterol - LDL, triglycerides), anthropometry and bioelectrical impedance (BIA).

Results: 72 % of patients had elevated levels of TC (5.9±1.4 mmol/l vs 4.6±0.2 in control group, p<0.001) and LDL (4.0±1.3 mmol/l vs 2.8±0.4, p<0.001), 41% - an increase in triglyceride levels was detected (2.0±0.9 mmol/l vs 1.5±0.2, p<0.001) and a decrease in the level of HDC (1.1±0.2 mmol/l vs 1.3±0.2, p<0.05). These violations were equally pronounced in patients with non-diabetic and diabetic nephropathy, and they do not depend on the duration of PD, peritoneal transport characteristics and the amount of transferred dialysis peritoneus, body mass index, nutritional status, as well as serum concentrations of total protein and albumin. Hypercholesterolemia prevailed among women (6.3±1.1 mmol/l vs. 5.4±0.9 among men, p=0.004) was determined by a positive correlation of TC with age (r=0.327, p=0.001) and the quantity of fat mass, calculated by anthropometric (r=0.206, p=0.047) and BIA (r=0.249, p=0.027). Long- term (more than 6 months) treated by statins reduce TC levels by an average of 33%, LDC an average of 27 %, triglycerides by 11% and increase the level of HDC by 15%.

Conclusion: Patients with PD receiving replacement therapy of PD, characterized by a high frequency of lipid disorders. Inclusion of statins in the complex drug therapy reduces the severity of dyslipidemia.

P026

Nutritional Status, Body Composition, Energy Intake and Energy Expenditure in Kidney Transplant Recipients
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Objective: The objectives of this study were to investigate the evolution of nutritional status, body composition, energy intake, energy expenditure and metabolic rate following kidney transplantation.

Method: This single-centre longitudinal study enrolled 26 living donor KTRs (mean age = 41±16 years; 58% male). KTRs were assessed within 1 month prior to transplantation (baseline), at 3 months (3m) and 12 months (12m) following transplantation. Nutritional status and body composition were measured using 7-point subjective global assessment (SGA), handgrip strength (HGS), weight (WT), body mass index (BMI), waist circumference (WC), hip circumference (HC), triceps skinfold thickness (TST), mid-arm muscle circumference (MAMC), and bio-impedance measurements of lean tissue index (LTI) and fat tissue index (FTI). Average daily energy expenditure (EE) and metabolic rate measured as metabolic equivalent task (MET) were assessed by wearing metabolic and physical activity monitor "SenseWear Armband" for 3 consecutive days. Energy intake (EI) was determined by 3-day food diary.

Results: SGA, HGS, TST, MAMC, FTI and EE did not differ significantly between baseline, 3m and 12m post transplantation. Nutritional status and body composition were measured using 7-point subjective global assessment (SGA), handgrip strength (HGS), weight (WT), body mass index (BMI), waist circumference (WC), hip circumference (HC), triceps skinfold thickness (TST), mid-arm muscle circumference (MAMC), and bio-impedance measurements of lean tissue index (LTI) and fat tissue index (FTI). Average daily energy expenditure (EE) and metabolic rate measured as metabolic equivalent task (MET) were assessed by wearing metabolic and physical activity monitor "SenseWear Armband" for 3 consecutive days. Energy intake (EI) was determined by 3-day food diary. Significant elevations from baseline to 12m were detected for WT (p<0.05), BMI (p<0.05), WHR (p<0.05), NC (p<0.01), MET (p<0.005) and EI (p<0.005). No significant differences were found between 3m and 12m for all the studied parameters.

Conclusion: Visceral and upper-body adiposity increased following kidney transplantation. Such an increase was accompanied by a reduction in lean tissue mass during early stages post transplantation. Increased energy expenditure appears to determine adiposity among KTRs. Timely nutritional intervention targeting adiposity is necessary to reduce long-term morbidity and mortality.

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P027

Association of frailty with measured skeletal muscle and fat mass in maintenance hemodialysis patients
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Objective: Frailty is common and important problem to be related with adverse health outcomes in maintenance hemodialysis (MHD) patients. The aim of study is to show how frailty is associated with body composition in this population.

Method: We recruited ambulatory adult MHD patients on MHD for 6-month (m) or longer, without hospitalization for the previous 3 m. We adopted frailty phenotype composed of the following components, 1) unintentional weight loss >4.5 Kg or 5% of the previous body weight for the last 1 year; 2) physical inactivity, 3) RAND-36 physical function (PF) scale <75 and vitality scale <55 as surrogates for weakness/weakness and exhaustion, respectively. Low PF scale was scored as 2 points and other components as 1 point for each. With those 3 or more points were considered as ‘Frail’. Body composition were measured by bioelectrical impedance analysis (BIA), dual energy X-ray absorptiometry (DEXA) and computed tomography (CT) in the next morning after hemodialysis with fasting for at least eight hours. Demographic and laboratory data were collected from medical records.

Results: Sixty three patients evaluated were 57±11.6 years (y) of age (means±SD) on MHD for 5.2±5.4y; 49.2% were male. Frail patients was 28.6% (18/63), who were more likely to be older (64±10.4 vs. 54.8±10.9 y;P<0.05), diabetic (DM) (72.2 vs. 44.4%;P<0.05), have higher Charlson-Comorbidity Index (CCI) (6.9±1.9 vs. 5±0.2;P=0.001) and lower 25-hydroxyvitamin D (25OH) level (ng/ml) (9.6±4.9 vs. 13.4±8.5 P<0.05). Frailty was significantly associated with higher % body fat (%BF) (28.8±7.0 vs. 24.5±7.0;P<0.05) measured by BIA; lower appendicular skeletal muscle index (ASMI, %) by BIA (26.2±3.6 vs. 29.5±4.3 P<0.01); lower thigh muscle cross sectional area to body weight ratio (TMA/Wt, cm²/kg) (1.4±0.2 vs. 1.6±0.2;P<0.01) and higher % thigh muscle fat content (%TFF) (7.4±4.2 vs. 4.4±4.0;P<0.01) by CT; %BF, ASMI,TMA/Wt and %TFF showed significant associations (odds ratio [95% CI]: 1.14 [1.01-1.29], 0.68 [0.51-0.91], 0.01 [0-0.83] and 1.18 [1.02-1.38], respectively) with frailty; after adjustment for age, gender, DM, CCI, levels of hemoglobin, albumin and 25OHD.

Conclusion: Frailty phenotype is useful to reflect deleterious changes in body composition, that is, less skeletal muscle and more fat mass in MHD patients.

P028

Alterations in calorobism are early markers of infection in acute kidney injury patients undergoing dialysis
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Objective: To describe NB and UNA AKI patients undergoing dialysis and assess whether changes in these parameters can be early markers of infection.

Method: Prospective cohort study that evaluated patients admitted at Botucatu School of Medicine for 22 consecutive months. Patients had diagnosis of AKI with suggestive clinical presentation of acute tubular necrosis and need for dialysis. Nutritional evaluation was composed by clinical and nutritional data, markers of catabolism and infection (CR-reactive protein > 10 mg/dl, leukocytes > 12,000/mm³ and fever (body temperature < 38 C). Patients were followed up until recovery of kidney function or death. The results were expressed as mean and standard deviation or median with 5% significance (p< 0.05). To assess whether BN and UNA were early markers of infection, Kaplan-Meyer curves were used and Logrank test for comparison of the curves. Bonferroni adjustment test was used for multiple comparisons.

Results: 124 patients were evaluated, with median age of 63 (60-81) years, etiology of AKI septic in 47.6%, UNA were early markers of infection. BN and UNA were early markers of infection. BN and UNA were early markers of infection.

Conclusion: Patients undergoing dialysis presented low hypercatabolism according to NB. Nitrogen balance and UNA were early markers of infection in AKI patients undergoing dialysis and assess whether changes in these parameters can be early markers of infection. Lipid disorders in patients on peritoneal dialysis.
P029
Evaluation and classification of volume status on peritoneal dialysis patients

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Objective: To observe the mitochondrial damage associated with protein-energy wasting of skeletal muscle in diabetic kidney disease (DKD) model of GK rats and evaluate the effects of low-protein diet supplemented with a-keto acids on muscle wasting.

Method: Forty-five male 24-week-age GK rats were randomly divided into three groups, normal protein diet group (NPD), low-protein diet group (LPD) and LPD + a-keto group (Keto). Fifteen gender and age matched Wistar rats were served as the control group (CTL). The living condition of GK rats was observed and the weight was measured once a week. Urine albumin, serum creatinine and urea nitrogen were measured at 24, 32, 40, 48 week age. Soleus muscle was observed to calculate the muscle size and the percentage of muscle fiber with software after SDH and NADH staining at 48-week-age. Tissue ultrastructure was observed under the transmission electron microscopy. Expression of mitochondrial DNA was examined by Q-PCR.

Results: Compared with CTL group, NPD, LPD and Keto groups had lower bodyweight higher urine albumin, higher serum creatinine and urea nitrogen (all P<0.05). The cross-sectional area of muscle fibers was larger in CTL group. Compared with CTL group, the muscle fiber was partly broken, the mitochondrial morphology was obviously changed, the percentage of type II muscle fiber was increased significantly (P<0.05), and the activity of citrate synthase and the number of mitochondrial DNA was decreased significantly in NPD, LPD and Keto groups (all P<0.05). In Keto group, muscle wasting was improved compared with NPD and LPD group (P<0.05), the cross-sectional area of soleus muscle increased and the percentage of type II muscle fiber decreased, levels of urine albumin, serum creatinine and urea nitrogen decreased (all P<0.05). Under transmission electron microscopy, the muscle fiber of Keto group showed intact and mitochondiral morphology was close to that of CTL group. The activity of citrate synthase and number of mitochondrial DNA was examined by Q-PCR.

Conclusion: Low-protein diet supplemented with a-keto acids can improve mitochondrial damage and muscle wasting induced by DKD.

P030
Mitochondrial damage in protein-energy wasting of skeletal muscle in rats with diabetic kidney disease and the effect of low-protein diet combined with a-keto acids

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Objective: The fluid overload (FO) has relevant impact to mortality in peritoneal dialysis (PD) patients. There is no unique definition of euvolemia and because of this the aim of this study was to compare different forms to evaluate volume status in this population.

Method: A cross-sectional study with stable PD patients was performed. A Body Composition Monitor (BCM) was used for the analysis of volemia. The occurrence of normal values in all of the different criteria - FO, FO/extracellular fluid (ECW) and ECW/height were considered euvoemla (EV). Overhydration (OH) was classified as those with at least one of the following factors: FO/ECW ratio above 0.15; FO greater than 1.1L; or ECW/height higher than 10.59 for men and 9.86 for women. An analysis of sensitivity and specificity was performed for each method based on the parameter chosen EV in the present paper. The ROC analysis sought to identify which method had greater power of discrimination for the occurrence of OH and which of the chosen cut-off points provided better sensitivity and specificity.

Results: Thirty seven (23 women/mean age 48.2 ± 16.6 years old) patients were enrolled. The frequency of OH varied according to evaluation method: 20 (54.1%) were classified by using FO criterion, 12 (32.4%) according to ECW/height and 10 (27%) through FO/ECW. When using the method of highest sum and product of sensitivity and specificity to establish the best cut-off point, the frequency of OH would be 20 patients (54.1%) according to FO, 21 patients (56.8%) for ECW/height and 19 patients (51.4%) through FO/ECW.

Conclusion: The concept of establishing a ”novel” parameter classification for EV derived from three criteria described in the literature, categorized as EV only those patients meeting all criteria, the remaining being defined as OH, was taken in order to prevent borderline cases from mistakenly being clasded as EV. The method aims to ensure early treatment adjustment for patients and avoided classifying OH patients as EV.

P031
Evaluation of body composition and fluid volume using a body composition monitor with full and empty peritoneal cavity

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Objective: Fluid overload is a common finding in patients on peritoneal dialysis (PD), and is associated with worst outcomes and increased mortality. Biopsychology spectroscopy is a precise, sensitive and reliable tool for determining the fluid volume status and body composition of PD patients. However, the influence of a peritoneal solution is still under discussion and not fully known. The aim of this study was to compare body composition and volume variables, measured with the dialysis fluid inside the peritoneal cavity (full cavity, FC) and after its drainage (EC), using a Body Composition Monitor (BCM).

Method: A cross-sectional study involving 32 adult patients (>18 years) stable on PD. A BCM report was used for the analysis of fluid status and body composition, and was conducted with both a FC and EC.

Results: The demographic and clinical sample characteristics were 62.5% female, 68.8% Caucasian, 75.0% on continuous ambulatory PD (CAPD), 25.0% on automated PD (APD) 24.2% diabetic and 87.9% hypertensive, median time on PD 15.6 (8.0-35.4) months, and 40.6% dialysis vintage 5 years and 1 year therapy. Analysis of variables related to fluid volume status showed a statistical difference (P<0.001) in the assessment of body weight between FC and EC. No statistical difference was found in overhydration (OH) indicator, as well as total body water, extracellular water, intracellular water and their corrections for height and weight, lean tissue mass, fat tissue mass and their indices, adipose tissue mass, and body cell mass. Pearson's correlation coefficient test of OH between FC and EC presented a value of r=0.989 (P<0.001). Bland Altmann plot: OH full and OH empty showing line of bias (-9 mL) and 95% limits of agreement (-603 to 585 ml).

Conclusion: The presence of intraperitoneal fluid does not interferes with the evaluation of hydration status using BCM, or in the analysis of corporal composition. Lean tissue mass, fat tissue mass, adipose tissue mass and their indices. No statistical difference was shown between the two measures, suggesting that the BCM methodology can be applied in both conditions, with or without drainage of the dialysate solution.

P032
Effects of fluvastatin on lipid metabolism and renal function in diabetic patients with chronic kidney disease stage 3 and above

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Objective: Lipid abnormalities often develop and play an important role in glomerular injury in diabetic patients with chronic kidney disease (CKD), but few medications are available for controlling lipid metabolism when renal insufficiency advances. We examined the effects of fluvastatin, one of the potent statins, on lipid abnormalities and renal function in diabetic patients with CKD stage 3 and above, and compared these results with the effects of probucol.

Method: The protocol consisted of a 4-week run-in period and a 26-week treatment phase with either fluvastatin (20 mg/day) or probucol (500 mg/day) administration. Inclusion criteria were estimated glomerular filtration rate < 60 ml/min/1.73 m2, serum low-density lipoprotein (LDL) cholesterol levels >140 mg/dl and triglyceride levels >150 mg/dl. Lipid parameters were measured before and after treatment.

Results: Serum LDL cholesterol decreased significantly (P < 0.05) from 177 ± 42 (baseline) to 128 ± 39 mg/dl (26 weeks) in the fluvastatin group (n = 32, mean age, 62 ± 9 years old; men/women, 15/17) and from 178 ± 44 to 129 ± 29 mg/dl in the probucol group (n = 33, mean age, 61 ± 8 years old; men/women, 16/17). Apolipoprotein B also decreased significantly (P < 0.05) from 149 ± 30 to 108 ± 30 mg/dl in the fluvastatin group and from 152 ± 37 to 122 ± 28 mg/dl in the probucol group. Fluvastatin and probucol significantly (P < 0.05) decreased serum triglyceride levels from 238 ± 76 to 166 ± 68 mg/dl and from 223 ± 70 to 161 ± 46 mg/dl, respectively. High-density lipoprotein (HDL) cholesterol concentrations did not change (P > 0.05) between baseline (53 ± 13 mg/dl) and 26 weeks (54 ± 16 mg/dl) in the fluvastatin group, but decreased significantly (P < 0.05) from 54 ± 16 to 42 ± 20 mg/dl in the probucol group. Serum creatinine levels showed no changes (P < 0.05) between 2.0 ± 0.7 mg/dl (baseline) and 2.2 ± 0.9 mg/dl (26 weeks) in the fluvastatin group and between 2.1 ± 0.7 mg/dl (baseline) and 2.2 ± 1.0 mg/dl (26 weeks) in the probucol group. Serum creatinine levels showed no changes (P < 0.05) between 2.0 ± 0.7 mg/dl (baseline) and 2.2 ± 0.9 mg/dl (26 weeks) in the probucol group.

Conclusion: These results demonstrate that fluvastatin but not probucol improves lipid metabolisms without affecting HDL cholesterol levels and renal function, suggesting that fluvastatin is useful for controlling not only hypercholesterolemia but also hypertriglyceridemia in diabetic patients with CKD stage 3 and above.
P033

Trimethoprim/Sulfamethoxazole-Associated Hyponatremia
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Background: Hyponatremia is the most common electrolyte disorder in hospitalized patients. Trimethoprim/Sulfamethoxazole (TMP-SMZ) can cause several electrolyte abnormalities including hyponatremia, hyperkalemia, and metabolic acidosis. We report a case of woman taking TMP-SMZ presenting with new onset hyponatremia.

Case description: A 51-year-old woman with HIV and schizophrenia presented with suicidal ideation. She also had an abscess on her chin and the dose of TMP-SMZ which she had been taking for Pneumocystis jiroveci pneumonia prophylaxis was increased from 160-800 mg/tablet 1 tablet twice a day to 2 tablets a day on hospital day 2. She developed acute kidney injury (AKI) with serum creatinine of 1.6 mg/dL from baseline of 1 mg/dL. Urine microscopy was bland. FENA and FEUrea were 1% and 32%, respectively.

Conclusion: Two days later, serum Na was down to 133 mmol/l from normal. TMP-SMZ was switched to clindamycin. On hospital day 6, serum Na was 126 mmol/l, serum K was up to 5.7 mmol/l. She also had wide anion gap metabolic acidosis (WAGMA) with serum HC03 and anion gap of 16 and 16 mmol/l, respectively. Urine Na was 52 mmol/l and urine osmolality was 381 mOsm/kgH2O. Serum osmolality was 268 mOsm/l. Urine K/urine creatinine was 0.8. Urine anion gap was +41 mmol/l. She was discharged on hospital day 9 with serum Na of 131 mmol/l and normalized serum K and HC03.

Discussion: Our patient had new onset hypotonic hyponatremia, hyperkalemia and WAGMA. Although urine Na and osmolality suggested SIAW, SIADH cannot be diagnosed given AKI. She was normotensive and had no sign of dehydration; however, urine osmolality was inappropriately high. FENA and FEUrea were consistent with prerenal AKI. TMP-SMZ likely caused the patient’s electrolyte disturbances given these were resolved after TMP-SMZ was discontinued. TMP reversibly inhibits epithelial Na channel leading to renal Na wasting and subsequently hyponatremia and hyperkalemia. Metabolic acidosis resulted from TMP causing acidification deficit and hyperkalemia reducing net acid excretion from inhibition of ammoniagenes.

Conclusion: TMP-SMZ can lead to reversible hyponatremia, hyperkalemia and WAGMA via the mechanism like a potassium-sparing diuretic. It should be considered as one of the causes of these new onset electrolyte disturbances.

P034

Resistance exercise prevents muscle wasting in mice with chronic kidney disease (CKD) by increase microRNA-23
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Objective: We have previously shown that exercise improves muscle protein synthesis and prevents accelerated protein degradation in muscle of CKD mice (Wang at al, Kidney Int 2010). We also identified 23 individual microRNAs (miRs) that are significantly increased in wasting muscles of mice with chronic kidney disease (CKD) (Wang at al, JASN 2010). In silico analysis and other reports indicate that one miR, miR-23, targets several proteins associated with muscle atrophy. In this study, we evaluated whether exercise increases the level of miR-23 (miR-23) in CKD mice.

Method: CKD was induced by 20-25g mice by 5/6th nephrectomy. Muscle overloading, a resistance exercise model, was produced in both control and CKD mice by removing the gastrocnemius and soleus muscles from both hindlimbs.

Results: Transfection of miR-23 precursor into cultured muscle cells inhibits the activity of luciferase reporter genes containing the 3’-UTR of target genes of miR-23. In CKD mice, exercise significantly increased the level of miR-23 in muscle of CKD mice vs. unexercised CKD mice. It also decreased PTE3 protein and consequently, Akt phosphorylation (2.3-fold, P<0.001). Additionally, exercise increased MyoD, myogenin and eMyHC proteins which are controlled by the myogenic transcription factor, YY1. Finally, miRNAs for the muscle-specific E3 ubiquitin ligases, atrogin-1 and MuRF-1, were attenuated by exercise.

Conclusion: Resistance exercise increases miR-23 in muscle of CKD mice. This response attenuates the expression of multiple atrophy-related proteins, thereby contributing to the muscle-sparing effects of exercise in CKD.

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P035

Identification of the factors associated with malnutrition in maintenance hemodialysis patients from two different geographic zones of Mexico
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Objective: To identify the factors associated to malnutrition in maintenance hemodialysis patients in two different geographic zones in Mexico.

Method: We included 182 patients in maintenance hemodialysis, a group living in the area of Mexico City (Zone A, N = 126) another group at Puerto Vallarta (Zone B, N = 56). We used Kalantar–Zadeh DMS to assess malnutrition. The score of 7 to 14 was considered well nourished, 15 to 21 and 22 to 35 were interpreted as moderate and severe malnutrition respectively. We also evaluated different clinical and biochemical parameters, appetite level, depression and anxiety symptoms, and distorted thinking. For each geographic zone we compared the data of the patients with malnutrition versus those well-nourished with Mann Whitney U or Chi2 test. The variables independently associated with malnutrition were identified for each geographic zone with multiple logistic regression.

Results: The patients with moderate or severe malnutrition was similar on both zones: 62 (49%) Zone A and 30 (54%) Zone B (p=0.84). The factors independently associated (p < 0.05) in the Zone A were (odds ratio, 95% confidence interval): Female gender (2.76, 1.29-5.92), diabetes mellitus (2.43, 1.14-5.18), body weight (0.96, 0.92-0.99), and anxiety score (1.06, 1.01-1.12). The factors associated with malnutrition in the Zone B were: Female gender (5.02, 3.1-9.29), diabetes mellitus (8.5, 2.23-33.15), appetite score (0.82, 0.67 - 1.00), and creatinina (0.66, 0.47-0.93).

Conclusion: The gender (female) and diabetes are associated with malnutrition in both areas, but with a higher risk in zone B. The rest of the factors associated with malnutrition are different in each zone. Awareness of these variations between populations, will be important to design effective clinical and psychological interventions in order to reduce malnutrition in these patients.

P036

Assessment of the nutritional status of post-renal transplant patients at the Groote Schuur Hospital (GSH) Renal transplant clinic (A Pilot study)
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Objective: Background: Chronic renal failure is associated with metabolic and nutritional abnormalities. Renal transplantation offers patients a chance at full rehabilitation. However patients receive lifelong immunosuppressive therapy, which is associated with adverse effects on nutritional status. This study aimed to assess the nutritional status of post-renal transplant patients attending the GSH renal transplant clinic.

Method: This is a descriptive, cross-sectional pilot study with a retrospective component. The data obtained (n=16, mean age 38.8±11.1, 62.5% males and 37.5% female) at their current clinic visit included anthropology, biochemistry, clinical, dietary intake and dietary behaviour. Retrospective data included weight and biochemistry. Statistical tests for descriptive data included (means/medians, SD/interquartile ranges and frequencies while tests for comparative data included (Chi-squared, Friedman ANOVA and Wilcoxon sign rank test).

Results: The mean weight (64.3±12.4kg) and BMI (23.8±4.9 kg/m2) 1 month post-transplant increased significantly to 73.0±14.7 kg at 12 months post-transplant (p<0.005) and BMI to 27.3±7.1 kg/m2 (p<0.004). Three patients (19%) were diagnosed with new onset diabetes (NODAT) post-transplant. The mean haemoglobin increased significantly from 9.8±1.3gm/dL at 1 month to 11±1.2gm/dL (p<0.05) and from 160-800 mg/tablet 1 tablet daily to 2 tablets twice a day on hospital day 2. She developed acute kidney injury (AKI) with serum creatinine of 1.6 mg/dL from baseline of 1 mg/dL. Urine microscopy was bland. FENA and FEUrea were 1% and 32%, respectively.

Conclusion: Resistance exercise increases miR-23 in muscle of CKD mice. This response attenuates the expression of multiple atrophy-related proteins, thereby contributing to the muscle-sparing effects of exercise in CKD.

Conclusion: The increased weight post-transplant may be due to the reported increase in appetite post-transplant as well as the rest of the factors associated with malnutrition are different in each zone. Awareness of these variations between populations, will be important to design effective clinical and psychological interventions in order to reduce malnutrition in these patients.

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Reducing Chaperone-Mediated Autophagy Causes Increased Protein Oxidation
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Objective: Chaperone mediated-autophagy (CMA) is a cellular process that destroys damaged proteins including oxidized proteins. Diabetes or feeding high protein diets increase oxidative stress in the kidney and renal cortical protein oxidation and modification. Because these stimuli also decrease CMA activity, it is possible that reduced CMA leads to kidney damage. The purpose of this study is to test whether reducing CMA leads to accumulation of oxidative modified proteins.

Method: CMA activity requires the lysosomal associated membrane protein 2 splice variant A (LAMP2A). To reduce LAMP2A, 3 separate sequences of small inhibitory RNA (siRNA) or scrambled sequences (control) were transfected using lipofectamine into NRK-52E renal tubular cells. Abundances of proteins were measured by western blotting normalized to actin. Macroutaphagy was measured as the ratio of the modified form of light chain protein 2b to the unmodified form (LC3 ratio). Immunofluorescence (IF) was used to detect oxidized proteins undergoing modification of tyrosine residues. Modified proteins were stained with anti-nitrotyrosine and anti-LAMP2A antibodies.

