

levels in foods aren't required to be on labels and are rarely provided. Phosphorus-containing food additives are widely used in all types of foods, often where they have never been seen before. It is common practice to relate phosphorus content in food closely to protein value. This can only be reliable for unprocessed raw materials. Any processed foods may have phosphorus additives which will not be evident on the labels and protein is measured by Kjeldahl nitrogen, which falsely assumes all nitrogen in foods is protein-related. The reality and future directions of the food industry need to be taken into account when making nutritional recommendations. The way forward is to understand the challenges the food industry faces and work with them to elucidate the problems and seek solutions.

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APPLICATION OF LEAN METHODOLOGY PRESCRIPTION OF NUTRITION SUPPLEMENTS AS MEDICATION BY DIETITIANS

J Woods¹, M.A. Silvers¹, R. Raja¹, A.M. Gordon¹, M.K. Inkster¹, J. McDonald^{2,3}

¹Department of Dietetics, Monash Medical Centre, Australia

²Department of Dietetics, Royal Childrens Hospital, Australia

³Department of Dietetics, Royal Melbourne Hospital, Australia

In a major Victorian hospital, dietitians observed that requests to medical staff to prescribe nutritional supplements via the medication chart were inefficient. This led to delays in the delivery of nutritional recommendations, thus compromising patients' nutritional status. *Lean Methodology* was applied to simplify the ordering of patients' nutritional supplements as medication (NSAM) by dietitians. A literature review was conducted. Direct observation and value stream mapping were used to identify process time and wasted time related to NSAM prescription. A detailed root cause analysis of identified issues was undertaken, followed by the development of an implementation plan. The following problems were identified: ordering process was complicated and not linear, delay in patient receiving NSAM (2.8 days, range 0–23 days), and 60% repeat requests by the dietitian for NSAM. An implementation plan was developed which included: submission to the Medical Executive Committee to seek prescribing privileges for dietitians; dietetic competency training and credentialing, communication strategy, development of prescribing and administering procedures; and ward education. Dietetic prescribing privileges were granted, implemented, and an evaluation of this change in dietetic practice undertaken. In conclusion, application of Lean Methodology enabled dietitians to clearly examine, in a systematic manner, delays, risks and inefficiencies with our current process of ordering NSAM. It led to a plan of action to improve quality of care to our patients, including renal patients, and reduce waste in our health care setting by timely and appropriate commencement of NSAM.

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THE EXPRESSION PROFILING OF INTESTINAL NUTRIENT TRANSPORTER GENES IN RATS WITH RENAL FAILURE

Hironori Yamamoto, Hiroko Kikuchi, Mari Nakao, Otoki Nakahashi, Sarasa Tanaka, Yutaka Taketani, Eiji Takeda

Department of Clinical Nutrition, University of Tokushima, Tokushima, Japan

The understanding of intestinal function in chronic kidney disease (CKD) has been an important element in the clinical management of CKD with dietary and drug therapy.

Numerous studies have indicated that CKD patients or model rats have enzymatic abnormalities and impairments of absorptive function in the small intestine. However, it

has been still unclear how different the intestinal function is in CKD. In this study, we demonstrated the microarray analysis of global gene expression in the intestine of adenine-induced CKD rat. DNA microarray analysis using Affymetrix rat gene chip revealed that CKD caused great changes in gene expression in the rat duodenum: about 400 genes exhibited more than a two-fold change in expression level. Gene ontology analysis showed that a global regulation of genes by CKD involved in iron ion binding, alcoholic, organic acid and lipid metabolism. Furthermore, we found markedly changes of a number of intestinal transporter gene expression related to iron metabolism. These results suggest that CKD may alter some nutrient metabolism in the small intestine by modifying the expression of specific genes. The intestinal transcriptome database of CKD might be useful to develop the novel drugs or functional foods for CKD patients.

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LOW BMI IS THE RISK OF CARDIO-VASCULAR MORTALITY WITHOUT PROGRESSION OF CKD

Tae Yamamoto, Mariko Miyazaki, Masaaki Nakayama, Tasuku Nagasawa, Hiroshi Sato, Toshinobu Sato, Sadayoshi Ito
Tohoku University, Sendai, Japan.

