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Renal Nutrition Forum is published quarterly (summer, fall, winter, spring) as a peer-reviewed publication of the Renal Dietitians Dietetic Practice Group of the American Dietetic Association.

Articles about successful programs, research interventions, evaluations and treatment strategies, educational materials, meeting announcements and information about educational programs are welcome and should be emailed to the editor by the next deadline.

Future Deadlines:
September 1, 2011
December 1, 2011
March 1, 2012
June 1, 2012

Please forward information to:
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Subscription cost is $35.00 for individuals who are ineligible for ADA membership and $50.00 for institutions.
A check or money order should be made payable to ADA/DPG #21 and sent to:

Stacey C. Phillips, RD
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Grand Rapids, MI 49525

Remember to update your profile electronically in the 'members only' section of ADA's web site. You will need your registration number and web password. Keeping ADA informed of your name and contact information will help avoid delayed issues of your Renal Nutrition Forum.

From the Editor's Desk

Megan Sliwa, RD, LDN
Editor

When I was on the plane back from the National Kidney Foundation (NKF) Spring Clinical Meetings in Las Vegas, I was asked why I was in Vegas. After letting the person know the meeting that I was attending and introducing myself as a registered dietitian, the person with whom I was speaking went on to reveal that their brother was recently put on hemodialysis. In the discussion that followed, he shared that his brother attributed a good part of the treatment success to the counseling he received at the in-center dialysis clinic. As I look back on that conversation and the NKF Meeting, I am inspired by the energy of the attendees, their commitment to the research and the passion for increasing the quality of life for patients diagnosed with Chronic Kidney Disease (CKD). The role of the renal dietitian has such power to share their expertise, teach fellow clinicians as well as improve the health of their patients.

It is this commitment and dedication, along with their interest in sharing their knowledge and best practices that drives the contributions to the Renal Nutrition Forum. I encourage you to have a look at the Feature Article by Rachael R. Majorowicz, RD, LD, for an in-depth case study that reviews the function of vitamin A. This article also reports on the treatment course of a patient with a deficiency and provides 2.0 CPEU hours. Additionally, the Advances in Practice article by Amy Braglia Tarpey, MS, RD, CSR, CNSC, examines medical nutrition therapy for the CKD patient, its long-term benefits to the patient and overall reduction in health care costs, provides 1.5 CPEU hours. Another interesting article included in this issue is a reprint entitled Understanding Functional Foods Through the Eyes of the Consumers from the On the Cutting Edge Newsletter. It discusses effective communication as a critical element in realizing the benefits of functional foods.

With the demands of work and life, I know volunteer time is precious. Many thanks to all those that made this issue possible for your expertise and guidance; this would not have the quality it does without your contributions. This issue of the Forum will be my last as Editor as I transition into the role of Managing Editor and Sara Erickson, RD, CSR, LDN, CNSC will begin her term as Editor with the Summer 2011 issue. And… a big thank you to Stacey Phillips, RD, outgoing Managing Editor, for her three-year commitment and dedication to the Renal Nutrition Forum Editorial Board! I wish her luck in her new role on the Executive Committee as the incoming Treasurer.

My goal is for you to enjoy and learn from this issue of the Forum. The editorial team welcomes your comments and suggestions for future issues as well. And if you've recently attended an interesting seminar or read a compelling article, it is likely that fellow members of the RPG would agree… consider sharing it as an original article submission to the RNF Editorial staff. ◆

Happy Spring!

Erratum
from Winter 2011 Forum:

Please accept our apologies, in the print version of the Renal Nutrition Forum, Vol. 30, No. 1 on page 1, the CPEU expiration date for the Feature Article entitled 'Maintenance Hemodialysis Patient is Improved with Intradialytic Parenteral Nutrition (IDPN): A Case Study' is listed incorrectly as 'April 15, 2011' and should read 'April 15, 2012'. Please note that the pdf version of the issue and the article on www.renalnutrition.org have been corrected.