Results: Combining 2 separate siRNA sequences reduced LAMP2A protein levels on western blot compared to scrambled RNA control by 45-81% (mean 70%, n=4) consistent with reduced CMA (p<0.05). Macroutaphagy increases in response to decreased CMA and LAMP2A siRNA increased macroautophagy 3-fold as measured by LC3 ratio (n=2); p62/sequestosome 1 protein increases when there is increased protein oxidation and it rose by 45% in LAMP2A siRNA treated cells vs. control (n=2). Using IF, siRNA against LAMP2A decreased LC3 by 58%, while increasing nitrotyrosine staining, 2.3 fold compared to control (p<0.001, n=100 cells counted in 3 experiments). While there was no correlation between LAMP2A and nitrotyrosine staining in control, all cells with siRNA staining with > control range of nitrotyrosine had LAMP2A less than half of control.

Conclusion: Down regulating LAMP2A with siRNA increases oxidative protein modification in renal tubular cells. Because the reduction in LAMP2A is in a similar range to that seen in the renal cortex with diabetes or with a high protein diet, this finding demonstrates that the down-regulation of LAMP2A seen in those conditions is sufficient to cause oxidative damage to renal tubal cells.

Handgrip strength in nutritional status assessment in patients with chronic kidney disease.
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Objective: Decreased muscle mass is one of the diagnostic criteria of protein energy wasting. The aim of the study was to assess association between handgrip strength (HGS) and body composition, biochemical parameters and inflammatory markers in patients with chronic kidney disease (CKD) stage 4-5 (NKF) without dialysis treatment and in hemodialysis patients(HD).

Method: We included 61 patients with CKD and eGFR<30/ml/min not treated with dialysis (35 male, age: 60±17.7) and 48 patients treated with HD three times a week, for more than three months (32 male, age: 59±15.5). Handgrip strength was measured using hydraulic hand dynamometer Saehan. Lean tissue mass (LTM), fat tissue percentage (FT) and body cell mass (BCM) were measured using bioimpedance spectroscopy (Body Composition Monitor, FMC). In statistics analysis Spearman’s correlations coefficients was used (SPSS v18).

Results: Predialysis group: HGS 24.02 ± 19.54 kg, LTM 47.41 ± 9.01 kg, FT 37.3 ± 8.66%, BCM 20.06 ± 6.4 kg, serum albumin (SA) 4.0± 0.3 g/dl, serum prealbumin (SP) 34.1± 9 mg/dl, CRP 0.53 mg/dl, IL-6 5.1± 4.4 pg/ml. Positive correlation was observed between HGS and lean tissue mass (r=0.755, p<0.001), HGS and BCM (r=0.696, p<0.001), CRP (r=0.57, p<0.001). Negative correlation was found between HGS and fat tissue percentage (r=-0.39, p<0.001), CRP (r=-0.33, p=0.022), IL-6 (r=-0.29, p=0.046). We did not observe correlation between HGS and SA.

HD group: HGS 21.7 ± 11.4 kg, LTM 42.8 ± 7.8 kg, FT 34.7±11.6 %, BCM 17.9 ± 5.72 kg, serum albumin 4.0±0.4 g/dl, serum prealbumin 33.5mg/dl ± 10.9 mg/dl, CRP 1.16 ± 1.34 mg/dl, IL-6 10.2 ± 11.3 pg/ml. Strong positive correlation was found between HGS and lean tissue mass (r=0.604, p<0.001), (BCM (r=0.604, p<0.001). Negative correlation was found between HGS and fat tissue percentage (r=-0.329, p=0.033). We did not observed correlation between HGS and SA, SP, CRP, IL-6.

Conclusion: HGS is simple and reliable tool to assess muscle mass, highly correlated with amount of lean tissue mass measured by bioimpedance spectroscopy in patients with CKD stage IV-V and in hemodialysis patients. Negative correlations between HGS and tissue indicator that increase of fat mass can mask muscle mass reduction and body composition measurements are important in nutritional status assessment.

P339
Higher HDL cholesterol is associated with lower cardiovascular events while higher LDL cholesterol is associated with lower infectious events in a large international population of hemodialysis patients
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Objective: The effect of lipid lowering agents on prevention of all-cause mortality decreases as renal function declines losing statistical significance in patients in End Stage Renal Disease (ESRD). Low density lipoprotein (LDL) is capable of absorbing and inactivating bacterial toxins (S Bhakdi, et.al. JBC, 1983) and human LDL can prevent endotoxin induced lethality in mice (Feingold, Infect. Immun. 1995). The second highest leading cause of death among ESRD patients after cardiovascular diseases (CVD) is infectious. We conducted this analysis to explore the relationship between blood lipid levels and both CVD and infectious outcomes.

Method: Databases from RRI and FMC Europe [17 countries] were used to identify all patients with in-center treatments [1/2006-12/2012] who survived >12 months on HD. Those with at least one record of HDL and LDL, triglycerides, in the first 12 months were selected (baseline). Mean clinical and laboratory parameters were computed for the first 12 months and hospitalizations and clinical events (deaths and hospitalizations) were observed in months 13 to 24. Hospitalizations and mortality were classified as (CVD or infectious. Poisonous regression models were constructed to explore associations between baseline parameters and the number of CVD and infectious events in the follow up period. We studied 22,746 patients.

Results: Higher HDL was associated with fewer CVD deaths and hospitalizations (adjusted by NLR) while higher LDL was associated with less infectious deaths and hospitalizations but had no relationship to CVD outcomes. The association between HDL and CVD events was still significant when adjusted for NLR, a marker of inflammation (table 1). Results adjusted for CRP were similar.

Table 1. Poison regression results

<table>
<thead>
<tr>
<th></th>
<th>Poison regression with risk of CVD events</th>
<th>Poison regression with risk of infectious events</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>95% CI</td>
</tr>
<tr>
<td>HDL (mg/dL)</td>
<td>-0.013</td>
<td>-0.019</td>
</tr>
<tr>
<td>LDL (mg/dL)</td>
<td>0.001</td>
<td>0.003</td>
</tr>
<tr>
<td>Triglycerides (mg/dL)</td>
<td>0.001</td>
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</tr>
</tbody>
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Adjusted for geographic region, age, gender, race, BMI, diabetic status, NLR and albumin

Conclusion: Higher HDL is associated with fewer CVD events, while LDL is associated with fewer infectious deaths and hospitalizations. These data may suggest a hypothesis accounting for the inverse association between LDL and mortality in the dialysis population.

P040
How relevant is BMI as an indicator of nutritional status in haemodialysis patients?
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Objective: BMI is commonly used as an indicator of nutritional status in renal patients despite relying on confounding variables: 1. accurate dry weight 2. inaccurate height measurements particularly for elderly dialysis patients. For 2 years we have undertaken nutritional assessment by 2 methods renal adapted MUST (Malnutrition Universal Screening Tool), which relies on BMI in comparison to SGA which doesn’t. We aimed to evaluate which method could more accurately reflect malnutrition risk amongst our pts. To gain understanding of the significance of low BMI as a risk factor for malnutrition and a ‘healthy´ BMI range for our patients? To hence allow timely, appropriate intervention.

Method: All 163 HD pts, who dialyse in Somerset units were assessed in June 2013, using 2 methods and grip strength measured before dialysis. Results were compared.
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**P041**

**In chronic kidney disease, serum α-Klotho is related to serum bicarbonate and proteinuria**

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**Objective:** Klotho is an “aging-suppressor” gene and encodes a single-pass transmembrane protein predominantly expressed in renal tubules. Whether chronic kidney disease (CKD) affects serum Klotho is poorly documented. We aimed to measure the relationship of serum α-Klotho with renal function, acid-base markers, and proteinuria in CKD patients.

**Method:** We measured serum α-Klotho, serum FGF-23 and glomerular filtration rate (GFR) by inulin clearance in 60 CKD patients between January and July 2011. We also measured serum creatinine, bicarbonate, calcium, phosphorus, parathyroid hormone, C-reactive protein, and 25OH vitamin D. Proteinuria was obtained from a 24 h urine collection.

**Results:** The median serum α-Klotho was 477 [348-658] pg/ml. We found a significant inverse relationship between serum α-Klotho and serum creatinine (r= -0.36, p=0.007), proteinuria (r=-0.36, p=0.013), and a positive relationship with serum bicarbonate (r=0.33, p=0.011) and GFR (r=0.32, p=0.012). There was no further significant relation between serum α-Klotho and serum clearance or serum FGF23. Multiple regression analysis including serum bicarbonate, eGFR, serum creatinine, and proteinuria, indicated that only serum bicarbonate was associated with serum α-Klotho (p=0.003).

**Conclusion:** This study shows for the first time in chronic kidney disease serum α-Klotho is related to serum bicarbonate and proteinuria and not to renal function. Further research is required to determine whether correcting these two amenable conditions would improve serum α-Klotho.

**P042**

**Assessment of knowledge and changes in serum potassium after nutrition education in chronic hemodialysis patients**

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**Objective:** The nutrition education was able to increase knowledge about the sources of potassium and maintain serum control of potassium and nutritional variables.

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**Method:** In this study, 24-week-old Goto-Kakizaki male rats were randomly divided into groups that received either a normal protein diet (NPD group), a low-protein diet (LPD group) or a low-protein diet supplemented with ketocids (LPD+KA group) for 24 weeks. Age- and weight-matched Wistar rats served as control animals and received a normal protein diet (control group). We examined the rat muscles for abnormalities in autophagy and evaluated the effect of a low-protein diet supplemented with ketocids on autophagy in skeletal muscle.

**Results:** We found that protein ingestion attenuated proteinuria and decreased blood urea nitrogen and serum creatinine levels. Compared with the NPD and LPD groups, the LPD+KA group showed a delay in body weight loss, an attenuation in soleus muscle mass loss and a decrease of the mean cross-sectional area of soleus muscle fibers. The mRNA and protein expression of autophagy-related genes, such as Beclin-1, LC3B, Bnip3, p62 and Cathepsin L, were increased in the soleus muscle of GK rats fed with NPD compared to Wistar rats. Importantly, LPD resulted in a slight reduction in the expression of autophagy-related genes; however, these differences were not statistically significant. In addition, LPD+KA abolished the upregulation of autophagy-related gene expression. Furthermore, the activation of autophagy in the NPD and LPD groups was confirmed by the appearance of autophagosomes and autolysosomes using electron microscopy, when compared with the Control and LPD+KA groups.

**Conclusion:** Our results showed that LPD+KA abolished the activation of autophagy in skeletal muscle and decreased muscle loss in rats with type 2 diabetic nephropathy.
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P045

Nutritional markers and body composition in Portuguese hemodialysis patients
Ana Valente; Cristina Garagarza; Telma Oliveira; Cristina Caetano
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Objective: An accurate management of nutritional status in hemodialysis (HD) patients is an important issue due to the increased nutrient requirements and dietary restrictions. The aim of this study was to evaluate nutritional parameters in HD patients.

Method: This was an observational, cross-sectional, multicenter study with 419 patients on maintenance HD. Nutritional parameters and body composition were assessed with bioimpedance spectroscopy. The statistical analysis was performed with SPSS®. A p<0.05 was considered significant.

Results: The mean age was 65±14.4 years, 55.6% were male and 39.1% were diabetics. Mean HD time was 54.5±55 months. Mean dry weight was 69.4±16.1 Kg and mean BMI was 26.2±5.76 Kg/m². Laboratory parameters presented the following means: albumin: 3.93±0.39 g/dL, nPCR=1.13±0.27 g/Kg/d, phosphorus =4.57±1.73 mg/dL. Regarding body composition 21.2% had Fat Tissue Index (FTI) higher than expected, 35.3% had a low Lean Tissue Index (LTI) and 24.3% were overhydrated (OH/ECW-pre >15%). Patients in HD for a longer time had a lower dry weight (p<0.001), BMI (p=0.002) and higher susceptibility to being overhydrated (p=0.022). As age increases the dry weight (p=0.02), LTI (p<0.001), interdiarly weight gain (p<0.001), P (p<0.001), albumin (p<0.001) and nPCR (p<0.001) tend to be lower unlike the OH/ECW-pre (p=0.003). Dry weight and BMI showed a positive correlation with FTI (p<0.001; p=0.001), LTI (p<0.001; p=0.001), P (p<0.001; p=0.001) and albumin (p<0.001; p=0.001). On the other hand, a negative correlation was seen with OH/ECW-pre (p<0.001; p=0.001). A higher LTI was positively correlated with albumin (p<0.001) and nPCR (p=0.001) and negatively with OH/ECW-pre (p=0.001). Moreover, a higher OH/ECW-pre was correlated with lower albumin (p<0.001) and nPCR (p<0.001).

Conclusion: The overall nutritional status of these patients was within desirable values according to the European best practice guidelines. Moreover, these results highlight the importance of monitoring modifiable parameters in order to improve nutritional status.

P046

Can wasting energy-protein markers proposed by International Society of Renal Nutrition and Metabolism (ISRNM) be used in AKI patients?
Marina Berbel-Bufarah; Cassandra Goea; Patricia Xavier; Daniela Ponce; André Balbi
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Objective: Evaluate if malnourished AKI patients according to Subjective Global Assessment (SGA) also presents wasting-energy protein according to ISRNM criteria.

Method: Prospective cohort study that evaluated patients admitted at the Botucatu School of Medicine for 22 consecutive months. AKI patients with suggestive clinical presentation of acute tubular necrosis were included. Clinical and nutritional data were collected and patients were divided and compared according to SGA nutritional assessment (SGA A vs. SGA B e C). Protein-energy wasting criteria according to ISRNM were: albumin < 3.8g/dl, cholesterol < 100 mg/dl and body mass index (BMI) < 23 kg/m², measured on the first day of evaluation. For comparisons of clinical and nutritional characteristics, t test, Mann-Whitney, Chi-square or Fisher were used, according to characteristics of distribution and normality of the sample with statistical significance of p < 0.05.

Results: 133 patients were included, with male predominance (68%), sepsis in 30% and need for dialysis in 58%. ATN- ISS of 4.7 (0.28-6.62) and mortality rate of 23.6%. Fifty-three patients were well-nourished (SGA A) and 80 malnourished (SGA B and C). Comparing clinical characteristics between the groups, malnourished patients were older (54 vs. 68 years, p < 0.001), had higher prevalence of oliguria (9.4 vs. 30%, p = 0.011) and increased mortality (13.2 vs. 33.7%, p= 0.014). Malnutrition criteria were compared according to prevalences of BMI < 25 kg/m² (9.4 vs. 40%, p < 0.0001); albumin < 3.8 g/dl (96.2 vs. 96.3%, p = 0.94) and cholesterol < 100 mg/dl (34 vs. 28.7%, p = 0.66) in well-nourished and malnourished patients, respectively.

Conclusion: According to ISRNM malnutrition criteria, only BMI was associated with presence of previous malnutrition.

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P047

Daily meals and protein intake affect nutritional status in hemodialysis patients
Telma Oliveira; Cristina Caetano; Cristina Garagarza; Ana Valente
Lisboa/P;

Objective: Patients in hemodialysis (HD) have a variable daily food intake, whereby eating patterns should be monitored to improve food habits. The aim of this study was to evaluate the association between the number of meals and the type of dinner with nutritional status.

Method: This was an observational, cross-sectional, multicenter study with 419 patients on HD. Laboratory, anthropometric parameters and the 24-h recall were assessed. Patients were divided into four groups regarding the type of dinner (no dinner; light meal/snack without any high biological value protein (HBVP) intake; light meal/snack with HBVP intake; complete dinner - CD). The statistical analysis was performed with SPSS®. A p<0.05 was considered significant.

Results: The mean age of the total sample was 65.8±14.4 years and 55.6% were male. Mean HD time was 54.5±55 months. A higher number of daily meals was prevalent in women (p=0.037), in patients with a normalized protein catabolic rate (nPCR) >1 g/Kg/d (p=0.008) and with an interdiarly weight gain (IDWG) >5% (p=0.02). A positive correlation between the number of meals and IDWG (p=0.047), nPCR (p=0.012) and fat tissue index (p=0.045) was observed. On the other hand a negative correlation was found with HD vintage (p=0.041). Regarding the type of dinner, 63.5% of the total sample reported having a CD and this was associated with a normal BMI (p=0.03). Nonetheless, 24% of older patients (>65 years) didn’t report having HBVP intake at dinner, still a higher prevalence (55.3%) of dinner with HBVP was seen in younger patients (<65 years) (p=0.008). A higher prevalence of obesity (33.4%) and underweight (16.7%) was observed in the group of people who didn’t have dinner (p=0.03). Within patients with nPCR>1 g/Kg/d, 82.2% had a meal with HBVP intake, off which 68.2% had a complete dinner.

Conclusion: According to this data, the number of meals, the type of dinner and the inclusion of protein in this meal can affect nutritional parameters. Therefore these results emphasize the importance of nutritional counseling in these patients.

P048

Gut microbial profile in patients with Chronic Kidney Disease on conservative treatment: Is there relationship with inflammation and markers of cardiovascular risk?
Amanda Barros; Natalia Borges; Dennis Ferreira¹; Julie C. Lobo²; Flavia Lima³; Alexandre Rosado¹; Denise Mafra¹
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Objective: To evaluate the gut microbial profile in patients with CKD on conservative treatment and verify the possible relationship with inflammation and cardiovascular risk markers.

Method: Twenty CKD patients on conservative treatment (6 men, 64 ± 9.1 years, BMI 26.1 ± 4.4 kg/m², CRCl 29.6±9.7/ml/min) were compared with 19 healthy individuals (8 men, 51 ± 6.6 years, BMI 24.2 ± 2.7 kg/m²). The bacterial community profile was determined by Electrophoresis Denaturing gradient gel (DGGE) and sequencing bands of clinical samples. C-reactive protein (CRP), tumor necrosis factor-alpha (TNF-alpha), vascular adhesion molecules and intercellular-1 (VCAM-1 and ICAM-1), and lipopolysaccharide (LPS) were analyzed by Immunoenzymatic Assay (ELISA).

Results: Patients had significantly elevated plasma levels of inflammation markers in comparison with healthy individuals: CRP (1.29 (0.6-3.0)mg/mL vs 0.36 (0.3-0.48)mg/mL) (p<0.001); TNF-alpha (161.0 ± 96.8 pg/ml vs 45.5 ± 14.0 pg/ml) (p<0.001); VCAM-1 (910.4 ± 208.7ng/dl vs 812.6 ± 103.2ng/dl) (p=0.03); ICAM-1 (174.4 ± 114.9mg/dl vs 113.5 ± 87.7ng/dl) (p=0.01); LPS (42.2(19.5-205.8)pg/mL vs 13.3(6.7-35.8)pg/mL) (p=0.02). The average number of bands, representative of the community polymicrobial, was 28.8 ± 6.1 in patients and 27.7 ± 3.9 in healthy individuals (p=0.58). The mean number of bands was negatively associated with plasma levels of VCAM-1 in patients (r=-0.50, p=0.03). The sequencing of representative bands showed: Flavobacteriaceae bacterium, as member of Firmicutes.

Conclusion: According to this study, gut microbiota in chronic kidney disease on conservative treatment presents altered levels of inflammation markers and C-reactive protein. Moreover, the presence of VCAM-1 in patients was negatively associated with the number of bands sequenced, suggesting a possible relationship between gut microbiota and cardiovascular risk.
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**P052**

**Evaluation of resting energy expenditure in critically ill acute kidney injury patients undergoing different dialysis modalities**

Cassiana Goes; Daniela Ponce; Marina Berbel-Bufarah; Cibele Almeida; Patricia Xavier; André Balbi

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**Objective:** To evaluate the resting energy expenditure (REE) of acute kidney injury patients undergoing different dialysis modalities and identify if the dialysis influences the REE.

**Method:** Patients admitted to the Clinical Hospital of Botucatu School of Medicine, São Paulo, Brazil, from September 2012 to November 2013 were evaluated. AKI patients with suggestive clinical diagnosis of acute tubular necrosis treated by conventional hemodialysis (CHD), extended HD (EDH), or continuous high volume peritoneal dialysis (HVPD) were included. Was applied to all patients evaluation composed of clinical and nutritional data. The evaluation of REE was performed before and during dialysis sessions. The results of clinical and nutritional characteristics of the AKI patients were described by median or mean and standard deviation and they were compared using the t test, Mann-Whitney test, chi-square or Fisher's exact test according to characteristics of distribution and normality. It was adopted as statistically significant p < 0.05. This study received financial support from the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP).

**Results:** 65 patients were included, 33.8% in CHD, 44.6% in EDH and 21.6% in HVPD. Patients had age of 62.8 ± 16.4 years, with 67.7% male and ICU admission (95%). AKI associated with sepsis was the most prevalent etiology (80%), ATN- ISS was 0.65±0.18, body mass index was 28.51± 7.18 kg/m² and mortality rate was 73.8%. When the groups were compared, patients on HVPD showed higher age (70 ± 12 vs. 56 ± 19, p= 0.016) and lower prevalence of males (42.8 vs 72.7%, p= 0.04) than those on CHD. Other clinical characteristics were similar between the groups CHD, EHD and HVPD. The REE pre dialysis was also similar between the three groups (2061.7±825.7 kcal/day vs. 2130.5±696.2 kcal/day, p= 0.227). There was no difference in the REE before and during the sessions of dialysis in AKI patients treated by three different modalities (2061.7±825.7 kcal/day vs 1988.5±796.4 kcal/day, p= 0.57, respectively).

**Conclusion:** AKI patients undergoing CHD, EHD and HVPD were similar concerning REE pre dialysis and evolution. The dialysis modalities have no effect on REE in AKI patients.

**P053**

**For Peer Review Only**

**Activation of autophagy and mitophagy in the skeletal muscles of patients with chronic kidney disease**

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**Clinical Médica, Faculdade de Medicina de Botucatu, Universidade Estadual Paulista, Botucatu/BR;**

**Objective:** This study was to investigate autophagy and mitophagy in rhabdomyosarcoma biopsies of stage 5 CKD patients.

**Method:** we analyze autophagy, mitochondrial morphology and mitophagy in muscle biopsies of patients with stage 5 CKD to understand whether autophagy and mitophagy are involved in the development of muscle atrophy.

**Results:** The cross-sectional area of the muscle fibers was decreased in CKD patients compared with the control group. CKD activated autophagy as measured by the significant increase in mRNA levels and protein expression of autophagy-related genes and the appearance of autophagosomes in the muscles of CKD patients. The protein expression of the mitophagy markers LC3, p62, Parkin, and Pink1 in the mitochondria were greater than in the control group. The occurrence of mitophagy was further supported by the colocalization of LC3 puncta with the mitochondrial outer membrane protein. Electron microscopic analysis of the ultrastructure also demonstrated the engulfment of mitochondria in autophagosomes.

**Conclusion:** autophagy and mitophagy are activated in skeletal muscle in chronic kidney disease patients, suggesting that both factors might have roles in muscle wasting.

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**P050**

**Nutritional markers associated with previous malnutrition in acute kidney injury patients**

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**Clinica Médica, Faculdade de Medicina de Botucatu, Universidade Estadual Paulista, Botucatu/BR;**

**Objective:** To identify which nutritional parameters are associated with malnutrition diagnosis by Subjective Global Assessment in AKI patients.

**Method:** Prospective cohort study evaluated patients admitted at Botucatu School of Medicine, for 22 consecutive months. AKI patients with suggestive clinical presentation of acute tubular necrosis were included. Clinical and nutritional data were collected and patients were divided and compared according to nutritional status of subjective global assessment (SGA A vs SGA B and C). For nutritional and clinical comparisons, t test, Mann - Whitney, chi-square or Fisher's exact test were used according to characteristics of distribution and normality of the sample with statistical significance of p < 0.05.

**Results:** 133 patients were evaluated, with male prevalence (68 %), sepsis in 30 %, and need for dialysis in 58 %. ATN-ISS was 0.57 ±0.23 and mortality rate of 23.6 %. Fifty-three patients were well nourished (SGA A) and 80 malnourished (SGA B and C). Comparing nutritional characteristics between the groups, malnourished patients were older (54 vs 68 years , p < 0.001 ) , had higher prevalence of oliguria (9.4 vs. 30 %, p=0.011) and higher mortality (13.2vs. 33.7 %, p = 0.014). Comparing catalasol parameters (nitrogen balance and urea nitrogen appearance ) , anthropometric index ( body mass index - BMI , arm circumference - AC , triceps skinfold and TSF - arm muscle circumference - AMC ) , biochemical markers (albumin, cholesterol, transferrin and prealbumin ) and bioelectrical impedance ( phase angle , resistance and reactance ) , only BMI and AC showed significant difference between well-nourished and malnourished patients with BMI of 28.7 kg/ m² (24.5 - 32.3 ) vs. 23.8 kg / m² (21.5 - 26.1 ) , p = 0.001 and AC of 32cm (28.5 - 35 ) vs . 30.5 cm (27 to 32.3 ) , p = 0.04 .