The paradoxical risk of BMI on mortality is known in CKD as well in dialysis populations, but studies of CVD risk in CKD including underweight is limited. We hypothesized lean CKD increase the CVD risk, contributing different factors from obese. 2,676 CKD patients recruited from 11 outpatients' hospitals. BMI and estimated GFR (eGFR) were calculated, and change of eGFR and CVD mortality during 2 years were collected. Patients were divided by BMI under cut off value of normal, thus 7% grouped in lean subjects (BMI < 18.5). Systolic blood pressure (sBP), albumin, hemoglobin, age and prevalence of diabetes were lower in lean BMI group compared to other subjects. However CVD history, urinary protein, baseline eGFR and smoking didn't differ between the groups. The lean BMI increased significantly the risk of CVD mortality, in spite of low prevalence of comorbidities and young age in unadjusted model (HR 2.38, 95%CI 1.49–5.21, $p < 0.01$). This significance remained after adjusted for CVD risk factors, such as primary disease of CKD, age, sex, smoking, albumin, cholesterol, sBP and eGFR. On the other hand, BMI was not associated with the decline rate of eGFR. We concluded that BMI less than 18.5 was an independent predictor of CVD, and that BMI did not effect on CKD progression rate in Japanese CKD.

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SURVIVAL AND RISK FACTORS ASSOCIATED WITH MORTALITY IN DIABETIC PATIENTS ON CONTINUOUS AMBULATORY PERITONEAL DIALYSIS IN SOUTHERN CHINA

Xiao Yang, Chunyan Yi, Xinghui Liu, Qunying Guo, Xueqing Yu
Department of Nephrology, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

This study aimed to analyze the survival and the risk factors associated with mortality in diabetic CAPD patients in Southern China. This single-center prospective cohort study enrolled all incident CAPD patients from Jan 2006 to Dec 2009 and followed-up until Dec 2011. Survival in diabetic and non-diabetic CAPD patients and the risk factors on mortality in the diabetic CAPD subjects were evaluated. Among 841 incident CAPD subjects in this study, 193 patients (22.9%) were diabetes. The mean vintage of CAPD was 29.4 ± 15.5 months. Shorter patient survival time was found in diabetic patients compared to that of non-diabetic ones ($p < 0.01$). The 1-, 3- and 5-year patient survival rates were 90%, 64% and 40% in diabetes and 95%, 88% and 75% in non-diabetes, respectively ($p < 0.01$). There was no significant difference in the death-censored technique survival time between diabetic and non-diabetic patients. The 1-, 3- and 5-year technique survival rates were 96%, 88% and 86% in diabetic, while 99%, 93% and 87% in non-diabetic patients, respectively. Diabetic CAPD patients that died during the follow-up period had older age (63.4 ± 10.5 vs. 58.6 ± 10.4 yrs, $p < 0.01$), higher proportion of cardiovascular diseases (CVD) (64.9% vs. 47.1%, $p < 0.05$), higher level of hsCRP [$5.1(1.5 \sim 11.7)$ vs. $1.8(0.8 \sim 7.2)$] mg/L, $p < 0.01$), but lower levels of haemoglobin (95.5 ± 20.2 vs. 103.4 ± 19.2 g/L, $p < 0.01$), serum albumin (33.7 ± 4.0 vs. 35.3 ± 4.9 g/L, $p < 0.05$) and 24h urine output [$600(300 \sim 813)$ vs. $800(500 \sim 1100)$ ml/d, $p < 0.01$] compared to the survivors. The presence of CVD, advanced age, higher glycosylated haemoglobin, lower hemoglobin and serum albumin at the initiation of PD were independent predictors of death in diabetic patients. It was concluded that survival of diabetic CAPD patients is not as good as that of non-diabetic patients in Southern Chinese patients, but better than those reported by other previous studies. Better management of modifiable risk factors such as hyperglycaemia, anemia and hypoalbuminemia may improve outcomes of diabetic PD patients.

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SAFETY AND EFFICACY OF ROSUVASTATIN FOR HYPERLIPIDEMIA IN PATIENTS WITH CHRONIC KIDNEY DISEASE (CKD) STAGE 3 AND ABOVE

Jun Yuto, Yosuke Ehara, Kazuhiko Shibata, Tamio Iwamoto, Gen Yasuda, Mari Katsumata, Yuichiro Yamamoto, Nobuhito Hirawa
Yokohama City University Center Hospital, Yokohama, Japan