Vitamin A Metabolism (1)

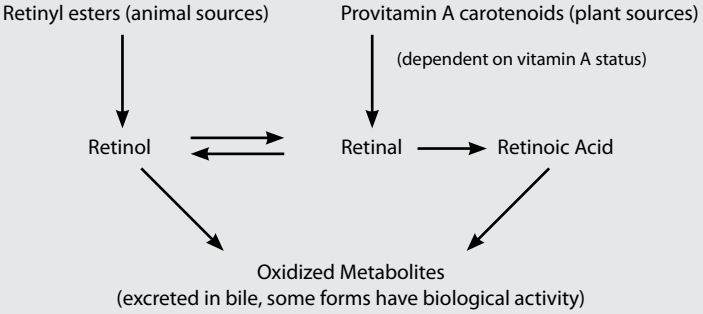
After some digestion in the stomach, retinol is esterified and packaged with chylomicrons in the small intestine, while some carotenoids are metabolized to retinoids and then esterified. Retinoic acid, on the other hand, enters the portal vein and tightly binds to albumin. Pancreatic and intestinal hydrolases act on the retinyl esters, freeing carotenoids and retinols to remain solubilized in micelle solutions. These are absorbed in the duodenum and jejunum, incorporated into chylomicrons, and transported to extrahepatic tissues. Those not taken up into tissues are then transported to the liver for storage or further metabolism. Roughly 50-85% of the total body retinol is stored in the liver (2).

Table 1
Food Sources of Vitamin A (3)

Animal Sources	Vitamin A (IU)*
Liver, beef, cooked (3 oz)	27,185
Milk, fortified skim (1 cup)	500
Cheese, cheddar (1 oz)	284
Milk, whole (1 cup)	249
Egg, fried (1 large)	362
Plant Sources	**Vitamin A (IU)**
Carrots, boiled (1/2 cup)	13,418
Spinach, frozen, boiled (1/2 cup)	11,458
Kale, frozen, boiled (1/2 cup)	9,558
Carrots, 1 raw (7 ½ inches)	8,666
Cantaloupe (1 cup)	5,411
Spinach, raw (1 cup)	2,813
Apricots, raw (1 cup)	3,178
Peach, 1 medium	319

*IU = International Units.

Diagram 1
Vitamin A Conversions



Note: conversion from retinol to retinal is reversible whereas the pathway from retinal to retinoic acid is not.

Table 2
RDAs and ULs for Vitamin A* (3)

Age (years)	Children (mcg RAE)	Males (mcg RAE)	Females (mcg RAE)	ULs
1-3	300 (1,000 IU)	n/a	n/a	600 (2,000 IU)
4-8	400 (1,320 IU)	n/a	n/a	900 (3,000 IU)
9-13	600 (2,000 IU)	n/a	n/a	1,700 (5,610 IU)
14-18	n/a	900 (3,000 IU)	700 (2,310 IU)	2,800 (9,240 IU)
19+	n/a	900 (3,000 IU)	700 (2,310 IU)	3,000 (10,000 IU)

* RDA's for pregnancy and lactation and Adequate Intakes for infants are found at http://ods.od.nih.gov/factsheets/vitamina

Within cells, retinol binds to cellular retinol-binding protein (RBP), which may function to regulate cellular levels of free retinol and to direct the vitamin to specific metabolic enzymes. Within the blood, retinol transport requires RBP, transthyretin (TTR, formerly known as prealbumin), and thyroxine. These carrier proteins circulate retinol to the tissues, with a half-life ≤ 15 hours. Once retinol has been deposited, the carrier proteins are filtered in the glomeruli and absorbed in the proximal tubules, making the kidneys indispensable to the process.

Vitamin A Deficiency

Vitamin A deficiency is uncommon in developed countries. Those at risk include preschool children eating inadequate fruit or vegetable intake, the urban poor, the elderly, or those with liver failure. Additionally, individuals with fat malabsorption, such as Crohn's disease, chronic diarrhea, celiac disease, and other disorders, have a higher risk of vitamin A deficiency.

A diagnosis of vitamin A deficiency is generally made by clinical findings but can be supported by serum retinol levels < 20 mcg/L or the ratio of retinol:RBP < 0.8 (2). Serum retinol levels may underestimate vitamin A stores in the setting of severe protein-calorie malnutrition since dietary protein, energy, and zinc are necessary for synthesis of RBP (2). Additionally, serum retinol