**Conclusion:** Lower body mass index and arm circumference were associated with presence of malnutrition according to SGA.
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**P054**

Description of a control strategy for interdialytic weight gain in clinical practice of a dialysis unit in a private hospital in southern brazil

Rafaela Siviero Caron-Lienert; Ariane Paiva Vieira 1; Renato Eick 1; Maurício Lutzky 1; David Saitovich; Milton Kalil; Janice Brustolin 1; Helena Luiza Manteufel Royer 1; Lilian Perez Righetto de Araujo; Rubia Natasha Maestri; Vania Rohsig Nephrology; Instituição de Pesquisas Biomedicas, Pontificia Universidade Católica do Rio Grande do Sul, 1 Nutrition, Hospital Moinhos de Vento, Instituto de Educação e Pesquisa, Porto Alegre/BR;

**Objective:** The excessive interdialytic weight gain (IDWG) besides giving symptoms during hemodialysis sessions (such as hypotension and cramps) also causes damage in the cardiovascular system of patients undergoing this therapy. The increasing in left ventricular mass, a common finding in fluid overload, is correlated with poor prognosis and the increased mortality in hemodialysis patients. Objective: Describe a control strategy for IDWG in clinical practice of a dialysis unit in a private hospital in southern Brazil.

**Method:** The use of this instrument for monitoring the IDWG aims to involve patients in their care and improve the control of fluid intake. During nutritional counseling, conducted in the hemodialysis sessions, the dietitian guides the importance of controlling weight gain, in particular, for oliguric and anuric patients, who require rigid control. The dietitian arranges, with patients, theirs goals regarding IDWG. This arrangement is based on Dialysis Outcomes and Practice Patterns Study Program guidelines as well as the individual tolerance. The goals are determined by color - green corresponds to goal achievement; yellow is equivalent to a value over the recommended levels, but still tolerated by the patient; red means that it will not be tolerated and that will cause heart damage in long term. At each session, the dietitian completes a monthly document (attached), created for this monitoring that will remain in the patients record filled with the appropriate colors. At the end of the month, the document regarding their evolution and control during the period is shown to the patient. All the guidelines and control strategies of IDWG will be based on patient outcomes and how it puts forward to their difficulties and goal achievement throughout the treatment.

**Results:** The use of this material assists in self-care of patients and encourages the improvement of such control, but it requires staff’s time and dedication from the nutrition professionals. The patient feels most watched and therefore undertakes to be more careful than usual, improving their clinical condition.

**Conclusion:** This methodology could be applied to all dialysis patients, not just those with difficult IDWG control, in order to prevent patients from having further problems regarding fluid overload.

**P055**

Effects of sodium restriction counseling in hemodialysis patients: a randomized clinical trial

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**Objective:** The aim of this study is to evaluate the effects of nutritional counseling of sodium restriction in the diet and its association with clinical and dietary parameters in patients on hemodialysis.

**Results:** Most patients were male (60.9%), white (64.4 %), hypertensive (74.4%), with mean age 59 ± 14 years , without difference between groups. Clinical variables (systolic and diastolic) and anthropometric (dry weight, body mass index, waist circumference and strength of the handbridge) were not different between groups in any of the moments evaluated. The total sodium intake decreased in both groups (T1 = 3.5 (2.3 to 4.7), T4 = 2 (0.7-2.5), p = 0.0001 and C; T1 = 3 (1.5 to 4.9), T4 = 2 (0.8-3.3), p = 0.0001), as well as the consumption of processed meats (mg) (I: T1 = 16 (5-46), T4 = 12 (0-28), p = 0.003 and C; T1 = 97 (31-406), T4 = 44 (0-152), p = 0.004). The intervention group had a significant reduction in consumption of ready industrialized spices (T1=130 (0-854),T4=0 (0-0), p=0.015) and noodles kind pasta (T1=19 (0-91), T4=0 (0-0), p=0.017).

**Conclusion:** The nutritional counseling was effective for promote changes in eating habits to foods high in sodium content like the consumption of industrialized spices and noodles kind pasta. Thus, nutritional counseling is an important tool in the treatment of hemodialysis patients.

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**P056**

Evaluation of volumenia in patients on peritoneal dialysis as gender and type of therapy

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**Objective:** To compare the fluid volume between continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD) and according to gender.

**Method:** Cross-sectional study involving stable adult patients (>18 years) undergoing peritoneal dialysis (PD). Analysis of the state of hydration (total body water, intracellular and extracellular, and the reasons for intracellular extracellular water, total body water, weight and height) was performed, using the Body Composition Monitor (BCM).

**Results:** 37 patients (23 women, 27 CAPD), mean age 48 ± 2 ± 16 years, 68.8% Caucasian, 24.2% and 87.9% hypertensive diabetic patients, with a median time of 15.6 months in PD (8.0-35.4). CAPD patients, 51.9% were classified as hypervolemic (Overload Hydro> 1.1L) compared to 50% of APD. When analyzed by gender, fluid overload (FO) was observed in 71.4% in men and 39.1% in women, although their means were not different (0.8 ± 1.7 vs. 2.0 ± 2.1L, P = 0.097). The evaluation appears to be different in total body water (28 ± 3.8 vs. 46.1 ± 3.4L, P <0.001), as well as intercellular fractions (14.0 ± 2.3 vs. 17.8 ± 3.0L, P=0.001) extracellular (14.0 ± 2.1L vs. 17.8 ± 2.9L, P = 0.003), extracellular corrected by height (8.9 ± 1.3 vs. 10.1 ± 1.9, P = 0.036) and weight (20.2 ± 2.4 vs. 23.1 ± 2.3, P < 0.001), where higher values in men.

**Conclusion:** Both modalities of PD appear to cause similar impact on FO. The changes observed in male gender suggest that men are the most affected by FO which also can be enhanced by being less exposed to glucose observed in this gender.

**P057**

Absence of Association of Dietary Pattern and New-Onset Diabetes After Kidney Transplantation

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**Objective:** The aim of this study was to verify the association of dietary patterns and dietary components with the development of NODAT.

**Method:** Cross-sectional study, which included 23 kidney transplant recipients who developed NODAT and 57 without NODAT diagnosis. Demographic, clinical, laboratory, anthropometric and body composition data were collected. Dietary intake was assessed by food frequency questionnaire. Dietary patterns were identified by cluster analysis. Chi-square test was used to verify the association between dietary patterns and NODAT.

**Results:** NODAT patients were older and had greater levels of total cholesterol, triglycerides, body fat percentage and pre-transplant body mass index, when compared with non-NODAT group. In addition, NODAT group had greater energy intake from the lipids, while non-NODAT patients had greater energy intake from carbohydrates. Two dietary patterns were identified: 1) greater intake of refined grains, fried potatoes and eggs, sausages, whole dairy products, cookies, chocolate, ice cream, beans, bananas, tomatoes, coffee with sugar, soda, pizza, margarine, olive oil and mayonnaise; and 2) higher intake of whole bread, cassava, potatoes and boiled egg, meat, viscus, fat dairy foods, yogurt, cake, pie, jam, sweetener, apple, orange, canned, unsweetened coffee, juice and vegetables. There were significant differences in energy intake from trans fat and protein between patterns (trans fat was higher in 1 and protein, in 2) Dietary patterns 1 and 2 were identified in 47.8% and 52.2% NODAT patients. There was no association between the dietary patterns and NODAT (p = 0.207).

**Conclusion:** Dietary patterns had no difference between NODAT and non-NODAT patients. Further studies with larger sample size and prospective design are necessary to evaluate a causal relation between risk factors of NODAT and its outcomes.
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**P058**

**Handgrip strength is affected by overhydration in patients on peritoneal dialysis**

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**Objective:** Handgrip strength (HGS) has been pointed as a reliable marker of nutritional status and its association with morbidity and mortality has been demonstrated in chronic kidney disease population. A potential impact of fluid overload on muscle strength has been suggested; however, this issue has been poorly investigated in dialysis patients. Thus, herein we aimed to investigate the association of overhydration with HGS in peritoneal dialysis (PD) patients.

**Method:** Sixty-seven PD patients were studied [age= 54±14.8y; men = 45%; diabetics= 31% diabetics, BMI= 26±4.6kg/m², length on PD= 176±40 months]. HGS was assessed in the dominant arm by using a dynamometer. Overhydration and body composition were evaluated by bioimpedance spectroscopy (BCM, Fresenius Medical Care).

**Results:** Reduced HGS values (defined as <20kg women and <22kg men) were observed in 17 patients (25%). Six patients (8.8%) had severe handgrip weakness (defined as <15 kg, 40% vs. <40% men). The association of handgrip with body composition using Pearson Correlation analysis showed that lower HGS was associated with lower fat-free mass index (FFMI) <0.001 (r=0.26, p=0.04) and upper arm muscle circumference (UAMC) (r=0.24, p=0.05).

**Conclusion:** This study demonstrated that overhydration identified by bioimpedance spectroscopy was associated with reduced HGS in peritoneal dialysis patients.

**P059**

**Body composition in renal patients awaiting kidney transplantation**

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**Objective:** To improve clinical identification of malnutrition and routines of documentation by using body composition (BC) measurements.

**Method:** All patients on waiting list in 2012 at Sahlgrenska University Hospital, Gothenburg, Sweden, were offered 4 quarterly measurements by bioimpedance spectroscopy (BIS), assessing body weight (BW), kg, fat mass (FM, kg), fat-free mass (FFM, kg), fat mass index (BMI, kg/m²) and fat-free mass index (FFMI, kg/m²), using a Body Composition Monitor device (Fresenius Medical Care). BMI and FFMI were used to categorize patients as normal, malnourished or obese following Kyle et al. and the Swedish National Board of Health and Welfare's cut-off values.

**Results:** Forty-two patients were identified of which 12 were excluded due to rapid transplantation (4), change of dialysis ward / maintenance of chronic kidney disease (5), declined to participate (1), pacemaker (1) and death (1). Remaining 30 participants (16 male), had a mean age 51 y (range 21-67), mean BW 75,9 kg, mean BMI 25,3, treatment mode peritoneal dialysis: 20, hemodialysis: 6, pre-dialysis: 4.

**Conclusion:** More effort is needed in developing individual nutritional care in patients with BC changes.

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**P060**

**Endotheloptin in kidney transplant recipients**

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**Objective:** The impact of body composition, nutritional intake and activity level on endotheloptin has not been investigated in kidney transplant recipients (KTRs). Circulating endothetoptin drives systemic inflammation and is associated with increased morbidity and mortality in chronic kidney disease. The objectives of this study were to investigate the predictors of inflammation and endotheloptin in KTRs.

**Method:** This single-centre cross-sectional study enrolled 127 clinically stable KTRs. Mean age = 50±15 years; 56% male; and median time post-transplantation = 5 (2-11) years. Fasting serum samples were collected for measurement of high-sensitivity C-reactive protein (hsCRP), endothetoptin, and estimated glomerular filtration rate derived using 4-variable modification of diet in renal disease equation. Body composition was measured using waist circumference; waist:hip-ratio; neck circumference; and bio-impedance measurements of lean tissue index, fat tissue index, and percentage volume expansion. Average daily energy expenditure and metabolic rate measured as metabolic equivalent task were assessed by wearing metabolic and physical activity monitor "SenseWear ArmBand" for 3 consecutive days. Energy and total fat intake were determined by 3-day food diary. Demographic, nutritional and clinical predictors of inflammation and endotheloptin were assessed using univariate and multivariate regression analyses.

**Results:** Global and visceral adiposity was associated with inflammation and endotheloptin in KTRs. Independent predictors of raised hsCRP level were endotheloptin (ß=0.8, 95% CI=0.2, 1.4, p<0.01), increasing fat tissue index (ß=0.3, 95% CI=0.0, 0.6, p<0.001), elevated waist:hip ratio (ß=0.1, 95% CI=0.0, 0.2, p<0.001), decreased metabolic equivalent task (ß=-2.9, 95% CI=4.1, -1.7, p<0.001), and higher total fat intake (ß=0.2, 95% CI=0.1, 0.3, p<0.001). Independent predictors of endotheloptin were increasing fat tissue index (ß=0.5, 95% CI=0.1, 0.9, p<0.05), elevated waist:hip ratio (ß=0.2, 95% CI=0.1, 0.4, p<0.05), and higher total fat intake (ß=0.2, 95% CI=0.1, 0.3, p<0.001).

**Conclusion:** This study highlights the need for prognostic interventions in KTRs, focusing on increased physical activity level and dietary modification to enhance metabolic rate, reduce fat intake, and prevent endotheloptin.

**P061**

**Relationship phosphorus intake estimated by food frequency questionnaire with phosphataemia in hemodialysis chronic kidney disease patients**

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**Objective:** Despite advances in dialysis, still observed hyperphosphataemia a significant risk to survival. Attention about the ingestion of high phosphorus, especially processed foods is emphasized that the phosphate salts are almost completely absorbed. This study aims to develop a list of the most consumed industrialized meat and drink, and to relate food consumption of these products with phosphorabmia.

**Method:** Descriptive, observational, cross-sectional and prospective study included chronic kidney disease patients on regular hemodialysis for at least 90 days in a university hospital, aged over 18 years. Patients answered food frequency questionnaires (FFQ), from which it drew up the list of most consumed foods and beverages; which meat and dairy products were selected, contained in its database and used in FFQ, we obtained a score of phosphorus consumption ranged from 39 to 261.

**Results:** 128 patients, age 55±14 years, 54% female, 46% diabetic, 31% had diabetic nephropathy, 50% not completed primary education, 63% had income around one minimum wage, equal 237. About nutritional parameters, weight was 69,8±17,3 kg and body mass index was 26,8±6 kg/m². Most consumed processed foods were cheese, ham, sausage, bologna and breaded chicken and beverages were milk, yogurt, soda and beer. Used in FFQ, we obtained a score of phosphorus consumption ranged from 39 to 261, and the average points 130,38±45,63, 47% of the samples showed a greater than average score, there was no correlation score of the patients with serum phosphorus (r=0.03, p=0.976).

**Conclusion:** High intake of foods containing additives, despite having a higher content of phosphorus compared to other protein sources, it has not been possible to establish relationship with phosphatemia, suggesting that in order to trust relationships between sources of consumption and dosages that element possibly need other tools and biochemical analysis of these foods.
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P062
Are the population dietary patterns a clue for success of low-protein diets?
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Objective: Low-protein diets are milestones in the treatment of CKD, both for delaying progression of renal disease and for postponing dialysis. Their use is hampered by the idea that such diets are "too difficult" for most of the patients. Few studies assessed the baseline dietary patterns of a population as a basis for understanding the compliance results obtained.

Aim of the study was to assess the main dietary patterns of the families of patients attending the Nephrology Unit of a Northern Italian University Hospital in the neighbourhood of a one million inhabitants city.

Method: Semi-structured questionnaires were given for one month to the patients attending the Nephrology Unit in a setting where compliance to low-protein diets is high, and over 90% of the patients with CKD stages 4-5 not on dialysis perform at least one trial period on a protein restricted diet (different schemas, 0.6 to 0.3 g/Kg/day of proteins).

Results: 120 questionnaires were gathered; the answers came from 56 males, 64 females, median age 58.5 (range: 19-101), 41.5% retired, in different stages of CKD (stage 1 to dialysis). In 68.7% no diet had been prescribed, 11.3% were on a low-protein diet.

The diet followed a Mediterranean pattern in most of the families; over 80% of the families eat pasta or rice on the average once daily; 20% only occasionally. 27% of the families eat meat every day, while 69.7% eat vegetables at each meal. One fourth of the cases always eat at home, and 44.9% eat out of home more than twice a week (mainly at work). The use of pre-cooked, frozen or canned food was limited and almost 20% of the families systematically avoided all types of processed food. While 76.3% of the cases also shop regularly in the supermarkets, markets are the main source of fresh vegetables in 66.7% of the cases.

Conclusion: A Mediterranean family dietary pattern and the habit of buying and cooking food everyday at home may be at the basis of this study to verify the effect of nutrition therapy intervention on nutritional status, renal disease progression and inflammation in pre dialysis patients.

P063
Comparison of 2 BIA devices in hemodialysis patients
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Objective: Body composition is determined using a 8-electrode, segmental multifrequency BIA, positioned in the device at each hand and foot. The system verifies the correct position of the patient, standing. Measure with BCM is realized in supine position, using a 4 electrode positioned at each hand and foot on the opposite side to the stitlala Ecln Altman and variance analysis were used as statistical methods.

Results: Total Body Water (TBW) and Extra Cellular Water (ECW) analysis shows a good agreement (r=0.89, mean difference 0.9L (0, -1.8, 95% limit) and 0.11L (0.2, 0.4, 95% limit)). Fat Free Mass Index (FFMI) from SECA and Lean Tissue Index (LTI) from BCM are significantly different with a higher mean value for FFMI of 4 kg/M2 and a poor agreement (r=0.54, 3.3, 4.8, 95% limit). A good correlation exists between Fat Mass (FM) from the 2 devices (r=0.9) but with a large variability (0.4, 2.5, 95% interval confidence).

Conclusion: In conclusion, the 2 BIA devices cannot be used one instead of the other. Though agreement is good concerning TBW and ECW, further study should precise the observed difference in FFMI, especially in body shape and ethnicity. SECA mBCA has the advantage of including a scale and standardize measurement technology.

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P064
Effect of nutrition therapy intervention on nutritional status, renal disease progression and inflammation in pre dialysis patients
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Objective: Most metabolic disorders presented by patients with chronic renal disease (CRD) are mainly a result of accumulation of products of nitrogen metabolism, present in protein rich foods. High protein diets are associated with hyperperfusion, hypertension and hyperfiltration of the glomeruli and, as a consequence, may accelerate the progression of CRF. Nutritional therapy plays an important role in CRF treatment, consisting mainly in reduction of daily protein intake. Although this intervention has difficult adherence. The aim of this study was to verify the effect of nutrition therapy intervention on nutritional status, renal disease progression and inflammation in pre dialysis patients.

Method: A crossover controlled prospective, randomized study in outpatients with stage IV CRD was carried out. The study consisted in the follow up of two groups of patients with CRD in the pre dialysis period. By randomization 21 patients were started on a 1.5 protein/kg/day diet prescription and 20 patients on low protein diet (0.6/kg/day). After six weeks diets were reversed between the two groups and followed for another six week period. Dietetic, biochemical and anthropometric parameters were assessed at baseline and after 6 and 12 weeks. Crossover analysis was performed.

Results: 41 patients were evaluated. The group with usual protein diet received 1.0±0.03g/kg/day and the low protein diet 0.61±0.02g/kg/day. Dietary record showed a ingestion of 0.87±0.27g/kg/day in the usual diet and 0.63±0.21 in the low protein diet. Although, urinary nitrogen appearance (UNA) indicated a intake around 1.0±0.28g/kg/day and 1.0±0.33 in usual and low protein diet respectively, that differ significantly from the diet prescribed and the appointed in the dietary record. Statistical analysis did not show any significant differences between the diets on nutritional status, creatinine clearance, creatinine, urea, CRF and fibrinogen. As the patients did not adhered to the diet, the effect of nutrition therapy intervention could not be analyzed.

Conclusion: Patients adhered poorly to low protein diets. Nutritional management of patients with CRF is as challenge in order to extend dialysis time.

P065
Associations between nutritional markers and cardiovascular events in haemodialysis patients
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Objective: Protein-energy wasting (PEW) and overload contribute to the poor cardiovascular prognosis in dialysis patients. The aim of this study was to evaluate the association between nutritional markers and cardiovascular events.

Method: Sample: the study included 181 patients (54.7% male; 28.7% diabetic), average age 65.7±12.0ys old. These patients were in HD for about 4,9±6.6ys. Most patients submitted HDAF (29,8%), 3 times week, FAV(88,6%), with an average 11,5±1,1 hours of HD per week.

The study consisted of baseline measurements of several nutritional parameters and records of outcome (death) over a period of 7 years.

Nutritional parameters: Subjective Global Assessment [SGA]; Bioelectric Impedance Parameter[BIA]; anthropometric measures; laboratory procedure including serum albumin[A(Alb)] in g/dl, total cholesterol[Col] in mg/dl, creatinine[Creat] in mg/dl and protein intake measured used normalized protein catabolic rate [PNAn] in g/kg/day.

Results: Fifty-four (29,8%) patients developed cardiovascular events during 33,9 months (4; 78) of follow-up period. Comparison of patients with and without cardiovascular events revealed higher extracellular mass/body cell mass [ECM/BCM] (1,10±0.28 vs. 1,05±0.2, p<0.05) and lower value of percentage mid-arm muscle circumference [%MACMC] (105,03±32,12 vs. 110,47±42,7, p<0.01). Survival analysis showed that Col<100mg/dl (OR=0.26, p<0.05) and ECM/BCM ≥1,2 (OR=1.91, p<0.05) were associated with poor cardiovascular prognosis.

Conclusion: In HD patients, poor nutritional status and fluid overload are associated with occurrence of cardiovascular events. Therefore the use the BIA at the clinical evaluation may be important for the cardiovascular prognosis in HD patients.
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P066

Association of anthropometric indexes with metabolic syndrome in patients on chronic hemodialysis
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Objective: Anthropometric measures are simple tools, easy to obtain, and strongly associated with metabolic risk factors. Hence, they could be useful to detect metabolic syndrome (MetS). Our aim was to determine which anthropometric index was better associated with MetS among patients on chronic hemodialysis (HD).

Method: An observational study was conducted. The anthropometric measures considered were body mass index, percent of mid arm muscle circumference standard and tricipital skinfold thickness standard, waist-to-hip ratio, waist-to-thigh ratio, sagittal abdominal diameter, conciity index, sagittal index and body fat percentage. The MetS diagnostic criteria used were those proposed by National Cholesterol Education Program’s Adult Panel III (ATP III-NCEP), International Diabetes Federation (IDF) and Harmonizing Metabolic Syndrome (HMS). Initially, univariate models were constructed and the variables associated with MetS were included subsequently in the multiple regression models by stepwise selection. The area under the receiver operating characteristic (ROC) curves was calculated to evaluate the ability of anthropometric measures to predict MetS.

Results: A total of 98 patients on HD, three times weekly for 4 h, were studied. The patient’s mean age was 57.8 ± 12.9 years, 54% were male, and 50% of the patients had diabetes. The main causes of end-stage renal disease were diabetic nephropathy (39.8%) and hypertensive nephrosclerosis (21.4%). The prevalence of MetS was 51%, 64.3%, and 74.5% according to ATP III-NCEP, IDF e HMS statement, respectively. WSR was the independent variable associated with MetS by all diagnostic criteria (p<0.01). Only the criteria proposed by IDF had another independent variable associated, that was percent of tricipital skinfold thickness standard (p<0.03). Using only abdominal obesity indexes to calculate the area under ROC curves, WSR was which can better predict MetS (0.906, 0.946, and 0.840 according to ATP III-NCEP, IDF e HMS statement, respectively, p<0.01).

Conclusion: WSR was the anthropometric index that had better association with MetS in this sample of patients in HD. WSR can be used in nutritional evaluation of patients in HD, because of its ease of application.

P067

Prevalence and Risk Factors of Hyperlipidemia in patients with IgA Nephropathy
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Objective: To investigate the prevalence and risk factors of hyperlipidemia in patients with IgA Nephropathy.

Method: This retrospective study enrolled 1450 adult patients (46.1% male, mean age 33.0±10.6 years), who were admitted to The First Affiliated Hospital, Sun Yat-sen University from January 2006 to December 2011 and diagnosed with biopsy-proven IgA nephropathy. Serum total cholesterol ≥5.18 mmol/L, triglycerides ≥1.70 mmol/L, LDL cholesterol ≥3.37 mmol/L or HDL cholesterol <0.91 mmol/L were defined as hyperlipidemia.

Results: Among 1450 IgA nephropathy patients, the prevalence of hyperlipidemia was 60.6%. Prevalence of hyperlipidemia in patients CKD stage 1, 2, 3, 4and 5 was significantly different (P <0.001), with a prevalence of 49.2%, 66.4%, 74.7%, 79.0% and 72.0%, respectively. Adjusting Logistic regression analysis showed old age (P=0.008), high diastolic blood pressure (P=0.002), decreased level of serum albumin (P=0.000), increased level of uric acid(P=0.000), increased percentage of crescent(P=0.009) were independent associated factors for hyperlipidemia in patients with IgA nephropathy.

Conclusion: The prevalence of hyperlipidemia in patients with IgA nephropathy was 60.6%, and old age, high diastolic blood pressure, low serum albumin, high uric acid were independent associated factors of hyperlipidemia in patients with IgA nephropathy.
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P070

And if our patients learned playing?
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Objective: Renal nutrition education program could help adherence to diet and or medication but mostly could help the patients to manage his diet in everyday life. Oral intervention or written resources are sometimes limited. The game can be a good approach for interaction between patients and a better understanding of the diet.

Method: A specific program of nutrition (EDAM project. Education of the dialysis patient for better food) was developed around an educational game (Dialogame) and patients’ guide. An educational game on dietary recommendations for hemodialysis was created and distributed in more than 40 dialysis units in France. This educational game allows patients to learn during hemodialysis sessions attended a dietician or nurse or independently. 200 questions and answers about the potassium salt and beverages, phosphorus, protein and energy are available. Field guides for patients, consisting of fact sheets, learning and knowledge assessment questionnaires exercises are distributed at the end of the game. A guide for the health team to use the tools and conduct nutrition workshops is available to help dietitian or nurses to assess knowledge about nutrition.

Results: We’ll present the tool and results of a knowledge assessment study in patients with versus without this educational program (80 patients, study in progress until March 2014).

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P071

Providing in-between meals during dialysis treatment contributes to an adequate protein-energy intake in hemodialysis patients
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Objective: Reduced protein intake and imbalance between protein synthesis and degradation during maintenance hemodialysis treatment are causes of protein-energy wasting, and predicts morbidity and mortality. The aim of this study is to achieve adequate protein- and energy intake on days of dialysis treatment.

Method: Adult hemodialysis patients in a university hospital, receiving three times per week dialysis treatment, were offered a choice out of seven different in-between meals (± 15 g protein, 240 kcal) during a six week intervention, combined with education focused on adequate protein-energy intake. Indirect calorimetry and physical activity level were measured to provide daily energy needs. 24 hour recall was completed for two dialysis days both at baseline (T0) and six weeks (T6) after starting the intervention, together with BMI, handgrip strength, appetite and serum phosphate.

Results: 23 patients (11 men) were enrolled. Age: 55.4 ± 12.7 years (mean ± SD), BMI: 24.5±4.4 kg/m2. At T0 the protein intake was 0.95 g/kg/body weight (82± 37% of protein requirements p= 0.01) and the energy intake 25±10 kcal/kg/bodyweight (85± 26% of estimated energy requirements p= 0.01). 35% of the patients achieved their protein goal, 39% of the patients their energy goal. At T6 the protein intake was 1.23 ± 0.51 g/kg/bodyweight (p=0.002) and the energy intake was 29±10 kcal/kg/bodyweight (p= 0.005). 61% of the patients achieved their protein goal, 67% of the patients their energy goal. Weight, appetite, handgrip strength and serum phosphate did not change significantly. Patients preferred in-between meals of regular foods instead of protein energy supplements.

Conclusion: Protein- and energy intake on days of dialysis treatment is insufficient in two out of three hemodialysis patients. This significantly improves by providing in—a between meal combined with education during dialysis treatment.

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P072

Comparing scores assessing nutritional status in chronic hemodialysis patients: a CONTRAST subanalysis
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Objective: Protein Energy Wasting (PEW) describes the state of decreased body stores of protein and energy fuels. It occurs in up to 50% of hemodialysis (HD) patients and is highly associated with increased all-cause mortality. Therefore, it is important to detect malnourished patients accurately and easily. We investigated which scoring list or individual parameter related to nutritional status best predicts all-cause mortality in HD patients.

Method: Data were used from the CONstructive Transplant Study (CONTRAST, NCT 00205556), a cohort of ESRD patients treated with HD or hemodiafiltration (HDF). We assessed or calculated the Subjective Global Assessment (SGA), the Malnutrition Inflammation Score (MIS), the Geriatric Nutritional Risk Index (GNIri) and the composite Protein Energy Nutrition Score (cPENS).

Furthermore, we investigated albumin, creatinin, body mass index (BMI) and normalized Protein Nitrogen Appearance (nPNA) as predictive individual parameters. All-cause mortality was used as end point. All scores and individual parameters were compared using 95% confidence intervals (CI) of Receiver Operating Curves (ROCs). Calibration was tested using the Hosmer-Lemeshow Goodness-of-Fit (GOF) Test. For each score or parameter, four groups were created in order to compare hazard ratios regarding the best group versus the worst group, the increase of hazard ratio per group and the worst group versus the other three groups combined.

Results: In 489 out of 714 patients, all scoring lists and individual parameters could be assessed or calculated. ROCs showed significant predictive value regarding mortality for SGA, MIS, GNIri, cPENS, albumin and creatinin with areas under the curve (AUC) between 0.59-0.66 (p < 0.0005). Comparing 95% CI of these AUCs, no single test performed better than the others. The Hosmer-Lemeshow GOF test showed inadequate fit of cPENS, GNIri and creatinin (p-value 0.002, 0.040 and 0.007, respectively). Of the remaining tests (SGA, MIS and albumin), none had a significant better predictive value regarding mortality over the other when comparing 95% CI of any hazard ratio.

Conclusion: Of the validated nutrition scores and parameters, SGA, MIS and albumin are the best predictors of mortality in ESRD patients. Of these three tests, none has an added value over the other.

P073

Anthropometric and biochemical assessment of the nutritional state in incident peritoneal dialysis patients: lower visceral protein plasma concentrations were independently associated with mortality
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Objective: Malnutrition is a common complication and strongly associated with high mortality in peritoneal dialysis (PD) patients. We aimed to investigate the relationship between combined nutritional indicators and mortality in incident continuous ambulatory peritoneal dialysis (CAPD) patients.

Method: This is a retrospective cohort study. Incident CAPD patients in our PD center were enrolled from January 2008 to December 2010. Nutritional status was accessed by body mass index and biochemical indices (serum albumin, prealbumin, transferrin, creatinine and total cholesterol). Comorbid disease and inflammatory parameter (high sensitive C reactive protein (hsCRP)) were also collected in the first 1-3 months after initiation of CAPD.

Results: A total of 719 incident CAPD patients were enrolled in this study. The mean age was 47.2±14.9 years, 59.8% (n=430) were male, 23.6 % (n=170) were diabetes mellitus. The median follow-up time was 30 months (interquartile range 21 to 41months) and 105(14.6%) patients died. Among the study population, 111(15.4%) patients had BMI < 18.5 kg/m2, 348(48.4%) had albumin <5.8 g/dl, 239(33.2%) had prealbumin <30mg/dl, 306(44.5%) had transferrin <10mg/dl, 345(47.9%) had creatinin <170umol/l, 403(56.0%) had hsCRP >8mg/l.

Conclusion: Protein and energy wasting in CAPD patients was accurately and easily. We investigated which scoring list or individual parameter related to nutritional status best predicts all-cause mortality in HD patients.
Interaction of albumin and phosphorus and its association with mortality in incident peritoneal dialysis patients

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Objective: Hypoalbuminemia and hyperphosphatemia each confers a worse prognosis in dialysis patients. However, it is largely unclear whether an interaction exists between serum albumin and phosphorus, and thus can modify the risk of all-cause mortality in peritoneal dialysis (PD) patients.

Method: We retrospectively analyzed 1248 incident continuous ambulatory peritoneal dialysis (CAPD) patients. Patients were categorized according to the baseline quartiles of serum albumin or phosphorus levels. Cox proportional hazards model were applied to examine the risk of serum albumin and phosphorus independently and interactively.

Results: Hypoalbuminemia was an independent risk factor for mortality after adjustment of confounders [hazard ratio (HR) 0.93, 95% confidence interval (CI) 0.90 to 0.95, P<0.001], whereas hyperphosphatemia showed a trend to increase death risk (HR 1.38, 95% CI: 1.00 to 1.91, P=0.05). There were no significant interaction between albumin and phosphorus in this cohort (P=0.75). However, when albumin levels were classified into quartiles, different trends in association of phosphorus with mortality were evident. With the lowest serum albumin quartiles (<33.5g/L), the increase in phosphorus levels tended to enhance risk for mortality. Nevertheless, patients with the highest albumin quartiles (>40.6g/L) and low (1.17mmol/L) or high (1.71 mmol/L) phosphorus concentration had a greater risk for death.

Conclusion: There was a significant interaction between serum albumin and phosphorus in our cohort. However, association with mortality was modified by each other at different concentrations.

Variation of potassium content in mate preparations from different kinds of erva-mate (Ilex paraguariensis)

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Objective: Chronic Kidney Disease (CKD) is a multifactorial disease. Among its complications is the hyperkalemia, when the main recommendation is dietary restriction of potassium (K). The erva-mate (Ilex paraguariensis plant product) is rich in K (1300mg/100g) and widely used in Latin America and southern Brazil in the preparation of mate (bevegare). Although, there are few studies describing the content in the infusion of mate. The aim of the study was to analyze the variation of K content over the course of the mate infusions of herbs in different types of mate.

Method: An experimental study was conducted with three types of erva-mate: traditional (70% leaf and 30% other parts of the plant), pure-leaf (80% leaf and 20% of other parts of the plant) and traditional with tea. K analysis was performed by optical spectrometry technique in the mate infusions (only the odd infusions- 1,3,5,7 and 9).

Results: The K content in the 1st infusion of mate prepared with traditional erva-mate was 176±150mg/L, with pure-leaf 701 ± 411mg/L and with traditional with tea 270±161mg/L. There was a reduction of K content through the infusions in all types of erva-mate analyzed. The higher decrease of K occurred in the mate prepared with traditional erva-mate, 176±150 mg/L to 35±6 mg/L, from the 1st to the 9th infusion (almost 80% of reduction). Although, 50% of reduction was found from the 1st to the 3rd infusion in the traditional and herbal teas added.

Conclusion: There is a big reduction of K content in the consecutive infusions of mate, in the different types. These preliminary findings discuss the prescription to reduce consumption of mate for patients with chronic kidney disease the risk of hyperkalemia.
Dietary profile of hemodialysis patients

Alessandra C. Pizzato; Carolina Ribeiro Anele; Nathalia Lemes Pereira; Laura Domingues; Maria Lucia Rossés

Objective: The diet plays a crucial role when dealing with patients who had chronic kidney disease (CKD), especially due to losses related to the hemodialysis (HD) sessions, what requires constant monitoring of the patients diet. The aim of this study was to analyze the dietary profile of HD patients.

Method: A cross-sectional study with patients who have chronic renal failure on HD at Hospital São Lucas PUCRS (south of Brazil). Dietary profile was collected by 3-day dietary record (day off HD, day on HD and Sunday) in which the macronutrients as well as potassium, sodium, phosphorous, calcium, and fluid intake were analyzed. Dietary analysis was performed by using nutritional software to quantify (ADSmart) and the findings were compared to the KDDQ Guideline.

Results: 44 HD patients were evaluated (73% male/27% female, 55±13 years). It was observed that the energy intake was 1918±27 kcal (2860±6.9 kcal/kg), carbohydrate 239±10g (51±2% of total energy intake), protein 86±5 g (1.3±0.06g/kg, 18±6% of total energy intake) and lipid 68±16g (31±2 % of total energy intake). The 3-day dietary record showed an intake of calcium of 697±368mg, phosphorous of 1091±425mg, potassium of 2149±720mg and sodium of 1930±820mg. No difference between macro and micronutrients were found when the days were analyzed separately. There was a significant difference related to fluid intake between day on HD and off HD (1.06±4.2L vs 1.468±5.13L respectively). No difference was found in relation to Sunday. Dietary profile showed a low energetic intake during the 3 days evaluated as well as carbohydrate and lipid intake adequacy. However, macro and micronutrients were found when the days were analyzed separately. There was a significant difference related to fluid intake between day on HD and off HD (1.06±4.2L vs 1.468±5.13L respectively). No difference was found in relation to Sunday. Dietary profile showed a low energetic intake during the 3 days evaluated as well as carbohydrate and lipid intake adequacy. However, protein intake was higher than expected, even though it was analyzed in the 3 days separately. Micronutrients showed adequacy, except in relation to phosphorus and calcium intake, with higher and lower respectively.

Conclusion: Dietary profile of patients showed alterations in energy, protein, calcium and phosphorus intake, which can lead to nutritional deficiency. Constant nutritional management is required to achieve the diet and prevent complications related to CKD.

P079

Randomized controlled trial of Bioelectrical Impedance Vector Analysis for dry weight adjustment in patients undergoing hemodialysis.

Ximena Atlano Carsi, Iris del Carmen Nieves Ayana; Ernesto Sabath; Maria Elena Rojo

Objective: The aim of the study was to compare the efficiency of BIVA against the conventional clinical parameters to adjust the intensity of ultrafiltration and achievement of dry weight in HD patients.

Method: Forty-seven adult patients were randomized into two groups. In group A, dry weight was adjusted by BIVA to reach euhydration. In group B, dry weight was adjusted based on clinical parameters. All patients were performed monthly measurements of bioelectrical impedance pre and post-dialysis for four months and plotted the patient’s vectors in the RXc graph in order to meet euhydration. In group A, the change in post-dialysis weight was 4 kg and 7.6 liters of TBW was observed, whereas in group B the change in post-dialysis weight was 5 kg and 8.4 liters of TBW. In both groups decrease in blood pressure was found. Number of antihypertensive drugs only decreased in group A. Baseline impedance vectors were in the lower right quadrant in both hemodialysis units, training is extended to the multi-disciplinary team. However, applying step 5 is reserved for dietitians only.

P080

Nrf2 and NF-κB expression in hemodialysis patients

Ludmila Cardozo, Liliana Pedruzzi, Milene Barca Stocker-Pinto; Julio Daleprane; Juliana Siqueira; Olavo Cabral; Renata Frauches, Maurilo Leite Jr.; Denise Maria

Objective: Nuclear factor-kappa B (NF-κB) regulates the transcription of pro-inflammatory cytokines genes. In contrast, the transcription nuclear E2 related factor 2 (Nrf2) regulates the expression of detoxifying enzymes such as heme oxygenase 1 (HO1) and NADPH quinone oxidoreductase 1 (NQO1). The purpose of this study was to evaluate the NF-κB and Nrf2 expression in CKD patients on hemodialysis (HD).

Method: Twenty HD patients (54.9±15.2 yrs, 65% men, BMI 23.6±3.0 kg/m², time of dialysis 78±46.4 months, 21%, 44% of diabetes) were compared to 11 healthy individuals (50.9±8.8 yrs, 45.5% men, BMI 23.8±1.9 kg/m²). Quantitative Real-Time PCR analysis was performed using 7500 Real-Time PCR System (Applied Biosystems) to evaluate the levels of mRNA expression encoding Nrf2, NF-κB, HO1 and NQO1 from peripheral blood mononuclear cells. Malondialdehyde (MDA) levels were measured by reaction with thiobarbituric acid.

Results: The HD patients had lower expression of Nrf2 (5.8±1.35) when compared to healthy individuals (1.13±0.64, p=0.005). By contrast, the NF-κB expression was 2 fold in HD patients (2.18±0.8), when compared to healthy individuals (1.04±0.22, p=0.0001). There was no difference in HO1 values and, NQO1 mRNA expression was lower in HD patients (0.47 ± 0.26) when compared to healthy individuals (1.04 ± 0.25, p=0.0001). MDA levels were higher in HD patients (13.7 ± 5.3 mmol/mL) when compared to healthy individuals (5.1 ± 2.7 mmol/mL, p<0.01). The NF-κB was inversely correlated with Nrf2 expression in HD patients (r= -0.54, p<0.01) and positively in healthy individuals (r=0.85, p<0.001).

Conclusion: The HD patients presented increased NF-κB and MDA mRNA levels and reduced Nrf2 and NQO1 mRNA expression, which was the opposite of healthy individuals. NF-κB may participate in the negative regulation of Nrf2 expression in these patients. Supported by: CAPES, Faperj, CNPq.
or a green background means allowed. These colours & symbols therefore replace writing "allowed" or "avoided"

Differences in food perceptions due to cultural diversity

Western diet perceptions of a food item differ vastly from traditional African diet perceptions. What is perceived as chicken in a Western diet e.g. thigh/drumstick/breast may be perceived as chicken heads & feet or gizzards in a traditional African diet, red meat could be processed meat like polony/hunchon meat, milk could be a powdered creamer due to lack of refrigeration.

Socio-economic constraints

Due to socio-economic & financial constraints refrigeration & electricity are luxuries. This then impacts on food choices & cooking methods leading to very little day to day variety in most patients’ diets. Intake is based on foods not needing refrigeration & what can be afforded.

Therefore it is of utmost importance to tailor education to a specific patient's needs & to adapt the information to the patient's literacy level, culture, socio-economic circumstances & ethnic eating habits.

Step 2. How kidneys work.

Illiteracy complicates educating the patient on the difficult concept of kidney function. Through trial & error the most understandable way of explaining kidney function is as follows:

The damaged kidney is portrayed as a sieve with very fine mesh, or a blocked oil filter that does not allow normal kidney functions. Wastes (urea) & fluids then accumulate & chemicals like sodium, potassium & phosphate go out of balance causing uremic symptoms. These uremic symptoms are then tied up with the culprit waste products or excess chemicals that the damaged kidney is unable to balance.

Uremic symptoms are portrayed visually. The patient needs to understand that his uremic symptoms are related to damaged kidneys as well as dietary intake.

Renal Replacement Therapy is needed to replace functions of damaged kidneys & is explained visually.

Step 3. What to eat.

As an introductory step to renal diet education, the renal diet is explained in an understandable way by a visual tool called “The renal plate” that was specifically developed as a basic tool to educate newly diagnosed, illiterate/non-English speaking CKD patients in Southern Africa.

Adapting the South African 11 Food based dietary guidelines / 5 Food groups proved too complicated & were not understood. The 3 Basic food groups were used because of ease of understanding. “The renal plate” is based on adjusting the Basic 3 Food Groups by making use of the South African renal exchange lists. “The renal plate” only focuses on types of foods in a specific food group, not on quantity of each food group to be eaten. The green section round the plate contains a variety of commonly eaten foods allowed & the red section foods to avoid.

Once the patient is comfortable with the basic information supplied by the “Renal plate”, each food group namely “Body building foods”, “Energy foods like starches, sugars, fats & oils”, “Protective foods” as well as fluids, herbs & spices are illustrated in depth. Visuals of suitable fiber- & anti-oxidant foods are provided.


Foods to avoid due to high sodium, phosphate & potassium contents are portrayed by illustrations & linked to uremic symptoms experienced when diagnosted. This section is particularly useful to identify culprit foods causing chemical imbalances or waste build up. Detailed information is supplied on phosphate bio-availability & role of sodium in CKD. CKD-MBD is visually explained.

Step 5. How much to eat.

Portion sizes are addressed through visuals since patients are not familiar with using measuring cups & scales. Africa cooks from the heart with available ingredients using the hand as measure, not with a recipe using specified amounts in milliliters or grams. Various objects familiar to the patients (e.g. match box/tennis ball) are used instead to compare portion sizes.

A simple diet template is provided with corresponding life size portions on the opposite page. Visuals on suitable “Body building foods” for vegetarian renal diets are supplied

Results

What to eat.

Renal Replacement Therapy is needed to replace functions of damaged kidneys & is explained visually. A simple diet template is provided with corresponding life size portions on the opposite page. Visuals on suitable “Body building foods” for vegetarian renal diets are supplied

What not to eat.

Foods to avoid due to high sodium, phosphate & potassium contents are portrayed by illustrations & linked to uremic symptoms experienced when diagnosed. This section is particularly useful to identify culprit foods causing chemical imbalances or waste build up. Detailed information is supplied on phosphate bio-availability & role of sodium in CKD. CKD-MBD is visually explained.

Step 5. How much to eat.

Portion sizes are addressed through visuals since patients are not familiar with using measuring cups & scales. Africa cooks from the heart with available ingredients using the hand as measure, not with a recipe using specified amounts in milliliters or grams. Various objects familiar to the patients (e.g. match box/tennis ball) are used instead to compare portion sizes. A simple diet template is provided with corresponding life size portions on the opposite page. Visuals on suitable “Body building foods” for vegetarian renal diets are supplied

Results

The tool has only been informally validated by positive feedback from users who implemented the tool in their renal units. It was observed that there was an improvement in dietary compliance with regards to foods choices as found in follow-up validated diet histories & also a corresponding improvement in blood results.

Conclusion

Compliance to a renal diet is an integral part of patient care. As observed in the results, the following hypotheses can be postulated:

Newly diagnosed, illiterate/non-English speaking CKD patients in Southern Africa, educated with the help of the illustrated manual, had a better understanding of the disease, its consequences & impact of foods on blood results which led to better renal diet compliance & ultimately better disease outcome.

The goal is to scientifically validate the tool in the near future.
Objective: The National Helath Service Outcome framework in the UK includes a set of outcome goals spanning effectiveness, patient experience and safety (Department of Health 2010). In order to identify haemodialysis patient experience of current renal dietetic services, a satisfaction questionnaire was developed. We wanted to evaluate current patient views of renal dietetic services and to explore patient experience with the level of information they receive.

Method: This service evaluation was conducted by offering all HD patients (n=364) the choice to complete an anonymous questionnaire between April and June 2012. To reduce bias from the renal dietitian the questionnaire (Table 1) was left at the HD reception desk.

Results: Out of 364 HD patients 133 (36.5%) completed the satisfaction questionnaire. The following table shows the satisfaction questionnaire results (n=133).

1. How often do you see the renal dietitian?
   - Not enough: 38.4% (n=51)
   - Just about right: 60.9% (n=81)
   - Too much: 0.8% (n=1)

2. Do you feel you receive enough information to follow your renal diet?
   - Just about right: 60.9% (n=81)
   - Not enough: 38.4% (n=51)
   - Too much: 0.8% (n=1)

3. Which of the following options would you find helpful?
   - Cooking sessions: 8.2% (n=11)
   - Posters: 33.8% (n=44)
   - Games: 6% (n=8)
   - Recipes: 52.6% (n=70)
   - Group education: 9.7% (n=13)
   - Quarterly newsletter: 52.6% (n=70)
   - Skype: 3.7% (n=5)
   - Potassium allowance: 48.9% (n=65)
   - Phosphate allowance: 46.6% (n=68)

Conclusion: As a result of this service evaluation renal dietitians have implemented a newsletter with recipes and are working on new potassium and phosphate allowance resources. Although this satisfaction questionnaire was not validated, it was effective and inexpensive in identifying HD patients related experience measures (PREMS) of renal dietetic services.
P086

Pedometer-assessed physical activity and kidney function in patients with chronic kidney disease - results from the German Chronic Kidney Disease (GCKD) Study
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Objective: Patients with chronic kidney disease (CKD) are at increased risk of cardiovascular disease and death. Evidence suggests that physical activity may protect against cardiovascular disease in the general population. In CKD, regular physical activity may prevent impaired muscle metabolism with atrophy of muscles and muscle weakness and may slow the progression of renal disease and CV complications. We sought to determine whether physical activity as assessed by a pedometer was associated with renal function and proteinuria in a large cohort of CKD patients.

Method: From a prospective cohort study of German CKD patients (GCKD study), 1567 patients were provided with a pedometer and daily walking activity was assessed during 13 days. The mean step count of patients was compared across the categories of GFR (60 mL/min) and the level of proteinuria (300 mg urinary albumin/g creatinine). Logistic regression analyses were performed to investigate the association of the step count with the level of renal function and adjusted for potential confounders.

Results: Of all 1576 patients, 1153 with complete pedometer data were analyzed. The mean age of the patients was 61 years and 40% of them were women. The mean step count was 5162 steps per day. The mean step count was significantly lower with lower levels of GFR. While patients with a GFR ≤60 mL/min had a mean of 6016 steps per day, patients with a GFR >30/mL/min had a mean of 4588 steps per day. Patients of the lowest step count quartile (<3152 steps/day) had a more than twofold increased risk of CKD stage IIIb or higher (OR 2.40, 95% CI 1.71-3.35) as compared with patients of the highest step count quartile (>6716 steps/day). The association persisted after adjustment for age and sex (OR 1.96 (1.38-2.77)). With regard to proteinuria, a positive relationship with the mean step count was found.

Conclusion: We found that the level of physical activity directly correlated with kidney function in patients with CKD. Patients with higher physical activity levels had a higher GFR and a lower adjusted relative risk for advanced stages of CKD. In contrast, patients with higher physical activity levels showed a higher degree of proteinuria. In order to assess the causal effects of physical activity on kidney disease progression, randomized controlled trials with exercise intervention are needed in patients with CKD.

P087

The study of malnutrition in elderly people of Kurdistan in 2011
Zohreh Rahimi
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Objective: Population aging is increasing in nutritional status plays an important role in health and disease, older people and is considered the most important factor. Elderly disability due to the inability to chew disease, drugs and social isolation and loss of income and physical activity in are receiving inadequate dietary exposure study to evaluate the status of malnutrition in elderly Province choleria research priorities according to the Ministry of Health Food, which was announced to all universities.

Method: 1010 elderly in this study based on random cluster sampling in the province (Urban and rural) were selected and their income and physical activity in are receiving inadequate dietary exposure study to evaluate the status of malnutrition in elderly Province cholera research priorities according to the Ministry of Health Food, which was announced to all universities were. The mean age of the patients was 61 years and 40% of them were women. The mean step count was 5162 steps per day. The mean step count was significantly lower with lower levels of GFR. While patients with a GFR ≤60 mL/min had a mean of 6016 steps per day, patients with a GFR >30/mL/min had a mean of 4588 steps per day. Patients of the lowest step count quartile (<3152 steps/day) had a more than twofold increased risk of CKD stage IIIb or higher (OR 2.40, 95% CI 1.71-3.35) as compared with patients of the highest step count quartile (>6716 steps/day). The association persisted after adjustment for age and sex (OR 1.96 (1.38-2.77)). With regard to proteinuria, a positive relationship with the mean step count was found.

Conclusion: We found that the level of physical activity directly correlated with kidney function in patients with CKD. Patients with higher physical activity levels had a higher GFR and a lower adjusted relative risk for advanced stages of CKD. In contrast, patients with higher physical activity levels showed a higher degree of proteinuria. In order to assess the causal effects of physical activity on kidney disease progression, randomized controlled trials with exercise intervention are needed in patients with CKD.
Cystatin c based GFR equation does not outperform creatinine based formulas in obese and overweight CKD patients.

Method: This prospective study included 108 patients with BMI > 25 kg/m$^2$ referred to the department of renal function study in Lyon between January 2013 and October 2013 for measurement of gold standard clearance by inulin or iohexol (mGFR) without BSA indexation for suspected or established renal dysfunction. All patients underwent cystatin C measurement. GFR was also estimated by equations derived from creatinine (eGFRCKD-EPI) or cystatin (eGFRcyst) or both (eGFRcyst-creat). The mean Bias (mGFR - eGFR) and accuracy within 30% were calculated for the three equations.

Results: Mean age was 56 ± 1.5 years and BMI was 32 kg/m$^2$. Among this cohort, 56% of patients had a GFR < 60 mL/min/1.73m$^2$. The mGFR was 64 ± 3 mL/min, eGFRCKD-EPI was 60 ± 3.1, eGFRcyst was 62 ± 3.6 and eGFRcyst-creat was 63 ± 3.6 mL/min/1.73m$^2$. The bias between mGFR and eGFRCKD-EPI, eGFRcyst or eGFRcyst-creat were not different (2.8 ± 1.6, 1.4±2.2 and 3.12 ± 1.6 mL/min/1.73m$^2$). The accuracy 30% was 87%, 75% and 90 % for eGFRCKD-EPI, eGFRcyst and eGFRcyst-creat respectively. In the subgroup of patients with a GFR < 60 mL/min/1.73m$^2$, we found no difference with the bias between mGFR, eGFRCKD-EPI, eGFRcyst and eGFRcyst-creat.

Conclusion: eGFRcyst and eGFRcyst-creat could be used as an accurate estimation of GFR in obese and overweight subjects, but do not outperform eGFRCKD-EPI.

Objective: Malnutrition is reported to affect 20% - 50% of the haemodialysis population and causes are multifactorial. Nutrition support interventions are known to improve measures of nutritional status but the most effective methods and which outcome measures to use to validate their efficacy have not been confirmed to date.

Method: NOURISH is a two arm randomised, parallel group, external pilot trial of intradialytic oral nutritional supplements (ONS) during haemodialysis (HD) versus standard care. Eligible participants (HD patients >18 years, dialysis 3 times per week for at least 6 months, Body Mass Index <22 kg/m$^2$) were randomised to either receive an ONS each HD session or standard care for 2 months. Primary outcomes were recruitment and feasibility: recruitment rate (recruit to time, t = 6 weeks) and barriers, data completion, and acceptability of assessment methods. Secondary outcome measures included palatability of supplements, oral intake, handgrip strength and quality of life (QOL) using SF-12 completed at baseline, 1 and 2 months. The trial was designed to help inform the feasibility of a larger study, timing of assessments, and sample size requirements.

Results: 10 participants were recruited, representing 4% of the screened population. The main reason for ineligibility was a body mass index greater than 22kg/m$^2$. Average time for monthly assessments was 35 to 55 minutes, which patients found acceptable. The completion of the session questionnaire to identify food intake on HD and ONS preferences had a completion rate of just 23.6%. Significance tests were not performed for secondary outcome measures due to the small sample size. 181 participants would be needed to identify a significant change in handgrip strength in a definitive trial based on 90% power and a minimally clinically important difference of 3 kg.

Conclusion: A definitive trial would be feasible in the UK, but some aspects need further consideration. Inclusion criteria - possibly increase BMI to 24kg/m$^2$ and use additional measures of muscle mass to better indicate nutritional status. Timing of ONS during the intradialytic period should be clearly defined. Monthly assessments of oral intake, QOL, weight and routine blood results are advised but the use of session questionnaires is not indicated.

Objective: Cardiovascular disease and key uremic toxins: an observational study across the CKD spectrum

Method: We included 205 patients, 53% male, aged 56±14.5 years. The largest area under ROC curve was found to volume overload pre-dialysis (0.660, 95% CI 0.556-0.765 p = 0.004). The ROC curve of volume overload postdialysis also reaches statistically significance. The best cutoff point was found to volume overload predialysis = 1.4 L with a sensitivity of 69% and specificity of 67%. The association of TBW and inadequate BP control highlight the importance of volume management in hemodialysis patients.

Conclusion: Volume overload of 1.4 L pre-dialysis was the parameter that best discriminated the presence of inadequate BP control.
Total energy requirements of children with chronic kidney disease

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**Objective:** The aim of the present study was to determine whether total energy expenditure (TEE) in a group of children with CKD differs from that of healthy children and whether within the CKD group is affected by kidney function.

**Method:** TEE was estimated by three methods: (i) Dietary reference values incorporating measured basal metabolic rate (BMRm) or Schofield predicted BMR (BMR Sch); (ii) activity diary and BMRm; (iii) intelligent device for energy expenditure and activity (IDEAA; CA, USA). BMR was measured by indirect open circuit calorimetry following a 12 hour fast and after resting in recumbent position for 30 minutes. It was also predicted by the Schofield equation using age, gender, weight and height. Physical activity was measured by an activity diary (AD). A novel device (IDEAA) was also used. Estimated glomerular filtration rate (eGFR) was calculated using the Schwartz formula.

**Results:** Twenty children with CKD and twenty age and gender matched control children were studied (mean age 11.9±3.3 y, weight 39±15.9 kg vs. 46±16.8 kg, height 1.46±0.19 vs. 1.5 ±0.18 m, BMI 18±0.25 vs. 20±0.41 kg/m², and eGFR 33.7±20.5 ml/min/1.73m²). The results showed that TEE varied widely between individuals and did not differ significantly from healthy controls for any of the three methods (i) r²=0.027, p=0.517 BMRm r²=0.001, p=0.896 BMR Sch; (ii) r²=0.170, p=0.801; (iii) r²=0.227, p=0.511.

**Conclusion:** No evidence was found that TEE of children with CKD (mean stage 3 disease) differed from healthy controls. The non-significant tendency for TEE to decrease as renal function deteriorated was not significant, possibly because of small sample size and wide variation between individuals with CKD.
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We found inverse correlation with MIS Phase angle, % BCM, % intracellular water, prealbumin, albumin, transferrin, hemoglobin, MDRD and dynamometry and direct with Na / K, % extracellular water, OGA and SGA. 53.2% of men and 77.7% of women showed implying high abdominal circumference index of cardiovascular risk. Exists no significant difference in values between the two groups MIS and between diabetics and nondiabetics. 

Conclusion: Scale MIS appears as a useful scale for assessing the binomial nutrition - inflammation in patients with CKD with good correlation with analytical parameters, body composition and muscle strength

P098 Correlation between clinical diabetic nephropathy and severity of diabetic retinopathy in type 2 diabetic patients

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Objective: Diabetic nephropathy and retinopathy are the major microvascular complications of type 2 diabetes mellitus (T2DM). Their presence are frequently linked in patients, the relationship has not so far been clearly described especially T2DM. To investigate the relationship between the grade of retinopathy and the severity of nephropathy in patients with T2DM.

Method: Authors conducted a cross-sectional study in T2DM patients at Phramongkutklao hospital. The severity of nephropathy was graded using the levels of albuminuria and estimated glomerular filtration rate (GFR), and retinopathy was classified as absent, mild non-proliferative (NPDR), moderate-severe NPDR or proliferative lesion (PDR).

Results: A total of 213 T2DM patients with mean age of 63.5±12.37 years, and mean duration of diabetes of 9.49±6.88 years were included. There were 92 (43.2%) patients with normalalbuminuria, 61 (28.6%) patients with microalbuminuria, and 32 (13.3%) patients with overt albuminuria. Prevalence of overt albuminuria was 12.5% in the absence of retinopathy, and 87.5% in patients with signs of retinopathy. Prevalence of advance nephropathy which defined as estimated GFR<30 ml/min/1.73 m² was 31.0% in mild NPDR group, and 27.6% in moderate-severe NPDR group and 41.4% in PDR group. Overall, all patients with advanced nephropathy had signs of retinopathy. In addition, there was significant correlation between grading of retinopathy with higher albuminuria and estimated GFR declines.

Conclusion: In this study suggests that the presence of a pre-existing diabetic retinopathy and nephropathy may contribute to the development of another, especially in T2DM. The incidence of advanced T2DM nephropathy without retinopathy is uncommon.

P099 Is there relationship between bone mineral density and body composition in hemodialysis patients?

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Objective: Is there relationship between bone mineral density and body composition in hemodialysis patients?

Method: Twenty-nine HD patients (48.3±10.8 years, 65.5% men, BMI, 25.9±3.9 kg/m², dialysis time of 37.3±30.9 months) were analyzed using Multiplex kits (R&D System Inc. ®. Minneapolis, MN, USA).

Results: Osteopenia was reported in around 85% of patients and 86.2% presented high fat body mass. In women, OPG levels were negatively correlated with body fat (r=−0.92, p<0.005) and WC (r=−0.70, p<0.005) and OC negatively correlated with WC (r=−0.72, p<0.005).

Conclusion: In conclusion, HD patients present low BMD, high fat mass and inverse relationships between fat mass and osteopenia-linked bone markers.

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P100 Urinary Angiotensinogen as a Potential Biomarker of Diabetic Nephropathy

Bancha Sattrapoj, Nuttawut Sirintweesuk, Ouoppatham Supasyndh, Panbubpa Choovichian Medicine, Phramongkutklao Hospital, Bangkok/T;

Objective: Activation of the renin-angiotensin-aldosterone system (RAS) is an important mediator of diabetic nephropathy. Urinary angiotensinogen, a novel biomarker of the intra-renal RAAS, is associated with progressive kidney injury. In the present study, authors investigated the determinants of urinary angiotensinogen and its associations with staging of diabetic nephropathy.

Method: Random urine samples were collected from type 2 diabetic patients with normoalbuminuria (n=52), microalbuminuria (n=52) and macroalbuminuria (n=51) for the measurement of angiotensinogen by sensitive and specific ELISAs. Control samples were collected from healthy volunteers (n=20) who have normal albuminuria and renal function.

Results: Urinary angiotensinogen was higher in microalbuminuric and macroalbuminuric diabetic than in the controls (265.08±137.87 and 72.51±89 vs 9.81±89 ng/mL, respectively, P<0.001). In diabetes with normoalbuminuria, urinary angiotensinogen was also higher than in the controls (19.25±20.24 vs 9.81±89 ng/mL, P= 0.046). The performance of the biomarker in differentiating each stage of 2 diabetes from the controls is illustrated by receiver-operating-characteristic curves. The areas under the curve for the diagnosis of established normoalbuminuric, microalbuminuric and macroalbuminuric type 2 diabetes using urine angiotensinogen (ng/mL) were 0.65 (95%CI, 0.52 to 0.79), 0.82 (95%CI, 0.72 to 0.91), and 0.95 (95%CI, 0.90 to 1.00), respectively. In addition, the cut-off levels were 7.84 ng/mL (sensitivity 61.5%, specificity 55.0%), 11.05 ng/mL (sensitivity 55.8%, specificity 65.0%), and 13.32 ng/mL (sensitivity 46.2%, specificity 80.0%) for distinguishing normoalbuminuric type 2 diabetes from healthy controls.

Conclusion: Authors propose that angiotensinogen would be the one of potential urinary biomarker for diagnosis in established diabetic nephropathy. It appeared even before significant albuminuria in diabetic nephropathy: It might be useful as an early biomarker of activation of the RAS in diabetic nephropathy.

P101 Changes in body composition after initiation of haemodialysis

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Objective: Body composition monitoring (BCM) is primarily used in our centre for determining the ‘normally-hydrated’ (NH) weight of haemodialysis (HD) patients when reviewing target weights. It also provides a measure of body composition. The BCM breaks the NH weight down into normally hydrated lean tissue mass (NH-LTM) and normally hydrated adipose tissue mass (NH-ATM). We observed a tendency for HD patients to lose NH-LTM over time. This audit sought to find out if patients who start HD experience changes in body composition and, if so, to see if any routinely collected parameters could predict the changes.

Method: All patients with a BCM result within 90 days of starting HD were identified. This measurement was taken as baseline. Further BCM results were obtained at 3-6 months, 6-12 months and 12-24 months after baseline, if available. Where multiple results were found in any time period, the earliest was used. Parameters considered as potential predictors of body composition changes included age, gender, ethnicity, early/failure referral to nephrology, diabetes, other co-morbidities, nutritional support status, serum bicarbonate and C-reactive protein (CRP). Changes in body composition over time were assessed. Patients were categorised based on loss or gain of NH-LTM at 6 to 12 months and the predictors in the two groups were compared. Student’s t-test was used to compare continuous variables or Chi-Squared test for categorical variables.

Results: 223 patients had a baseline BCM result. Of these, 123 also had a BCM at 3-6 months, 137 at 6-12 months and 86 at 12-24 months post-baseline. There was a statistically significant decrease in NH-LTM and increase in NH-ATM during the first year (p<0.05). In year 2 there was no significant change in body composition. 60% of patients lost NH-LTM over the first year. There was no significant difference in any predictor between those who lost NH-LTM and those who didn’t.

Conclusion: Patients tend to lose lean tissue and gain body fat over the first year of HD. Lean tissue loss occurred across the patient cohort, not just in those traditionally assumed to be at high risk. This highlights the need to give patients the chance to participate in exercise as soon as possible after HD initiation and the importance of monitoring nutrition and body composition.
Cardiovascular risk and obesity after renal transplantation: an effect of exercise regimen and nutrition on fat, endothelial progenitor cells (EPC) and asymmetric dimethylarginine (ADMA).  

Objective: To determine the usefulness of determining BCMI in 240 patients with CKD as marked muscle mass and its relationship with body composition, total body potassium, visceral proteins, inflammation, and dynamometry values with age and sex changes.

Method: Observational cross-sectional study of 240 advanced CKD patients aged 71 ± 13 years (33-96) Diabetes 35.3%. Study of body composition was performed with Riva model BIA 101 (Aern, Italy) evaluated: total body water (TBW), cell mass, phase angle, ICW, NC, or key BCM. Also measurements of albumin, prealbumin, CRP, Hb, total lymphocytes, glomerular filtration rate with clearance and MDRD, also tripeptide skin fold, arm muscle circumference and abdominal circumference were performed. Patients were classified into two groups according BCMI: Group 1 < 8 and 2 > 8. In group 1 were 183 patients (73% male) and group 2, 57 patients (81.9% male).

Results: Among the prevalent patients at 31/12/2009, 45 were survivors and 74 non-survivors at 01/06/2013. These two groups of patients were analyzed and compared according to nutritional parameters (body mass index, % body fat, caloric and protein intake, sodium intake, protein equivalent of total nitrogen appearance [PNA], and bioimpedance [BIA] measurements), biochemical parameters (blood glucose, serum creatinine, urea, hemoglobin, ferritin, C-reactive protein [CRP], albumin and prealbumin), and Kt/V index. Predictors of death were analyzed by multivariate logistic regression.

Conclusion: Our study supports the hypothesis that poor nutritional status and presence of inflammation independently influence the death risk in HD patients.

аций внутренних органов и кровь из биопсии. Введение митохондрий в цитоплазму, а также в клеточное ядро. Перед их возможным использованием для создания новых моделей. Митохондрии и перинуклеарный аппарат клетки играют важную роль в метаболических процессах, а также в поддержании структурной целостности клетки.

Conclusion: Our findings suggest that BCMI > 8 joint to the phase angle and adequate intracellular water correlate with dynamometry and can be estimated by BMI measurement of muscle mass directly or by surrogates which was significantly lower in hemodialysis patients than in individuals without CKD with similar BMI. IGF-1 concentrations correlate with amount of lean tissue and seems to be a good determinant of lean tissue mass in hemodialysis patients.
**P106**

**Differences in nutritional parameters, body composition and muscle strength between diabetics and non-diabetic patients with advanced chronic kidney disease (CKD)**

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**Objective:** Assess nutritional parameters, body composition and muscle strength in 253 CKD patients comparing results in the group of diabetics versus non-diabetics.

**Method:** We evaluated 253 patients with CKD age 71.12±13.71 years, 60.5% men. They are divided into two groups: G1 - Diabetes Mellitus (DM) 33.7% and G2 other etiologies 66.3%. Anthropometric data were assessed body composition by bioimpedance vector (BIVA), biochemical data: albumin, prealbumin, CRP; total lymphocytes; cholesterol and transferrin. Muscle strength was assessed by dynamometry.

**Results:** The results and differences between G1 and G2 are in the table below. G1 patients had significantly lower phase angle, but Na/k interchangeably, lower Na × BICM, increased ECW and lower ICW. Albumin and prealbumin were lower in G1 without statistical significance. We found no significant difference between groups in SGA, OGA or MIS. The MDRD was lower in G1 vs G2 p<0.13 nevertheless albumin and prealbumin were similar. When comparing muscle strength by dynamometry x G1 found that was significantly lower than G2 mainly on the right side in men but not in women. Analyzing the groups according to gender major statistical significances between G1 and G2 shown in men. Mainly Parameters analyzed

<table>
<thead>
<tr>
<th>G1 vs G2</th>
<th>PA</th>
<th>Na/K</th>
<th>BCMpct</th>
<th>BWpct</th>
<th>BCMI</th>
<th>BCMpct</th>
<th>C/C INDEX</th>
<th>ALBUMIN</th>
<th>PreAlb</th>
<th>CRP</th>
<th>MDRD1</th>
<th>DINAM.RIGHT</th>
<th>DINAM.LEFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>3.99±1.17 vs 4.59±1.32, p&lt;0.001</td>
<td>52±48 vs 1.36±0.52, p&lt;0.01</td>
<td>37.45±10.02 vs 40.96±10.27, p&lt;0.01</td>
<td>43.02±8.46 vs 46.16±9.57, p&lt;0.01</td>
<td>6.71±2.06 vs 7.06±2.20, p&lt;0.01</td>
<td>0.98±0.07 vs 0.95±0.07, p&lt;0.007</td>
<td>4.14±0.35 vs 4.16±0.45, p&lt;0.01</td>
<td>26.91±7.17 vs 28.55±7.45, p&lt;0.01</td>
<td>0.58±0.77 vs 1.17±3.22, p&lt;0.03</td>
<td>8.96±7.00 vs 20.78±10.25, p&lt;0.12</td>
<td>48.03±17.23 vs 54.61±22.93, p&lt;0.17</td>
<td>45.74±14.85 vs 50.69±20.59, p&lt;0.24</td>
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</tbody>
</table>

**Conclusion:**
1. The G1 group of patients composition traits have more ECW than G2 group that is not justified by the reduction in glomerular filtration
2. Evidence of decreased muscle strength in the diabetic group that correlates with lower BCMI in BIVA
3. Patients with diabetes should be considered as a group at higher risk of malnutrition - inflammation within the CKD patients

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**P107**

**Effects of a reduced calorie diet on body composition in kidney transplant recipients**

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**Objective:** Weight gain post transplant is common with an average increase of 5-10% in the first year, and is associated with increased new onset diabetes, metabolic syndrome, cardiovascular disease (CVD), and long term allograft loss. We hypothesized that a reduced calorie diet would improve post transplant body composition abnormalities and associated metabolic derangements in kidney transplant recipients, ultimately reducing the burden of CVD.

**Method:** We performed a pilot randomized control study using a reduced calorie diet intervention in 13 newly transplanted kidney transplant recipients (Controls N=8, Intervention N=5). All patients were followed at months 3, 6, 9 post transplant and underwent dietary assessment using food records and dietary recall. The intervention group received a 6 month customized dietary menu for 10% calorie reduction in carbohydrates and fat from their usual diet for months 3 through 9. Dietary recall data was collected and analyzed using Nutrition Data System for Research. Anthropometric measurements and body composition measurements using dual energy x-ray absorptiometry were collected along with blood samples (for measures of insulin resistance, oxidative stress, and inflammation) and medical history. Analyses were completed using R (Version 3.0.2).

**Results:** The 2 groups were similar at baseline with median age 42 (IQR 28, 50), 23% female, and 85% Caucasian. Median baseline weight was 89 kg, BMI 26.7 kg/m², and fat mass 28.9 kg. The control group gained a median of 2.37 kg compared to 1.51 kg in the intervention group over the 6 months. BMI increased by a median of 0.77 kg/m² versus 0.51 kg/m² in the control and intervention groups, respectively. The median change in fat mass was 0.35 kg versus 0 kg and in lean mass 1.15 kg versus 0 kg in the control and intervention groups, respectively. None of the changes were statistically significant. Blood samples remain to be analyzed.

**Conclusion:** These preliminary pilot results show trends in favor of the intervention group but no significant statistical change likely due to the small number of patients. The findings support additional enrollment and longer duration of intervention to further assess impact of diet on post transplant weight gain.

**P108**

**Metabolic acidosis influences Acyl-carnitine concentration and Free/Acyl-carnitine ratio in maintenance hemodialysis patients**

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**Objective:** In maintenance hemodialysis patients serum carnitine levels are reduced and there are several studies suggesting the effects of carnitine supplementation. In this retrospective study, we investigated the effects of oral L-carnitine supplementation on anemia, inflammation, metabolic acidosis and nutrition status.

**Method:** A total of 26 maintenance hemodialysis (MHD) patients administering of oral 300mg/day L-carnitine and 29 MHD control patients were included in this study. Hemoglobin (Hb), Hematocrit (Ht), C-reactive protein (CRP), Albumin, Transthyretin (TTR), Transferrin (Tf), Protein catabolic rate (PCR), HCO3 and Body mass index (BMI) were determined at baseline after 3 months of treatment, and compared with control group. The levels of carnitine were measured in carnitine group.

**Results:** The levels of TTR (from 26.05 to 27.64 mg/dl), Tf (from 208.65 to 230.42 mg/dl) and Ht (from 33.56 to 35.21%) increased but HCO3 (from 20.98 to 20.25 mmol/l) decreased in carnitine group significantly (p<0.05). The level of Total-carnitine (TC, from 36.77 to 92.08 µmol/l), Free-carnitine (FC, from 22.51 to 58.15 µmol/l), Acyl-carnitine (AC, from 14.26 to 33.94 µmol/l) significantly increased after the 3months carnitine administration (p<0.01), but FC/AC ratio did not increase significantly (from 0.65 to 0.59). HCO3 correlated with AC negatively (r=-0.442, p<0.05), and FC/AC ratio positively(r=0.687, p<0.01).

**Conclusion:** Carnitine supplementation had some benefits on anemia and nutritional status, but metabolic acidosis influenced AC and FC/AC ratio. This study suggested that we need consider the impact of metabolic acidosis on serum carnitine levels.
MicroRNA-23a is decreased during muscle atrophy by a mechanism that includes calcineurin signaling and exosome-mediated export

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Objective: Skeletal muscle atrophy is prevalent in chronic kidney disease (CKD), diabetes (DM) and other chronic diseases. MicroRNAs (miRs) may play a key role in the wasting process. microRNA-23a (miR-23a) was previously shown to inhibit the expression of two key atrophy-inducing genes, atrogin-1 and MuRF1, in muscle. It also was reported to be regulated by the NFAT3 transcription factor in cardiomyocytes. The objective of this study was to determine if miR-23a is regulated during muscle atrophy and to evaluate the relationship between calcineurin (Cn)/ nuclear factor of activated T-cells (NFAT) signaling and miR-23a expression in skeletal muscle and muscle cells during atrophy.

Method: CKD was induced in mice by 5/6ths nephrectomy. Acute DM was induced in rats by a single intravenous injection of streptozotocin (STZ). miR-23a and Cn/NFAT signaling were evaluated in muscles of mice with CKD, rats with acute DM, and in C2C12 muscle cells treated with dexamethasone to induce myotube atrophy.

Results: miR-23a was decreased in the gastrocnemius muscles of CKD mice and acute DM rats, conditions that are known to increase atrogin-1 and MuRF1 expression and cause atrophy. Treatment of C2C12 myotubes with dexamethasone (Dex) for 48 hours also reduced miR-23a as well as RCAN1.4 mRNA, which is transcriptionally regulated by the Cn/NFAT pathway. Both Cn/NFAT nuclear localization and the amount of miR-23a decreased rapidly within 1 hour of Dex administration suggesting a link between Cn signaling and miR-23a. Compared to primary myotubes from wild type mice, myotubes from CnAa-/- or CnAß-/- mice had a lower level of miR-23a. Dex did not further suppress miR-23a in the Cn-deficient myotubes. Overexpression of CnAß in C2C12 myotubes prevented Dex-induced suppression of miR-23a. Finally, miR-23a was present in exosomes isolated from the media of C2C12 myotubes and Dex increased its exosomal abundance. Dex did not alter the number of exosomes released into the media.

Conclusion: Atrophy-inducing conditions down-regulate miR-23a in skeletal muscle by mechanisms involving attenuated Cn/NFAT signaling and selective packaging into exosomes. The reduction in miR-23a leads to increased expression of key proteins involved in muscle atrophy process associated with CKD and DM.

Intervention with Vitamin E Tocotrienols in Maintenance Hemodialysis Patients: A Pilot Study
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Objective: Malnutrition is a strong predictor of mortality in hemodialysis patients. Several scoring systems for evaluating nutritional status have been proposed. To validate them, nutritional scores should be compared with clinical outcomes. Thus, the purpose of this study was to assess malnutrition by three different nutrition scoring systems and determine which best predicts mortality in hemodialysis patients.

Method: This observational study included 164 adult chronic hemodialysis patients. Nutritional status was classified according to the diagnostic methods: International Society of Renal Nutrition and Metabolism (ISRN), Malnutrition Inflammation Score (MIS) and Subjective Global Assessment (SGA). Patients were censored if they were switched off dialysis, underwent renal transplantation, or were transferred to another facility. After 336 ± 111 days of follow-up, Kaplan-Meier method was used to calculate cumulative survival probabilities, and the difference between survival curves was assessed by the log rank test. Cox proportional hazard analysis was used to evaluate independent predictors of survival adjusted for age, gender, diabetes and serum creatinin.

Results: Mean age was 58 ± 15.5 years and mean body mass index 26.1 ± 6.6, 54.3% were men and patients had been on dialysis for 26 (11-48) months. Twenty-two deaths (13.4%) occurred during the study period and 10 received kidney transplants (6.1%). According to Kaplan-Meier curves, patients with poorer nutritional status by MIS and SGA showed significantly lower survival rates compared with those patients with better nutritional status (p<0.001 and p=0.002, respectively). Three models were fitted using multivariate Cox proportional hazards analysis, each one for one of the diagnostic methods. The impact of the diagnosis of malnutrition was independently significant for mortality when applied to MIS and SGA, adjusted for age, gender, diabetes and serum creatinine. In the presence of malnutrition, the risk of mortality increased 13% when evaluated by MIS (p<0.01), and 27% by SGA (p<0.01).

Conclusion: In conclusion, the presence of malnutrition diagnosed by MIS and SGA most accurately identifies patients at higher risk of death, reinforcing their use in clinical practice.
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**P113**

**Evolution of weight in the late period of post-kidney transplantation**

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**Objective:** The late post-kidney transplant period is marked by a series of nutritional changes, which may reduce the survival of the patient and renal graft. To evaluate the weight during the first year of renal transplantation (RT).

**Method:** This is a retrospective cohort study that weight data and other clinical parameters were collected of patient records of the Division of Nephrology at a University Hospital in Brazil.

**Results:** After the end of Of the 35 patients studied in T12, we observed average weight gain of 8.2%, while 29 (82.9%) gained weight. The increase becomes significant from T6 to T9 in women and in men. Weight gain promotes impact on BMI, significant difference between T0 (23.2 ± 4.3 kg/m²) and T12 (24.9 ± 4.4 kg/m²) (P <0.001).

**Conclusion:** The sharp weight gain can become a risk factor for the development of diseases associated with obesity in the post-transplantation, decreasing graft survival. Therefore, the identification of this risk can be a preventive strategy in this population.

**Keywords:** renal transplantation, weight gain, nutritional status, nutritional and metabolic diseases.

**P114**

**Serum albumin and age are the most important predictors of mortality in incident hemodialysis patients - an analysis of the DOPPS cohort**

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**Objective:** The risk of death varies among patients on hemodialysis (HD). We previously developed (UK Renal Registry) and validated (DOPPS) a model including age, race, BMI, residual renal function, vascular access, diabetes, CVI, albumin, hemoglobin and creatinine to predict mortality in incident HD patients. As age, albumin as a marker of nutritional status and residual renal function are well known predictors for mortality of patients on HD, we analyzed the incremental predictive value of the remaining variables on model performance.

**Method:** Patients of DOPPS initiating HD in 2002-2004 were included if they survived the first 90 days on treatment (n=3612). Subsequent mortality within the first year on HD therapy (n=551) was analyzed by Cox proportional hazards analysis. Discrimination was evaluated stepwise (model 1: age and albumin; model 2: plus residual renal function and vascular access, full model) with time-dependent c-statistics, the integrated discrimination improvement (IDI) and the net reclassification improvement (NRI) statistics.

**Results:** Age, albumin, residual renal function and vascular access were the variables contributing the most predictive information to the model (Wald 2: 62.5, 43.4, 20.2, 181, respectively). Model 1 already achieved substantial discrimination (C-statistic 0.72 [95% confidence interval 0.70, 0.75]), which was further improved by adding residual renal function and vascular access (0.74 [0.73, 0.75], model 2) and the remaining variables of the full model (0.77 [0.76, 0.78]). Moreover, the NRI increased substantially with model 2 (an additional 20.6% categorized correctly, p<0.01), but even more with the full model (25.6%, p<0.01) as compared to model 1. Similar improvements were observed for IDI values.

**Conclusion:** Most information predictive for mortality in incident hemodialysis patients is carried by age, nutritional status, residual renal function and vascular access. However, inclusion of all additional variables of our prediction model further increased the accuracy of the model as described by novel statistics of discrimination, IDI and NRI.

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**P115**

**Genetic sensitivity to taste and upper gastro-intestinal symptoms in chronic renal disease**

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**Objective:** Many chronic kidney disease (CKD) patients experience uraemic symptoms including dry mouth, taste changes, nausea, vomiting and dry retching. It is not known what causes uraemic symptoms in renal disease. The genetics of tastes is complex but enables people to enjoy foods and avoid toxins in the diet. The present cross-sectional study was performed to assess whether there are any associations between known genetic sensitivities to taste and self-reported upper gastric symptoms often experienced by CKD patients.

**Method:** Fifty-six CKD patients (35 males, 21 females, age 67 ± 14yrs), with glomerular filtration rate <30 ml/min were selected from a tertiary hospital renal outpatient clinic. Subjects answered a questionnaire to assess number and severity of upper gastro-intestinal (GI) symptoms experienced. Participants were tested for known genetic sensitivities to phenylthiocarbamide (PTC), thiourea and sodium benzoate. Saliva and blood samples were collected to determine their biochemical composition. Possible associations between genetic taste sensitivities, saliva and blood composition and upper GI symptoms were assessed.

**Results:** Uraemic symptoms were reported by 66% of females compared to 44% of males. Sensitivity to any of the genetic test was related to the number and degree of symptoms experienced, with thiourea highly significant at p<0.001.

**Conclusion:** This study provides evidence the increase of urea present in the salivary fluid of CKD patients combined with a genetic sensitivity to taste, especially thiourea, can impact upper GI symptoms experienced. Further research is required to clearly establish if changing the saliva environment improves uraemic symptoms, taste sensitivity and food intake in CKD patients.

**P116**

**Structural and functional status parathyroid glands in chronic renal disease**

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**Objective:** Conducted a parallel investigation cytomorphological characteristics of the parathyroid glands and hormonal-metabolic disturbances in hyperparathyroidism (HPT) in patients with chronic kidney disease (CKD).

**Method:** 58 needle biopsy performed under ultrasonography 40 patients (26 women, 14 men, mean age 44 ±11 years) with CKD stage 5 on renal replacement therapy. Cytological examinations of the tissue elements parathyroid glands included an analysis of activity proliferation, secretion and severity of degenerative process. All patients underwent blood analysis of parathyroid hormone (PTH), calcium and phosphorus.

**Results:** There are two types of cytological preparations. The first type cytograms (44) characterized by a high activity of proliferation and secretion parathyroid glands. It manifested itself absolute predominance of dark paraortiocites located in groups and clusters to form close cell-cell contact, and a small amount of light paratirocites. He often met with secondary HPT in dialysis patients. There was positive significant correlation between the activity of proliferation and secretion parathyroid glands and blood levels of PTH and phosphorus. The second type cytograms (14) had elements of degenerative processes and was presented loose arrangement of dark paraortiocites weak intercellular contacts paraortiocites predominance of light, the presence of basophilic granules of secretion in the cytoplasm light paraortiocites and intercellular space. He often met with persistent HPT renal transplant recipients, at least - in dialysis patients with a long history of CKD. There was positive significant correlation between the content granules of secretion and serum calcium concentration.

**Conclusion:** Cytological examination is informative method of verification hyperplasia and functional activity parathyroid glands at HPT in patients with CKD.
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The application of Mini Nutritional Assessment (MNA) for the beneficial role of a-keto acids in malnourished patients undergoing dialysis

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Objective: This study investigated the beneficial effect of a-keto acids compounds to malnourished patients undergoing maintenance hemodialysis and peritoneal dialysis with Mini Nutritional Assessment-Short Form, (MNA-SF).

Method: 2252 patients with end-stage renal failure (ESRD) undergoing hemodialysis (HD) or continuous ambulatory peritoneal dialysis (CAPD) in 150 dialysis centers were investigated. The duration of dialysis were more than 3 months, and Ketosteril were orally administered for 6 months. Nutritional status prior to the administration of Ketosteril was set as a control. Nutritional status was assessed with MNA-SF method combined with body mass index (BMI), triceps skin fold thickness (TSF), arm circumference (AMC), and serum albumin (ALB). Paired t-test and Wilcoxon paired method were employed.

Results: The administration of a-keto acid formulations six months later, MNA-SF score increased from 11.13 ± 2.35 to 12.44 ± 1.58 with significant difference, the number of cases of malnutrition and nutritional risk deceased respectively from 181 cases (8.04%) and 952 cases (42.27%) to 33 cases (1.48%) and 474 cases (21.24%). Body mass index increased from 21.86 ± 3.38kg/m² to 22.18 ± 3.32kg/m², and serum albumin increased from 35.93 ± 5.31g/L to 38.27 ± 5.04g/L with significant difference. Triceps skin fold thickness, arm circumference and lymphocyte count and other indicators also increased significantly.

Conclusion: a-keto acid compound formulations can increase serum albumin level and body mass index, and improve the malnutrition status in dialysis patients

P118

Association of hangriog stregth with nutritional and clinical markers in patients treated chronically by hemodialysis

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Objective: To evaluate the association of handgrip strength (HS) with nutritional indicators in chronic renal failure patients on hemodialysis (HD).

Method: One hundred twenty-six patients were included and anthropometry data, electrical biompedância (BIA) , food intake record by 72 hours , protein intake (protein equivalent of nitrogen appearance), nutritional status (subjective global assessment - SGA), BMI, arm muscle circumference (r = 0.75, p < 0.001), arm muscle area corrected (r = 0.73, p < 0.001) and lean body mass obtained by anthropometry (r = 0.67, p < 0.001) and by BIA (r = 0.78, p < 0.001). While the MS (HS) was positively correlated with the following variables: lean body mass assessed by anthropometry (r = 0.73, p < 0.001), total body water (r = 0.72 p < 0.001) and body cell mass (r = 0.67, p < 0.001) obtained by the BIA. The presence of diabetes was not correlated with the strength and muscle mass.

Conclusion: The HS was associated with classical nutritional markers, suggesting it might be used as a tool for assessing muscle mass and nutritional status in this population.
Association of malnutrition and platelet-derived microparticles in ESRD patients
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Objective: Microparticles (MP) are submicrometric fragments resulting from the remodelling of the plasma membrane in response to numerous conditions, including activation and apoptosis. Elevated levels of MP have been associated with renal disease and thrombotic events. A pilot study was carried out to further ascertain the association between platelet-derived MP (PMP) and nutritional status in ESRD patients.

Method: We isolated PMP from platelet-free plasma prepared by differential ultracentrifugation. PMP was labeled with CD41-ITC (Biolegend) and annexin V-APC (BD Pharmingen); 1μl beads represented size markers, and a log scale for forward scatter and side scatter parameters were used for analysis. PMP in ESRD patients was measured by flow cytometric analysis along with simultaneous measurements of triceps skinfold (TSF) and body mass index (BMI) in ESRD patients. Subjects were divided by PMP level.

Results: A total of 15 stable ESRD patients were enrolled. Average level of BMI and TSF were 22.8 ± 4.2 kg/m², 16.2 ± 6.3 mm, respectively. Patients with higher PMP level had more TSF and serum protein levels than those in patients with lower PMP level. Pearson correlation analysis, PMP correlated significantly with BMI (r = -0.171, p<0.05), TSF (r = -0.788, p<0.05), and serum calcium (r = -0.584, p<0.05). On multiple regression analysis, BMI and TSF were the independent risk factors affecting PMP.

Conclusion: Our results suggest that the malnutrition parameters such as lower BMI and TSF might be the potential risk factors of increased PMP in ESRD patients.

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Anemia management in CKD 3-5 not on dialysis (CKD 3-5N-D), French survey
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Objective: Management of anemia in CKD 3 - 5N-D evolved as a result of new erythropoiesis-stimulating agents (ESA), IV iron (IVI) and studies (TREAT). In France, management of anemia in CKD ND patient is poorly assessed. This survey aims to evaluate management of anemia before publication of KDIGO 2012

Method: Survey evaluating practices through an online questionnaire for French nephrologists (NP) (Study PrEPOFer). It covers diagnosis, treatment and monitoring of anemia in CKD 3-5 N-D patients.

Results: 428 (36.7 %) NP involved; public (51.5 %), private (11 %) or Kuratorium (38.8 %). Number of CKD patients/week: < 10 (48.8% of NP), 10-20 patients/w (24.8 %), 20-40 patients/w (26.3 %) and > 40 patients/w (2.6 %). 35 % of NP delegate management to a non nephrologist physician (22.3 %), nurse (12.8 %). Diagnosis of anemia: 84 % of NP use Hb, F and CST. Only 5.4 % use % GRH or CHr. 21.5 % of patients are under ESA, 57 % under iron and 37 % ESA + iron. Concerning inititation of ESA/iron, 36.2 %, 32.7 % and 24.7 % of NP initiate treatment when Hb <10 g/dl, 10.5- g/dl or 11 g/dl respectively. NP initiate oral IV iron when CST <20% (73.7% of NP) or CST <25% (11.2%), when F <100 g/l (57.1%) or <200 mg/l (23%). Concerning HB target, 58.3 %, 10.7 % of NP target HB between 10-12 g/dl and 9-11 g/dl respectively. Concerning iron targets, Ferritin should be : F < 500 mg/l (23% of NP), between 500-800 mg/l (46.3 %), > 800 mg/l (12.1 %) for CST target : CST < 30% (8.9%) or CST < 40% (9.3%) or < 50% (40.3%)

Oral iron are first line treatment for 71.2% of NP IV iron is used for 11.6% of NP : sucrose (51.6 % of NP), carboxymaltose (31.4 % of NP) dextran (16.9%). IV iron, average dose per injection is < or = to 300 mg (68.8 % of NP), between 300-500 mg (15%) and 500-1000 mg (6.3%). First IV administration at home (23.4 % of NP), in Center (73.3 %), and other (3,3 %). The subsequent injections : home (47.5 %), Center (44%), and other (8,5 %) of NP. IV iron administrated weekly, monthly, bimonthly or quarterly for 33.7 %, 34%, 14.9 % and 4.9 % of NP. If F> target, 48.9% of NP suspend iron, 36.3 % reduce frequency and 44.3 % reduce dose. If Hb>target, ESA is suspended (14.9 % of NP), frequency reduced (40.9 %) or dose reduced ( 44.2 %).

Conclusion: Impact of recent interventional anemia studies (TREAT) is significant : lower Hb target, spaced or lower dose of ESA if Hb level > target. First line iron treatment is predominantly oral. Upper limit of Ferritin level is not consensual unless F level. This survey provide a picture of practices before anemia 2012 KDIGO guidelines.

Use of Oral Nutritional Supplement and Clinical Evolution of Individuals on hemodialysis
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Objective: The aim of this study was to evaluate, retrospectively, the nutritional and clinical status of patients on hemodialysis who use oral nutritional supplements.

Method: It were included 36 patients and were evaluated body composition, manual force, biomechanical analysis (BIA) and anthropometric values. Dietary intake data were estimated from dietary records of 72 hours and the protein equivalent of nitrogen appearance (PNA). It were also evaluated biochemical data, dialysis dose (Kt/V) and state of hydration. Data were collected at the beginning and end of supplementation. The nutritional status was analyzed by T test (parametric variables) and Mann-Whitney test (nonparametric variables).

Results: A significant association between use of oral supplementation with increasing weight (p = 0.04), body mass index (p = 0.03), arm circumference (p = 0.001), phase angle (p <0.001), state of hydration (p = 0.03), serum creatinine (p = 0.005), serum urea (p = 0.02), serum phosphorus (p = 0.006), serum calcium (p = 0.004) and PNA (p = 0.002).

Conclusion: The findings show that patients using oral supplementation improved anthropometric and laboratory parameters, suggesting that nutritional support is beneficial to maintain and improve their nutritional and clinical status.
Effect of acute strength exercise on the oxidative stress responses in hemodialysis patients

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Objective: Strength physical exercise can be a new therapeutic approach to reduce oxidative stress in hemodialysis (HD) patients.

Method: Sixteen HD patients were studied (44.4±14.6 years, BMI 23.3±4.9 kg/m2, 61.7±43.1 months of dialysis) and served as their own controls. Acute intradialytic strength exercises were performed at 60% of 1-repetition maximum test for three sets of 8-12 repetitions in both lower limbs. Blood samples were taken at different days at exactly same time (with and without exercise).

Results: After acute strength physical exercise, the SOD levels were reduced from 24.4± 4.0 U/mL to 22.2 ± 2.8 U/mL (p <0.02). In contrast, during the day without exercise, SOD levels were increased from 21.8 ± 2.6 U/mL to 24.0 ± 3.8 U/mL (p <0.02). There was no change in plasma CAT and GPx levels in both evaluations (day with or without exercise).

Conclusion: These data suggest that acute strength exercise can alter the oxidative damage in CKD patients undergoing HD.

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Experience report about activities of nutrition education for hemodialysis patients and carers as a tool for healthcare team approach

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Objective: The healthcare realized that this activities should be permanent as a routine care. New different topics will be brought during the discussions, many outdated food concepts emerged, making it possible to identify the needs and to give the families a better guidance. As an educational tool and to promote understanding among the participants, videos and graphic material were created by the nutritionist.

Method: Educational and participatory activities between the healthcare team and hemodialysis patients’ family and carers were conducted by nutritionist in order to enhance patient supervision, offering appropriate evidence-based tools for a comprehensive and human care. In the three-month period, 14 workshops were conducted related to three main topics of nutritional counseling: interdialytic weight gain control, nutritional care for control of serum phosphorus and potassium. As an educational tool and to promote understanding among the participants, videos and graphic material were created by the nutritionist.

Results: The development of this work has generated greater interaction between nutrition, family/caregivers and patients. During the discussions, many outdated food concepts emerged, making it possible to identify the needs and to give the families a better guidance. As an educational tool and to promote understanding among the participants, videos and graphic material were created by the nutritionist.

Conclusion: Critical Analysis: The use of this careful approach has preventative effects related to malnourishment and fluid overload. Listening times, even for the simple exchange of successful experiences and difficulties among families. The existing bond was strengthened and the participants became even more interested in other periods of discussion and listening times, even for the simple exchange of successful experiences and difficulties among families.

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Do diabetics on hemodialysis need a more specific nutritional approach?

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Objective: A high prevalence of diabetes is frequent among hemodialysis patients. The aim of this study was to evaluate if the nutritional status differs between diabetics and non-diabetics.

Method: This was an observational, cross-sectional, multicenter study with 419 patients on HD. Laboratory, anthropometric parameters and the 24-h recall were assessed. Body composition was assessed by Bioimpedance Spectroscopy. The statistical analysis was performed with SPSS®. A p<0.05 was considered significant.

Results: The mean age of the group was 65.1±14 years and 56% were men. Body mass index (BMI) was 26.2±5.8 kg/m² and 39% (n=164) were diabetics. Of the whole sample 69% had 4-5 meals/day and the average number of meals was 4.6±1.0 per day. It was observed a higher dry weight (74.1±17.5kg), BMI (28.2±6.5kg/m²) and fat tissue index (15.9±7.2kg/m²) in the diabetic group (p<0.001) yet lean tissue index was lower (12.3±3.6kg/m²); p=0.012). The relative overhydration (OH/ICW% pre-15%) was significantly higher in diabetics (10.1±9.2% Vs. 7.6±7.7%) (p=0.004). On the other hand, lower albumin levels were found (3.9±0.9g/dL) in the diabetic group (p=0.013). In this study a higher number of daily meals (4.9±0.9) was also seen in diabetics (p<0.001).

Conclusion: According to this data, diabetics are at higher risk of having worse nutritional status and being more overhydrated. Therefore diabetic hemodialysis patients may need special attention regarding nutritional counseling.

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Medication adherence to phosphate binders: the CHEOBS study

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Objective: Noncompliance (NC) is not always intentional. The medical team, in the absence of objective evidence, rarely takes into account the non-intentional NC linked to the difficulty of taking drugs regularly and feelings of the patient, unless objective evidence is present. Better understanding of the triggers and determinants of NC would allow elaboration of educational tools designed to help out chronic patients with their treatment.

Method: 340 hemodialysis patients in 8 centers in three areas in France were included on a voluntary basis in this descriptive study. Among them, 10 patients responded to a qualitative interview focused on individual beliefs, attitudes and motivations towards phosphate binders’ therapy. 26% of patients attended an educational program. Statistical methods consist of frequencies analysis and Exploratory Factor Analysis to determine combination of factors which significantly influence the compliance to phosphate binders. The semi-structured interviews were analysed according to qualitative content analysis.

Results: 329 self-administered questionnaires (50 items) were analyzed, 297 were complete for analysis (mean age 61 years, 62% male, dialysis duration 4.5 years, number of medication 9 per day). The majority of patients considers treatment as important (80%). However, they mostly relativizes the treatment as vital (45%). Factor analysis helped to identify two kind of independent behaviors: those which indicate concerns for the treatment and those relative to the use of the treatment as a necessity. Age, level of education and gender influence these two factors. Older patients are more compliant. The higher the level of education the more frequently patients adapt the treatment. The swallowable tablets are preferred (75%). The shape and color has little influence on decision. 60% of the patients consider they received enough pre therapeutic information. The involvement into educational formation has a not high enough influence on adherence.

Conclusion: In conclusion, this large study provides clues to better understanding of non compliance to phosphate binders determinants. Based on these assumptions, educational program should be more efficient and fruitful to chronic dialyzed patients.
Is intravenous alfacalcidol a better treatment of secondary hyperparathyroidism in patients on long-term hemodialysis?

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Objective: Chronic Kidney Disease-Mineral and Bone Disorder (CKD-MBD) is a major complication of chronic renal failure (CRF). The optimal route of administration of alfacalcidol in secondary hyperparathyroidism is still a controversial issue. We underwent this study to look for a potential superiority of IV alfacalcidol over its oral form in terms of controlling PTH level in patients on hemodialysis using the same dosage in both forms.

Method: In this prospective, interventional, non-randomized, open-label trial, 34 patients were included and received a stable dose of oral alfacalcidol for a period of 6 months, followed by a washout period of 6 weeks during which they were kept off any vitamin D analogues. Afterwards, IV alfacalcidol was administered for a period of 9 months to all patients. PTH was measured using a third generation chemiluminescent assay at different time frames: at baseline (T-7), at 6 months of oral therapy (T-2), at the end of washout period (T0), at 3 months (T3), 6 months (T6) and 9 months (T9) after beginning of IV alfacalcidol respectively. Patients were distributed according to their PTH level across 3 groups: Below target (PTH<70pg/mL), within target (70-315 pg/mL) and above target (>315pg/mL).

Results: Median PTH levels were 178 [118-272] pg/mL at (T-7), 161 [120-302] pg/mL at (T-2), 144 [94-250] pg/mL at (T6) and 193 [157-276] pg/mL at (T9). Median of PTH between oral versus IV group showed no significant statistical difference. No statistical difference was noted when comparing mean of calcium and phosphorus at the different measures

Conclusion: At equal doses, IV alfacalcidol would be superior to oral alfacalcidol in terms of controlling secondary hyperparathyroidism. The advantage of IV alfacalcidol would be a better compliance to treatment but is limited by its higher cost.

Dietary vitamin C intake is associated with greater paraoxonase-1 activity in maintenance hemodialysis patients

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Objective: Patients with renal failure undergoing maintenance hemodialysis (MHD) have decreased serum paraoxonase-1 (PON-1) enzyme activity, and this is associated with increased markers of oxidative stress and the development of cardiovascular disease. The objective of this study was to investigate if vitamin C intake is related to PON-1 activity and markers of oxidative stress in MHD patients.

Method: MHD patients (n=26), dialyzed for at least 3 months, greater than or equal to 30 years of age, and not consuming antioxidant dietary supplements were recruited to complete 24-hour dietary recalls for a typical dialysis and non-dialysis day. Dietary recalls were analyzed for vitamin C intake using Nutritionist Pro version 5.3.0. Blood was collected from each participant prior to the start of a HD treatment session to quantify the activity of the antioxidant PON-1 (arylesterase, paraoxonase, and lactonase activity), as well as markers of lipid (oxidized low-density hipoprotein, ox-LDL), protein (advanced oxidative protein products, AOPP), and DNA (8-hydroxy-2’-deoxyguanosine; 8-OHdG) oxidation. Correlation analysis was used to assess the relation between vitamin C intake, PON-1 activity, and this is associated with increased markers of oxidative stress and the development of cardiovascular disease.

Results: Vitamin C intake averaged 69.3 ± 10.1 mg/day and was significantly less on dialysis (48.6 ± 12.4 mg/day) compared to non-dialysis days (79.8 ± 18.9 mg/day; p = 0.028). Greater mean vitamin C intake was significantly associated with increased arylesterase and paraoxonase activity (r = 0.386, p = 0.047 and r = 0.435, p = 0.023 respectively). However, vitamin C intake was not associated with lactonase activity (r = 0.181, p = 0.366), or serum concentration of AOPP (r = 0.085, p = 0.674), ex-LDL (r = -0.005, p = 0.982), and 8-OHdG (r = -0.117, p = 0.599).

Conclusion: MHD patients in our sample consumed less than the recommended dietary allowance for vitamin C on both dialysis and non-dialysis days. Greater vitamin C intake was associated with increased PON-1 enzyme activity, suggesting that MHD patients should be encouraged to consume more foods high in vitamin C, particularly on dialysis days.

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Serving a meal during the dialysis session: Study of patient tolerance and satisfaction

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Objective: Evidence exist regarding the benefits of nutritional support during the dialysis session. In the Tassin dialysis center, France, we historically provide a full meal during the dialysis session. However, it is controversial because of the risk of hypotension, GI symptoms and aspiration. We have run a survey to evaluate patient tolerance and satisfaction and the staff workload related to this practice.

Method: In a cross-sectional study, 73 patients (age: 68.5 ± 7.7; gender: 38F/35M; vintage: 77.4 months; session time: 5.6 hours) were interviewed by a dietician to rate appetite, tolerance and satisfaction regarding the meal served during the dialysis session. Clinical data were recorded during the week of the interview.

Results: The appetite was rated by the patients as good or very good (65%), fair (29%), bad or very bad (6%). The meal was served within the first two hours (23%), last two (51%) or in the middle part (26%) of the session. During the week study, the following side-effects were prospectively recorded: cramps (1.8%); hypotensive episodes requiring nurse intervention (2.3%); nausea (0.5%); vomiting (0.5%); abdominal pain (0.09%); diarrhoea (0%). The total of extra UF related to the meal and the circuit was 715±166 ml/session. Patient satisfaction was high or very high (74%), low and very low (26%). Patients considered the meal provided during the session as important or very important (89%), and of no or low importance (11%). The staff help (dietician, nurse and care helpers) was necessary in several aspects: meal order; temperature check of dishes; patient installation (16%); meat cutting (25%); preparation of starter and dressing sachet (70%), dairy products (41%), fruit (70%), bread (36%). Only one patient (1.4%) required full assistance because of blindness.

Conclusion: In our experience with extended dialysis time, there is no danger to provide a full meal during the dialysis session. Even if not controlled, the rate of side-effects was low and comparable to our usual practice. The nutritional benefits are expected. The drawbacks are the cost (5.1 per treatment) and the important workload for the staff.

Resting energy expenditure and mortality in critically ill acute kidney injury patients

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Objective: To determine the resting energy expenditure (REE) of AKI patients, classifying them according to predictive equation of Harris-Benedict (HB) in: hypometabolic, normometabolic, and hypermetabolic and compare metabolic status of survivors and non-survivors.

Method: Patients admitted at Botucatu School of Medicine were evaluated from September 2012 to November 2013. Acute kidney injury (AKI) patients with suggestive clinical of acute tubular necrosis were included. Nutritional and clinical data were reported from all patients. The RMR was estimated by the HB equation and measured by indirect calorimetry (IC). Patients were divided into hypometabolic (IC/BB < 90 %), normometabolic (90-130 %) and hypermetabolic ( > 130 %). Results of clinical and nutritional characteristics of the patients were described in median or mean and standard deviation and were compared using the t test, Mann-Whitney test, chi-square or Fisher, according to distribution and normality characteristics with statistical significance of p<0.05.

Results: REE patients were included, 20 (25 %) survivor and 60 (75 %) non-survivors. The two groups did not differ in clinical and nutritional characteristics (age, gender, etiology of AKI, oliguric, sepsis, ATN - ISS and body mass index (BMI). Survivors patients of Harris-Benedict equation (HB) in: hypometabolic, normometabolic, and hypermetabolic were an estimated 18.9 ± 2.2 (median) and measured 19.2 ± 2.1 (p>0.05). The REE were classified as hypometabolic (IC / BB : < 90 % ) , normometabolic ( 90-130 % ) and hypermetabolic ( > 130 % ) . Results of clinical and nutritional characteristics of the patients were described in median or mean and standard deviation and were compared using the t test, Mann-Whitney test, chi-square or Fisher, according to distribution and normality characteristics with statistical significance of p<0.05.

Results: Patients were included, 20 (25 %) survivor and 60 (75 %) non-survivors. The two groups did not differ in clinical and nutritional characteristics (age, gender, etiology of AKI, oliguric, sepsis, ATN - ISS and body mass index (BMI). Survivors patients of Harris-Benedict equation (HB) in: hypometabolic, normometabolic, and hypermetabolic were an estimated 18.9 ± 2.2 (median) and measured 19.2 ± 2.1 (p>0.05). The REE were classified as hypometabolic (IC / BB : < 90 % ) , normometabolic ( 90-130 % ) and hypermetabolic ( > 130 % ) . Results of clinical and nutritional characteristics of the patients were described in median or mean and standard deviation and were compared using the t test, Mann-Whitney test, chi-square or Fisher, according to distribution and normality characteristics with statistical significance of p<0.05.

Conclusion: AKI patients were predominantly hypermetabolic. Presence of hypo- or hypermetabolism was associated with mortality in these patients.
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Bias of glomerular filtration rate estimation by Cockcroft-Gault equation, but not MDRD and CKD-EPI, can be predicted by body composition assessment with dual energy X-ray absorptiometry

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Abstract: Accurate of glomerular filtration rate (GFR) estimation equations are unsatisfactory in several clinical situations, such as protein energy wasting or obesity. Taking body composition (BC) into account could improve GFR estimation. We thus investigated if BC assessment could predict GFR estimation bias.

Method: In patients with chronic kidney disease (CKD), fat free mass (FFM) and fat mass (FM) were estimated by dual energy X-ray absorptiometry (DXA), and expressed as total body weight percentage (FFM% and FM%). GFR was measured by 51Cr-EDTA clearance, and estimated from serum creatinine using Cockcroft-Gault (CG), MDRD and CKD-EPI equations. Correlation between BC parameters (FFM, FM, FM%, FMM/FM ratio) and GFR estimation bias were tested by linear regression.

Results: Thirty three patients (13 women and 20 men) aged 27-85 years were included. Six (18%) patients had diabetes mellitus. Body mass index ranged from 18.0 kg/m² to 39.7 kg/m². Mean±SD [min-max] FFM% was 63.2±7.7 [50-80] in women and 73.5±5.5 [65.1-84.7] in men. Measured GFR ranged from 7.9 to 58.5 ml/min/1.73 m². Mean±SD GFR estimation bias was 4.88±7.60 ml/min/ml-0.71±5.56 and -0.09±5.10 ml/min/1.73 m² by CG, MDRD and CKD-EPI equations respectively. GFR estimation bias by CG equation was positively correlated with FFM in men (r²=0.29, p<0.015) and with FFM% and FFM/FM ratio in women (respectively r²=0.41, p=0.02 and r²=0.35, p=0.04), but not with weight or BMI in men or women. GFR estimation bias by MDRD and CKD-EPI equations did not correlate with any BC parameter.

Conclusion: BC assessment by DXA can predict GFR estimation bias by CG equation, but not by MDRD and CKD-EPI equations, which do not include weight. A stepwise regression approach remains to be performed to evaluate if BC assessment could be useful to estimate GFR from creatinine.

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Nutritional and biochemical monitoring of hemodialysis patients in a private institution in the south of Brazil

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Abstract: Nutrition-energy malnutrition (NEM) is one of the main factors that adversely affect the prognosis of hemodialysis patients being linked to increased morbidity and mortality in this population. The aim of the study is to evaluate the nutritional status of patients undergoing regular hemodialysis in a dialysis unit of a private hospital in southern Brazil.

Method: A retrospective longitudinal study. Demographic, anthropometric and biochemical data were collected from January 2006 to April 2010. Nutritional status was assessed by calculating body mass index (BMI), using dry weight. Serum albumin levels were also used to demonstrate malnutrition. Serum phosphorous, calcium, ionized calcium, hemoglobin, hematocrit, iron, ferritin and transferrin saturation were analyzed. The dialysis efficiency was estimated by rate of urea removal (Kt/V) using the Daugirdas formula II.

Results: We evaluated 49 patients (76% male). The mean age was 65±15. The average of BMI found was 21.4±3.7kg/m² and, through this tool, the sample was classified at 62% eutrophic, 26% overweight, 4% malnourished and 7% obese. The mean of serum albumin was 3.6±0.45 g/dL, but according to the reference parameter (≥3.5 g/dL), only 26% of the patients had appropriate values. Mean values of Kt/V were 1.38±0.29, indicating that dialysis is performed properly. The study population presented iron deficiency (70.32 mg/dl) and ferritin excess with a mean of 918 ng/ml (589-1343). The other biochemical tests were performed according to the set points.

Conclusion: The complexity of hemodialysis patients suggest that the nutrition assessment would be more detailed by the use of appropriate methods avoiding inappropriate nutritional classification.
Determinants of pre hemodialysis serum sodium variability in incident and prevalent hemodialysis patients: results from an observational study.

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Dietary (Suckling 2012) and dialytic factors (Hecking 2011), hospitalizations and comorbidities can affect SNa. Previous analyses showed an association between pre HD SNa+ variability and mortality and hospitalizations, respectively (Raimann, ERA-EDTA 2012, Reyes-Bahamonde ERA-EDTA 2012). We aimed to identify determinants of pre HD SNa+ variability in incident and prevalent HD pts.

Method: We studied pts commencing HD in U.S. Renal Research Institute clinics between 2000 and 2010 and with less than 15 hospitalizations over a period of the observed year and who survived at least three years after dialysis initiation. Univariate and multivariate regression analysis was employed in Year 1 and 2 after HD initiation to evaluate determinants of SNa+ variability (quantified as SNa+ standard deviation). Only parameters significant in the univariate analyses were included in multivariate models.

Results:

- We studied 2119 pts (56% male, 59±15 years old, 56% diabetics, 53% blacks, 2117 in the first year and 2095 in the second year on HD. Univariate regression analysis identified significant determinants for inclusion in the multiple regression analysis for Year 1 and 2 (Table 1). Of these only IDWG (0.009), NLR average and SD (0.030 and 0.03 mg/dL, respectively) and, serum glucose (ß 0.003), pre HD SBP average and SD (ß -0.005 and 0.021, respectively), pre HD weight (ß 0.006), hospital admission count (ß 0.06) and time to first hospital admission (ß 0.007) remained significant in the first year. In Year 2 IDWG (ß 0.012), serum glucose (ß 0.003), ΔNa+ average and SD (ß -0.05 and 0.15, respectively), pre HD weight average and SD (ß 0.008 and 0.048, respectively) and total hospital days (ß 0.005) were significant predictors.

Conclusion: Our data indicate that SNa+ variability in incident and prevalent hemodialysis patients associates with body composition, inflammation and possibly the number of hospitalizations. Of note, SNa variability was associated with dialysis treatment-related parameters only in Year 2, and in neither year with nutritional parameters.

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Nourishment assessment according with gender and method of treatment of patients on peritoneal dialysis.

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Objective: The aim of this study was compare nutritional status between the different modalities of continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD) and gender.

Method: Cross-sectional study involving adults in stable PD. Nutritional status: weight, height, body mass index (BMI), application parameters only in Year 2, and in neither year with nutritional parameters.

Results:

- 37 patients (25 women,27 CAPD), mean age 48.2 ± 16.8 years, 68.8% Caucasian, 24.2% and 87.9% hypertensive diabetic patients with a median time of 15.6 months in PD (8.0-35.4). In comparison by gender, we observed a difference between total 37 patients (23 women,27 CAPD), mean age 48.2 ± 16.6 years, 68.8% Caucasian, 24.2% and 87.9% hypertensive diabetic patients with a median time of 15.6 months in PD (8.0-35.4).

Conclusion: There are differences in markers of nutritional status between genders. The lowest MMT observed in women suggests poor nutritional state, as well as higher fat percentage can generate increased cardiovascular risk. The differences found in the MCT, as well as in IMM suggest that patients on CAPD may be with better nutritional status than on APD, but without impact on nutritional assessment of systemic variables.

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Can anthropometric indices of obesity estimate risk of diabetes mellitus after kidney transplantation?

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Objective: To evaluate the performance of different anthropometric indices of obesity to estimate the risk of developing Post-transplant Diabetes Mellitus (PTDM) in renal transplant recipients.

Method: A cross-sectional study that evaluated 188 renal transplant recipients until 5 years of transplantation. Body mass index (BMI), waist circumference (WC), waist-to-hip ratio (WHR), conicity index (CI), abdominal volume index (AVI) and lipid accumulation product (LAP - lipid accumulation product) were evaluated. The diagnosis of PTDM was performed using the American Diabetes Association (ADA) criteria. The performance of each index was assessed by estimating the sensitivity and specificity from the ROC (Receiver Operating Characteristic) curves. In order to identify cutoff points (CP) of each indicator, we used the higher value of the Youden index. The positive and negative predictive values were evaluated for the CP of each anthropometric index.

Results:

- Among the patients studied, 61 developed PTDM. There was no difference in gender, ethnicity, smoking, type of dialysis, time of transplantation and hypertension between both groups. Only age (51.5 years the PTDM group vs. 49.2 years in without PTDM group, p < 0.0001) and donor type (deceased donor greater frequency in PTDM group, p = 0.04 ) showed statistical differences. In men, the area under the curve was associated with PTDM to WHR (p = 0.003, p = 1.4, sensitivity 54.8 %), CI (p = 0.003, 13.11 PC = 71 % sensitivity ), AVI (p = 0.008, p = 2.74, sensitivity 77.8 % ), and LAP (p = 0.084, p = 85.03, sensitivity 58.3 % ). In women CI (p = 0.039, p = 12.57, sensitivity 66.7%), AVI (p = 0.018, p = 2.88, sensitivity 73.7%) and LAP index (p = 0.004, p = 79.37, sensitivity 53.8 % ) showed meaningful results.

Conclusion: Up to 5 years of renal transplantation, CI, AVI and LAP indices are suggestive of PTDM in both genders. WHR may also be used to estimate risk of DMPT in men. These indices are accessible and may contribute to clinical practice on the development of Diabetes Mellitus after renal transplantation.

P140

BMI and BP control: association and their interactive effects on mortality in peritoneal dialysis patients.

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Objective: Many studies showed a risk-factor paradoxical association of body mass index (BMI) with blood pressure (BP) control and mortality among general and hemodialysis (HD) populations. We aimed to investigate the relationship between BMI and control and their interaction in peritoneal dialysis (PD) patients.

Method: Incident CAPD patients from January 2006 to December 2011 in our center were enrolled. Patients were categorized according to the baseline quartiles of BMI. Binary logistic regression and Cox’s regression were used for analyses of associated factors for uncontrolled systolic blood pressure (SBP=140mmHg), uncontrolled diastolic blood pressure (DBP=90mmHg) and mortality. Biologic interaction was applied to assess the interacted effect between BMI category and uncontrolled blood pressure.

Results: A total of 1144 incident PD patients were included with a mean age was 48.06 ± 15.29 years, 41.3% female. The highest quartile of BMI (BMI=23.51kg/m2) was significantly associated with uncontrolled SBP (OR 1.65, 95%CI 1.15-2.37, P=0.007) after adjusting for potential confounding factors, compared with BMI <19.55 kg/m2. The result was similar in a separate model using BMI as a continuous variable (OR 1.05, 95%CI 1.01-1.09, P=0.03). After a median follow up of 29.6 months, 14.2% of patients died. Both BMI (OR 1.06, 95%CI 1.11-1.1, P=0.03) and SBP (OR 1.05, 95%CI 1.01-1.1, P=0.02) were predictors for mortality in the adjusted Cox model. When using low BMI (BMI<21.4kg/m2) with controlled SBP (SBP<140mmHg) category as reference, patients of low BMI with uncontrolled SBP (HR 2.2, 95%CI 1.27-3.79, P=0.005), high BMI (BMI=21.4kg/m2) with controlled SBP (HR 1.78, 95%CI 1.03-3.03, P=0.03) and high BMI with uncontrolled SBP (HR 2.68, 95%CI 1.55-4.63, P<0.001) were all higher at risk of mortality. However, BMI category and uncontrolled SBP had not an interacted effect on mortality (synergic index 0.85, 95%CI 0.44-1.62).

Conclusion: Higher BMI is associated with uncontrolled SBP in PD population. Both BMI and SBP are positively correlated with mortality, but high BMI category (BMI=21.4kg/m2) and uncontrolled SBP have not an interacted effect on mortality.
Knowledge of the food sources of sodium and protein of nondialyzed chronic kidney disease (CKD) patients under conservative treatment

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Objective: We aimed to investigate the patients' knowledge about food sources of protein and sodium before and at the 4th month of dietary counseling. In addition, we also assessed the factors associated with improving the knowledge of both dietary components.

Method: Intervventional and prospective study comprising 84 patients under conservative treatment (52% males; age: 63±11 years; BMI: 29±5kg/m² and MDRD-GFR: 33±13 ml/min). All patients were individually counseled by the same renal dietitian to follow a diet with 0.6-0.8g protein/kg/day; 25-30 kcal/kg/day and up to 2.4 g sodium/day. Patients were followed for 5±2 months and returned each 30-45 days, summing 4 return visits. The food sources of protein and sodium was shown to all patients at the beginning and reinforced as necessary. Participants answered a questionnaire about their knowledge on food sources of protein and sodium before the dietary counseling (T1) and after the 4th return visit (T2). The Delta (T2-T1) of the questions was calculated.

Results: As described in the Table, the question related to protein had the lowest percentage of correct answer. All questions had a significant increase after the 4th return visit. Gender (male) was inversely associated with Delta on protein food sources (r=-0.23; P=0.03) and Delta Total score (r=-0.21; P=0.050). Age was inversely associated with Delta of sodium food sources (r=-0.23; P=0.04). Years of literacy was directly associated with Delta of seasons low/high sodium (r=0.38; P<0.01) and borderline significance with Delta sodium sources (r=0.21; P=0.054). Length of treatment with the nephrologist, BMI and MDRD-GFR were not significantly associated with changes in protein nor sodium questions.

Conclusion: In conclusion, patients showed an improvement on the knowledge regarding dietary sources of sodium and protein. Gender (Male), age and years of literacy were the factors associated with changes on knowledge of food sources of protein and sodium.

Table 1

<table>
<thead>
<tr>
<th>Question about</th>
<th>T1 •</th>
<th>T2 •</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seasons low/high sodium</td>
<td>82 ±16</td>
<td>92 ±11</td>
<td>10 ±17</td>
</tr>
<tr>
<td>Sodium food sources</td>
<td>73 ±16</td>
<td>87 ±14</td>
<td>15 ±15</td>
</tr>
<tr>
<td>Protein food sources</td>
<td>57 ±20</td>
<td>70 ±20</td>
<td>13 ±15</td>
</tr>
<tr>
<td>Total score</td>
<td>69 ±12</td>
<td>82 ±12</td>
<td>13 ±9</td>
</tr>
</tbody>
</table>

% correct answer, *P<0.01 by Paired T-test, † mean±SD

IDPN in pew hemodialysis patients as first choice treatment

Elena Bruschetta; Marco Righetti; Francesca Colombo; Nicola Palmieri; Marco Prencipe; Oscar Bracchi; Francesca Stefani; Karen Amar; Alfo Scala; Ferruccio Conte
Renal Unit, Uboldo Hospital, Cernusco/I;

Objective: Protein energy wasting (PEW) is frequently diagnosed in hemodialysis patients. Dietary counseling and oral nutritional supplements, even if important tools to contrast PEW, are often discharged by the patients. Intradialytic parenteral nutrition (IDPN) may be a useful support to improve malnutrition. So, we designed a prospective trial analyzing the effects of IDPN, as first choice treatment, in PEW dialysis patients.

Method: A single center prospective, uncontrolled, interventional study has been performed in our Renal Unit. PEW hemodialysis patients were submitted to thrice weekly IDPN for at least a three months’ time. Primary outcomes were the effects of IDPN on survival rate and nutritional parameters as albumin, transferrin, phosphorus, urea.

Results: 18 patients, 5 females and 13 males, with a mean age of 75.4 years (53-87) and a Charlson Comorbidity Index of 11.5 (5.8-24.7) began IDPN. IDPN was performed for a mean period of 142 days. 5 patients died after a brief mean time of 75 days. Table shows nutritional parameters at baseline and after IDPN, nutritional parameters changing during IDPN. KM survival analysis, considering 2 subgroups of patients split by the difference of albumin values during IDPN showed that patients with higher increased of albumin levels had a better survival rate (p=0.05).

<table>
<thead>
<tr>
<th>Variable</th>
<th>baseline</th>
<th>after IDPN</th>
<th>Changing during IDPN</th>
<th>changing during IDPN, pts split by outcome</th>
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</thead>
<tbody>
<tr>
<td>Albumin</td>
<td>3.08 ± 0.1</td>
<td>3.38 ± 0.2</td>
<td>+10.3 %</td>
<td>-8 vs. +19 %</td>
</tr>
<tr>
<td>Transferrin</td>
<td>134 ± 8</td>
<td>166 ± 11</td>
<td>+9.1 %</td>
<td>-20 vs. +19 %</td>
</tr>
<tr>
<td>Urea</td>
<td>106 ± 9</td>
<td>130 ± 10</td>
<td>+13.3 %</td>
<td>+1 vs. +20 %</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>3.85 ± 0.3</td>
<td>4.87 ± 0.5</td>
<td>+19.4 %</td>
<td>+13 vs. +23 %</td>
</tr>
</tbody>
</table>

P142

HDL is not vasoprotective in patients with impaired renal function

Stephen Zeiinger; Thimoteus Speer; Marcus E. Kleber; Hubert Scharnagl; Rainer Voitats; Philipp Lepper; Karolin Pfähler; Sarah Seiler; Gunnar Henrik Heine; Winfried Márz; Günther Silbernagel; Danilo Flier
Nephrology and Hypertension, Department of Internal Medicine, Saarland University Hospital, Homburg/Saar; Medical Faculty Mannheim, Mannheim; Clinical Institute of Medical and Chemical Laboratory Diagnostics, Medical University of Graz, Graz/A; Division of Nephrology, Department of Internal Medicine I, University of Bonn, Bonn; Pulmology, Department of Internal Medicine, Saarland University Hospital, Homburg/Saar; Synlab Academy, Synlab Services LLC, Augsburg; Department of Angiology, Swiss Cardiovascular Center, University Hospital Bern, Bern/CH;

Objective: In the general population, HDL cholesterol (HDL-C) is associated with reduced cardiovascular events. However, recent experimental data suggest that the vascular effects of HDL can be heterogeneous.

Method: We examined the association of HDL-C with all-cause and cardiovascular mortality in the Ludwigshafen Risk and Cardiovascular Health study comprising 3307 patients undergoing coronary angiography. Patients were followed for a median of 9.9 years. Estimated GFR (eGFR) was calculated using the Chronic Kidney Disease Epidemiology Collaboration eGFR creatinine-cystatin-C. The effect of increasing HDL-C serum levels was assessed using Cox proportional hazard models.

Results: In participants with normal kidney function (eGFR 90 ml/min per 1.73 m²), higher HDL-C levels associated with reduced risk for all-cause and cardiovascular mortality and coronary artery disease severity (hazard ratio [HR] 0.51 [P=0.03]; HR 0.30 [P=0.01]). Conversely, in patients with mild (eGFR=60-89 ml/min per 1.73 m²) and more advanced reduced kidney function (eGFR <60 ml/min per 1.73 m²), higher HDL-C did not associate with lower risk for mortality (HR 0.68 [P=0.07]; HR 0.84 [P=0.50]; HR 1.18 [P=0.88]; HR 0.82 [P=0.60]). Moreover, Cox regression analyses revealed that the interaction between HDL-C and eGFR associated with all-cause and cardiovascular mortality (P=0.04 and P=0.02, respectively).

Conclusion: We confirmed a lack of association between higher HDL-C and lower mortality in an independent cohort of patients with definite CKD (P=0.63). In summary, higher HDL-C levels did not associate with reduced mortality risk and coronary artery disease severity in patients with reduced kidney function. Indeed, abnormal HDL function might confound the outcome of HDL-targeted therapies in these patients.

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TABLE

<table>
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</table>
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**Conclusion:** IDPN improves all nutritional parameters in PEW hemodialysis patients. Patients with a good outcome had a larger improvement of nutritional parameters as compared with patients having a fatal outcome. IDPN may be a simple, first choice treatment in PEW hemodialysis patients.

**P144**

**Association of BMI and its change with mortality in peritoneal dialysis patients**

Fenghua Xu, Qingdong Xu, Liping Xiong, Rixong Xu, Huyan Li, Xuan Peng, Yan Yang, Haiqing Mao, Xueqing Yu

**Department of Nephrology, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, CN.**

**Objective:** To investigate the prognostic effects of baseline body mass index (BMI) and BMI change during the first year of therapy in peritoneal dialysis (PD) patients.

**Method:** A cohort of 1263 incident patients undergoing continuous ambulatory peritoneal dialysis (CAPD) was enrolled between January 2006 and December 2011. Patients were divided into four groups according to World Health Organization classification for Asian population. BMI of baseline and the 12th month after initiation of PD was measured to calculate the BMI change (Delta BMI). Patients were split into four categories according quartiles (Q) of delta BMI: Q1= -0.8%; Q2 = -0.8%–2.7%; Q3 = 2.7%–7.4%; Q4 = >7.4%.

**Kaplan-Meier survival analysis and Cox regression proportional hazard analysis were used to assess the association of baseline BMI and BMI change on mortality.**

**Results:** During a median follow-up of 25.20 months, 175 (13.8%) patients died within 108 (61.7%) cardiovascular (CVd) death. Compared with normal weight patients, obese patients had significantly higher risk of all-cause mortality (hazard ratio [HR] 1.71; 95% confidence interval [CI] 1.05-2.79; P<0.031) and CVd mortality (HR 2.10; 95%CI 1.19-3.72; P<0.011), after adjustment for confounders. However, both underweight and overweight individuals did not show this trend. In Cox proportional hazard analysis, the lowest quartile (Q1) was associated with higher mortality (HR 1.97, 95%CI 1.0-3.5; P=0.023) when compared to the reference group Q2, independently of baseline BMI. Similar results were observed with regard to cardiovascular mortality; with adjusted HR 1.99 (0.97-4.07) for Q1 group.

**Conclusion:** Obesity at baseline and BMI decrease during the first year of PD therapy were associated with all-cause and CVd mortality in Chinese PD patients.

**P145**

**Experience with Intradialytic Parenteral Nutrition (IDPN) in the last three years**

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**Objective:** Use of Intradialytic Parenteral Nutrition (IDPN) in the treatment of hemodialysis and effect on nutritional status

**Method:** In the past three years we gave Intradialytic Parenteral Nutrition (IDPN) to nineteen hemodialysis patients in our hospital. Two are still using it at the end of 2013.

**Results:** In two cases we had to stop the IDPN due to fluid overload. The main reasons were: low blood pressure levels and only low ultrafiltration rate possible (0,5 l/our dialysis).

**Conclusion:** What we can conclude is that: 1 IDPN is often started in the last phase of life of hemodialysis patients, 2 it gives fluid problems in only 10% of the patients, 3 it’s easy to use, 4 it gives no complications, 5 it can especially be used when oral intake can’t be improved using oral supplements.

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**Development of a patient information website with dietary and fluid advice for cystinuria patients**

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Nutrition and Dietetics, 1 Urology, 2 Radiology, 3 Nephrology, Guy’s and St Thomas' Foundation Trust, Guy’s Hospital, London/UK,

**Objective:** Online dietary information is often unreliable and inaccurate, producing confusion and anxiety. This was highlighted as a particular concern by our patients with cystinuria. As a multidisciplinary team we developed a website, one of the main goals being education on diet and fluids which is key in managing these patients.

**Method:** Using standard web design software and working closely with patients, we created the website www.CystinuriaUK.co.uk. The multidisciplinary team provided input into content. Extensive literature searches were carried out to ensure patients were provided with up-to-date, reliable information on diet and fluids. Quantitative/ qualitative assessment was made through monitoring of website analytics as well as an online feedback questionnaire assessing 5 domains (ease of use; finding information; understanding information; visual appeal; overall impression). We have kept the website under regular review and adaptation in response.

**Results:** The website has had 4200 unique visitors, 14000 page views and is the second result on a ‘Google’ search of cystinuria. Visitor rate continues to grow over time with 623, 1170 and 2443 unique visitors for 2011, 2012 and 2013 respectively. Approximately half of visitors are from outside the UK (total 105 countries). On average 2.74 pages are viewed per visit spending nearly 3 minutes on the site. We received positive feedback with high scores from visitors (mean 4.4/5 scale 1-5) and staff (mean 4.5).

**Conclusion:** Reliable dietary and fluid advice is now accessible not only for patients in our specialist clinic but nationally and internationally. Numbers of visits to the website continues to grow and the analytics suggest that readers are staying on the site to access information. Incorporating feedback and multidisciplinary input remains key to maintaining up-to-date information.

**P147**

**Effect of acute strength exercise on the plasma irisin levels in hemodialysis patients**

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**Objective:** Irisin, a recently discovered hormone secreted by myocytes induces cytokines induced in exercise, as acts as a muscle-derived energy expenditure signal that binds to undetermined receptors on the white adipose tissue surface, stimulating its browning and uncoupling protein 1 (UCP1) expression. The purpose of this study was to assess the effect of acute strength physical exercise on plasma irisin levels in hemodialysis (HD) patients.

**Method:** Fourteen HD patients were studied (44.0 ± 15.6 years, BMI 23.3 ± 5.2 kg/m², 68.2 ± 42.0 months of dialysis) and served as their own controls. Acute intradialytic strength exercises were performed at 60% of 1-repetition maximum for three sets of 8-12 repetitions in both lower limbs. Blood samples were taken at different days at exactly same time (before and after - with and without exercise). The levels of plasma irisin were determined by Enzyme-Linked Immunosorbent Assay (Phoenix).

**Results:** The irisin plasma levels were significantly reduced in both moments, after exercises (from 123.3 ± 18.7 to 116.8 ± 15.4 ng/mL, p<0.03) and without exercises (from 122.3 ± 14.0 to 115.3 ± 17.8 ng/mL, p<0.01).

**Conclusion:** These data suggest that acute strength exercise was unable to augment plasma irisin levels in HD patients and independent of exercise, it seems that the dialysis procedure is able to reduce irisin levels.
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Effects of renal-specific oral supplementation in malnourished patients on peritoneal dialysis
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Objective: More than a half of patients on peritoneal dialysis (PD) have poor nutritional status which directly correlate with mortality. The main causes that this problem that patients did not get enough protein and have chronic inflammatory status. The aim of the present study was to estimate the influence of oral supplementation on the nutritional and inflammatory status in malnourished patients on PD.

Method: We analyzed 30 PD patients with malnutrition. The enrolled patients were with albumin <35g/l and C-reactive protein >10mg/L. Patients were prescribed Reionil 7.5 at an oral intake dose of 125 mL twice a day for 3 months. Albumin, prealbumin, phosphate (P), C-reactive protein, transferrin, Hb, and body composition were recorded at baseline and after 3 months. Body composition was investigated with a multifrequency bioelectrical impedance analyzer (Medass, Russia).

Results: After 3 months of supplementation, prealbumin, albumin, Hb, transferrin concentrations significantly increased (p<0.05), on the contrary C-reactive protein significantly decreased (from 24.4±29.0 to 8.1±9.1 mg/L). Lean body mass and body fat mass levels significantly increased. P did not significantly change.

Conclusion: The results indicate an improvement in the nutritional status of PD patients who were prescribed an oral supplementation. Furthermore, patients also benefited Hb and inflammatory state from Renilon 7.5 treatment.

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Circulating Plant Sterols Are not Associated with Cardiovascular Risk in Patients on Maintenance Hemodialysis
Günther Silbernagl; Günter Fauler 1; Vera Krane 2; Christiane Drechsler 2; Bernd Genser 2; Hubert Schernagl 1; Tanja B. Grammer 1; Eberhard Ritz 2; Christoph Wanner 1; Winfried März 1
Abteilung für Angiologie, Schweizer Herz- und Gefäßzentrum, Universität Bern, Bern/CH; 1 Klinisches Institut für Medizinische Nephrologie, Universitätsklinikum, Bayerische Julius-Maximilians-Universität Würzburg, Würzburg; 2 Abteilung für Nephrologie, Medizinische Fakultät Mannheim, Universität Heidelberg, Mannheim; 3 Abteilung für Nephrologie, Medizinische Klinik I, Universität Heidelberg, Heidelberg;

Objective: Patients with the hereditary disorder sitosterolemia have up to 100-fold elevated circulating plant sterols and may develop early onset atherosclerotic disease. We aimed to investigate, whether moderately elevated circulating plant sterols are related to cardiovascular events in patients with end-stage renal disease.

Method: We studied participants of the German Diabetes and Dialysis Study (4D). They were on maintenance hemodialysis for less than two years and suffered from diabetes. After inclusion into the study, they received either 40 mg of atorvastatin or placebo. The participants were prospectively followed over a mean duration of 3.9 years. The primary end point was a combination of major cardiovascular events. Secondary end points included all-cause mortality. Circulating campesterol and sitosterol, the two most abundant plant sterols, were measured with gas-chromatography and mass spectrometry. Tertiles of the campesterol and sitosterol to cholesterol ratios of were formed. An extended Cox regression approach with multivariate adjustment was used to analyse the associations of the tertiles of the plant sterol to cholesterol ratios with outcomes.

Results: There were no significant associations of the tertiles of the campesterol and sitosterol to cholesterol ratios with the primary endpoint and all-cause mortality in the entire cohort (all P>0.05). There were no significant associations of the tertiles of the plant sterol to cholesterol ratios with outcomes in the subgroups with and without statins either (all P>0.05).

Conclusion: Moderately elevated concentrations of plant sterols are not associated with increased cardiovascular risk in patients with end-stage renal disease.

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Nutrition and circulating D-lactate and zonulin concentrations in hemodialysis patients
Katarzyna Wyskida; Urszula Szczechowicz-Zaton 1; Sylvia Rorkegel 1; Jaroslaw Ciepl 1; Dariusz Klein 1; Maria Bozentowicz-Wikarek 1; Aniceta Brzozowska; Magdalena Olbzanowicz-Glinianowicz; Jerzy Chudek 1; 1 Department of Pathophysiology, Health Promotion and Obesity Management Unit, Medical University of Silesia, Katowice/PL; 2 Dialysis Center in Chorzów, Centrum Dializa Sosnowiec Poland, Chorzów/PL; 3 Dialysis Center in Katowice, Centrum Dializa Sosnowiec Poland, Katowice/PL; 4 Dialysis Center in Pszczyna, Centrum Dializa Sosnowiec Poland, Pszczyna/PL; 5 Department of Pathophysiology, Pathophysiology Unit, Medical University of Silesia, Katowice/PL;

Objective: D-lactic acid, the stereoisomer of L-lactic acid, is produced in human body in very low amount. Its main source is microbial fermentation in the colon. There is no data concerning the food composition and circulating D-lactate concentrations. While zonulin levels are considered as a marker of intestinal permeability. Therefore, the aim of the study was to assess the relationships between diet composition and plasma D-lactate and zonulin in hemodialysis patient.

Method: The analysis included 32 adult (19 females) hemodialysis patients. Plasma D-lactate and zonulin were assessed by ELISA in fasting state before subsequent hemodialysis session. Energy and macronutrients intake were assessed on the basis of tree day food diary completed by patients.

Results: Plasma concentrations of D-lactates and zonulin were 2.41±1.92 mg/ml and 8.96±6.8 mg/ml, respectively. D-lactates levels significantly correlated (r=0.57, p<0.01) with mean daily energy intake (1963±668 kcal/d), but not with the diet composition: protein (15.1±3.1%) fat (36.5±9.6%), carbohydrates (48.4±9.4%), and consumption of fiber (7.82±2.03 g/100kcal/d). Additionally, there was no association between D-lactates and zonulin levels.

Conclusion: Our study suggests that plasma D-lactate concentrations in hemodialysis patients is associated with daily energy intake but not intestinal permeability.

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Sodium restriction and proteinuria: a threshold effect?
Federica Neve Vigotti; Davide Ippolito 1; Martina Ferrarese; Luigi Teta 2; Emiliano Arroso; Elena Mongiardi, Irene Capezzi 1; Paolo Avagnina 1; Giorgina Piccoli
SS Nephrology, 1 Laboratory, 2 Dietology, San Luigi Gonzaga Hospital, Orbassano/I; 1 Physiology, University of Padova, Padova/I; 2 Biomis research centre, Bassano del Grappa/I;

Objective: Even if Sodium restriction is always mentioned among the basic tools for lowering blood pressure, improving arterial stiffness and reducing albuminuria, the recent experiences with low sodium diets are limited mainly by the low-compliance and scarce palatability. Aim of the study was to analyse the effect of Sodium restriction on proteinuria in a subset of obese CKD patients, with baseline proteinuria >0.5 g/day, who underwent a period of Sodium restriction in the context of a weight reduction diet.

Method: The present analysis included 8 patients (2 males, 6 females, age 35-74) selected from a larger subset of 31 cases with CKD who underwent the weight reduction program. Kidney diseases included all major proteinuric disease (2 diabetic nephropathy, 4 glomerulonephritis, 2 other). In all cases a minimum of 4 contextual assessments (range 4-14, overall 68 biochemical profiles) of 24 hours proteinuria, together with serum and urinary Na, K, Creatinine, Urea and Calcium were available in the same laboratory (standard laboratory methods).

Results: No significant correlation was found in the whole cohort between urinary Na and Proteinuria (r=0.013). On the contrary, in 5/8 cases a trend towards a correlation between urinary Sodium and proteinuria was found (r=0.5). No correlation was found between proteinuria and urinary urea, calcium or weight loss. The correlation was driven by the cases with very low Na excretion (<80 mEq/day), hence suggesting a threshold effect.

Conclusion: From this in itinere analysis of the urinary profiles of Na and proteinuria, in the absence of correlation with urea, Calcium or weight loss, two hypotheses may be drawn: an individual response to low Na diet and a threshold effect at very low Na intake. Both hypotheses need to be tested in larger patient cohorts.
One-day dietary recall to characterize nutritional profile of a dialysis population

Stanislas Trolonge; Celine Nodimar; Catherine Lasseur; Nicole Larroutou; Claude Desvergnes; Christian Combe; Philippe Chausseau; Aurad-Aquitaine, Gradsignan/F; 1 Nephrology dialysis unit, Pellegrin Hospital, Bordeaux/F;

Objective: One-day dietary recall (DR) is commonly used in epidemiological study in healthy population. In hemodialysis population, DR is not suitable for nutritional evaluation of a single patient but is probably useful to guide nutritional education and analyze the nutritional habits of a specific population. The French food composition databank had been recently updated (Ciqual 2012). We use it to re-evaluate nutritional habits of 99 patients from self-dialysis units.

Method: Patients, who participated in an education program (EDAM), after dietitian evaluation, write down during a typical day what they eat to re-evaluate nutritional habits of 99 patients from self-dialysis units. The French food composition databank had been recently updated (Ciqual 2012). We use DR is not suitable for nutritional evaluation of a single patient but is probably useful to guide nutritional education and analyze the nutritional habits of a specific population.

Results: Mean Age: 60±14 yrs, BMI: 25±5 kg/m², Albumin 35±4 g/L, Prealbumin: 0.31±0.08 g/L, K: 5±0.7 mmol/L, P: 1.5±0.4 mmol/L, Hb: 10.8±1.5 g%, median CRP 5 mg/L. Mean protein intake is 1.2 ± 0.7 g/kg/d (nPNA 0.9±0.3). Sodium (median 1.6g/d) and Phosphorus (988 mg/d) intake are higher than the recommendations in 40 to 60% of patients. These results are significantly higher than those we reported in the same type of population using 7-day DR (IREN 2007). This is probably due to a better estimation of sodium and phosphate content in the new database.

Conclusion: One-day dietary recall appears to be a useful tool to guide nutritional evaluation, support and education program in a dialysis population.

Effects of lean body size and blood pressure levels on cardiovascular event rates in Japanese CKD: prospective observational Gonryo study

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Objective: Low body mass index (BMI) and low blood pressure are the risk for cardiovascular disease (CVD). Body size is reported to affect on the different cardiovascular outcome by hypertensive treatments, but the associations are little known in Asian chronic kidney disease (CKD).

Method: Japanese 2694 outpatients with CKD before dialysis recruited from multicenter of nephrology care. Patients were divided by BMI and blood pressure levels, and followed prospectively clinical outcome, change of eGFR, prognosed end-stage kidney disease (ESKD) and CVD mortality during 3 years.

Results: Among BMI group, lean (BMI <20) and obese (BMI >30) groups associated with higher rate of CVD. BMI was correlated positively to both diastolic (DBP) and systolic blood pressure (SBP), and patients under the treatments of anti-hypertension as well as diuretics was fewer rate in lean BMI group. Mean arterial pressure (MAP), estimated by 2/3 DBP plus 1/3 SBP, lower than 95 (almost equivalent to 120/75) mmHg was an independent risk for CVD. Different from normal to overweight patients, hypotension in lean patients did not increase the CVD progression rate. On the other hand, lower MAP was associated with lower rate for progression of ESKD in both lean and normal to overweight individuals.

Conclusion: BMI less than 20 was associated independently with higher CVD rate. Hypotension with lean group did not associated with the increased CVD rate in Japanese CKD, so different mechanisms from obese patients might mediate to predict CVD.
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P156
Seasonal variations and hemodialysis
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Objective: In order to demonstrate seasonal differences, we comparatively processed biochemical and clinical parameters in a group of maintenance hemodialysis (HD) patients living in Puerto Vallarta Mexico, a region with a tropical savanna climate with dry winters.

Method: We included 153 patients (34% female), age 49.7±15.3 years and 26±16 months on HD. The biochemical parameters (sodium, potassium) from February and August, considered as the months with the lowest and higher temperature, were compared by Paired t-test. Blood pressure and weight values were evaluated before and after HD session in a beginning of the next week session (BS) and a mid week session (MS). Mean values of blood pressure, weight, and ultrafiltration (UF) rate were compared with ANOVA for repeated measures (p<0.05 was considered significant). All variables had normal distribution (Kolmogorov-Smirnov test).

Results: There were seasonal variations in sodium (February vs August, 139±3 vs 155±3 mEq/L), and potassium (5.3±1.0 vs 4.92±0.63 mEq/L). In both seasons, patients during BS had higher systolic and diastolic blood pressures, larger body weight before HD, larger HD weight difference and larger UF than during MS. During February and BS, patients had higher systolic blood pressure, larger body weight before and after HD, larger HD difference in weight, and larger UF rates than during August and BS. During February and MS, patients had higher diastolic blood pressure, larger body weight before HD, and larger HD difference in weight and larger UF than during August and MS.

Conclusion: These patients may have increased sodium loss by sweating during summer, which contributes with higher blood pressure decrease. Awareness of these variations might facilitate the interpretation of laboratory results and the clinical treatment of these patients.

P157
Baseline results of the SALTED Study: analysis of the effects of dietary salt restriction on fluid status, blood pressure, and biomarkers of CKD
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Objective: Salt restriction has been considered an important intervention to reduce cardiovascular complication and progression of chronic kidney disease (CKD). However, there is a paucity of information from well-designed and conducted trials to support these recommendations. In this is aimed to analyze the effects of dietary salt restriction on fluid status, blood pressure, and markers of CKD.

Method: This was a prospective, randomized, controlled study with parallel groups. The study was powered to detect a 20% reduction of weight in the intervention group. The patients were divided in two groups with a weight baseline of 70±10 kg, attending hemodialysis twice a week (BS) and a mid-week session (MS). The comparison of the main characteristics between the control and intervention groups at baseline was performed by ANOVA. The analysis of the main characteristics between the control and intervention groups, and the results of the main changes were compared by Paired t-test. Blood pressure and weight values were evaluated before and after HD session in a beginning of the next week session (BS) and a mid week session (MS). The analysis of the main characteristics between the control and intervention groups at baseline was performed by ANOVA. The analysis of the main characteristics between the control and intervention groups, and the results of the main changes were compared by Paired t-test. Blood pressure and weight values were evaluated before and after HD session in a beginning of the next week session (BS) and a mid week session (MS). Mean values of blood pressure, weight, and ultrafiltration (UF) rate were compared with ANOVA for repeated measures (p<0.05 was considered significant). All variables had normal distribution (Kolmogorov-Smirnov test).

Results: There were seasonal variations in sodium (February vs August, 139±3 vs 155±3 mEq/L), and potassium (5.3±1.0 vs 4.92±0.63 mEq/L). In both seasons, patients during BS had higher systolic and diastolic blood pressures, larger body weight before HD, larger HD weight difference and larger UF than during MS. During February and BS, patients had higher systolic blood pressure, larger body weight before and after HD, larger HD difference in weight, and larger UF rates than during August and BS. During February and MS, patients had higher diastolic blood pressure, larger body weight before HD, and larger HD difference in weight and larger UF than during August and MS.

Conclusion: These patients may have increased sodium loss by sweating during summer, which contributes with higher blood pressure decrease. Awareness of these variations might facilitate the interpretation of laboratory results and the clinical treatment of these patients.
Examining the effect of gender on the association of BMI with mortality in maintenance hemodialysis patients: A marginal structural model analysis

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Objective: Previous studies have found a linear inverse relationship between body mass index (BMI) and mortality in maintenance hemodialysis (HD) patients, which differs from the association found in the general population and is thereby also known as the "The Obesity Paradox." However, it is not clear whether these observations result from time-dependent residual confounding or selection bias. It is also uncertain if these associations differ across gender. We therefore investigated the association of BMI with all-cause mortality accounting for time-dependent confounders with inverse probability weighting using marginal structural modeling (MSM) in male and female HD patients and hypothesized that even after applying MSM, the inverse association of BMI with mortality in HD patients remains robust in both gender groups.

Method: We examined the associations of BMI with mortality in adult HD patients (67,758 male and 55,871 females) during the 2001-2006 period using 11 BMI categories in MSM to adjust for time-dependent confounders.

Results: Male patients were 61±16 years old and included 30% blacks, and 54% diabetics, while female patients were 62±15 years old and included 35% blacks, and 64% diabetics. Both male and female HD patients had a linear incremental inverse association with mortality for BMI groups <25 as compared to a BMI of 25-27.5 with male patients having a slightly higher risk of death than females. The association between BMI levels >27.5 and mortality continued to be inverse and linear in female patients with the greatest survival benefit for patients with BMI 40-45 (HR: 0.65, 95%CI: 0.55-0.76). However, male patients exhibited a reverse J-shaped trend where there was no significant survival benefit for BMI levels 40-45 (HR:0.89, 95%CI: 0.68-1.16) and even a trend toward increased risk of death for BMI>45 (HR 1.05, 95% CI:0.79-1.34).

Conclusion: Hence, while the obesity paradox remains robust in female patients using MSM analyses which adjusts for time-dependent confounding, survival benefit is not observed in male HD patients with BMI>45.

Relationship between Adiponectin and Body Composition in Maintenance Hemodialysis Patients: Initial Results from the MADRAD Study

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Objective: In the general population, circulating adiponectin is inversely associated with fat mass and positively associated with lean body mass. Hemodialysis (HD) patients have comparatively higher adiponectin concentrations, but the relationship between circulating adiponectin levels and body composition in this population remains unclear.

Method: We examined 501 prevalent HD patients from the prospective Malnutrition, Diet, and Racial Disparities in Kidney Disease study from 13 DaVita dialysis centers during 10/2011-2/2013. We first examined the relationship between adiponectin and body composition surrogates including visceral fat (waist circumference), subcutaneous fat (biceps and triceps skinfold [SF]), lean muscle mass (mid-arm muscle circumference [MAMC]), and body fat (measured by near infrared [NIR] interactance) using unadjusted and adjusted (partial) Pearson correlation coefficients (R). We then examined associations between body composition and high (>95th percentile) vs. low (≤50th percentile) adiponectin using logistic regression adjusted for case-mix and laboratory covariates (age, sex, race, ethnicity, diabetes, vintage, albumin, total iron binding capacity, creatinine, white blood cell count, phosphate, hemoglobin, normalized protein catabolic rate).

Results: Adiponectin was inversely correlated with waist circumference, biceps SF, triceps SF, MAMC, and NIRD body fat percentage: unadjusted R (p-values) -0.27 (<0.001), -0.15 (0.003), -0.11 (0.03), -0.20 (<0.001), and -0.12 (0.02), respectively. In adjusted correlation analyses, adiponectin had the strongest inverse correlation with waist circumference: R= -0.30 (p<0.001). In logistic regression analyses, higher waist circumference (5 cm increments), biceps SF (1 cm increments), triceps SF (1 cm increments), MAMC (5 cm increments), and NIRD body fat percentage (5% increments) were associated with lower odds of high adiponectin: adjusted ORs (95% CI) 0.78 (0.72-0.85), 0.69 (0.54-0.86), 0.73 (0.59-0.89), 0.66 (0.57-0.77), respectively.

Conclusion: In HD patients, inverse associations between adiponectin level and visceral and subcutaneous fat are preserved. However, in contrast to the general population, higher adiponectin is associated with lower lean body mass.
No decline in serum concentration of fat-soluble vitamins after 1 year of treatment with a new iron-based phosphate binder PA21

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Objective: Phosphate binders for controlling hyperphosphataemia in dialysis patients may be associated with micro- or macronutrient adsorption/degradation. In vitro studies of iron(III)-oxyhydroxide phosphate binder, PA21, found no biologically relevant interactions with water-soluble B vitamins or other nutrients. Potential interactions of PA21 with fat-soluble vitamins were assessed vs sevelamer carbonate (SEV) in a 1-year Phase 3 study.

Method: An open-label, randomised study assessed PA21 (1.0-3.0 g/day; starting dose 1.0 g [2 tablets]/day; n=710) vs SEV (2.4-14.4 g/day; starting dose 4.8 g [6 tablets]/day; n=349) in dialysis patients. A 12-week dose titration was followed by 12 weeks’ maintenance therapy. After 24 weeks, patients could enroll in a 28-week extension study and continue receiving maintenance-dose PA21 or SEV. Laboratory assessments included serum levels of vitamins A, E, K, 25(OH)D and 1,25(OH)2D. Only patients completing 1 year of treatment (PA21 n=322; SEV n=227) were included in this analysis.

Results: At Week 52, no significant changes from baseline were observed in mean levels of vitamin A, E, K, or 25(OH)D; however, there were significant increases in mean levels of 1,25(OH)2D (PA21 +8.08 pmol/L [p=0.0006]; SEV +5.00 pmol/L [p=0.0112]). Significant increases from baseline to Week 24 were seen in mean levels of vitamin A (PA21 +0.34 µmol/L [p=0.0037]; SEV +0.66 µmol/L [p=0.0011]), E (PA21 +4.07 µmol/L [p<0.0001]; SEV +6.55 µmol/L [p<0.0001]) and K (PA21 +0.83 µmol/L [p<0.0001]; SEV +0.44 µmol/L [p=0.0056]). Small but significant decreases in 25(OH)D were more pronounced with SEV (-14.40 nmol/L [p<0.0001]) vs PA21 (-9.86 nmol/L [p=0.0001]). The difference between the groups in 25(OH)D changes was significant at Week 52 (PA21 +2.09 nmol/L; SEV +3.11 nmol/L [p=0.0113]).

Conclusion: Despite temporary fluctuations of fat-soluble vitamin serum levels after 24 weeks, no significant decline was observed after 1 year with PA21 or SEV. Despite some experimental limitations (e.g. potential impact of nutritional supplements and co-medications, season-dependent fluctuations, limited test sensitivity) these findings show no marked impact of PA21 on serum levels of these vitamins.
Speakers

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