

Oxidant stress in hemodialysis

**By: Claudio Ronco, MD,
Director RRI Hemodialysis Research Laboratory**

Oxidative stress has been suggested to be an important complication occurring in hemodialysis (HD). It may not have immediate clinical effects, but it may represent a long term complication caused by the repetitive effects of blood-membrane interaction.

Advanced experimental and clinical studies have highlighted the role of blood cell activation, (particularly leukocytes) as a primary mechanism of oxidative stress during HD. However, the occurrence of this process may include other factors peculiar to chronic HD, such as an incomplete correction of uremic toxicity, a status of malnutrition and a progressive worsening of clinical conditions due to aging and co-morbidity. Altogether these factors trigger oxidative stress by establishing a steadily abnormal production of pro-oxidant stimuli coupled with a defective or insufficient antioxidant protection.

Phagocyte activation can generate reactive oxygen species (ROS) during the so-called respiratory burst. These molecules exert a physiological role participating to the killing of bacteria and tumor cells and to the cell signaling. From another end however, if chemical reactivity of these molecules is not properly controlled and limited, they may become extremely dangerous leading to the oxidative modification of biologically relevant molecules such as lipids, proteins and nucleic acids. Ultimately, a series of acute and chronic responses (damage, repair and

adaptation) may arise in tissues and organs, the physiopathological relevance of which has been extensively documented. Oxidative stress has been proposed to play a role in many states often associated with the end stage renal disease, including: cardiovascular and infectious diseases, cancer, diabetes, disorders of peripheral and central nervous system, anemia and accelerated aging. Even if a direct cause/effect relationship between HD and oxidative stress-related disease states hasn't been definitively demonstrated, the repeated activation of the immune cells during the extracorporeal treatment may be a key aspect implying the onset of long-term side-effects and an increased morbidity and mortality in these patients.

Exploring in detail, the possible consequences of an increased oxidative stress in HD patients we may come up with a list of disorders that include:

1) Lipoprotein modification: this is one of the major event associated with oxidative stress and, together with the ROS damage to endothelial cells, it is considered one of the earliest key events in the formation of the atheromatose plaque.

2) The recurrent leukocyte stimulation with complement activation and cytokine secretion may lead to a condition of chronic inflammation in which the priming of immune cells can ultimately result in a defective immune response upon specific stimuli. To this immune cell dysfunction may also directly contribute the nox-

ious effects of ROS and the abnormal production of pro-inflammatory/pro-oxidant

The occurrence of this process may include other factors peculiar to chronic HD, such as an incomplete correction of uremic toxicity, a status of malnutrition and a progressive worsening of clinical conditions due to aging and co-morbidity. Altogether these factors trigger oxidative stress by establishing a steadily abnormal production of pro-oxidant stimuli coupled with a defective or insufficient antioxidant protection.

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Here is Issue No. 24

This is the 12th issue under our new mast-head. RRI's purpose is to improve outcomes in dialysis patients through collaborative research. This paper will continue to present views of events in the dialysis community from a variety of sources and information about our programs. Your input is welcome.

The Nephron Information Center

<http://nephron.com>

Creating a web portal for the renal community

By Stephen Fadem, M.D.

It is estimated that there are now 200 million persons using the World Wide Web. The number of web sites doubles approximately every 37 days. Virtually every business is promoting e-commerce, and logging on to their "dot.com" web site. With the explosion of information, the heavy traffic on the information highway has led to intellectual congestion, and it often becomes very difficult to find exactly what you want or need.

Navigating the i-bahn need not be difficult if one knows just a few select sites. Such a site exists for the nephrology community. The Nephron Information Center, <http://nephron.com> created to address the special needs of nephrologists, nurses, dietitians, social workers and patients, makes it easy to gather information and fully utilize the value of the web.

For physicians, the site is invaluable. One can search the National Library of Medicine's PubMed directly from the site, and does not have to remember complex URLs. PubMed is a readily searchable selection of PubRef, the NLM database of all referenced journal articles and most abstracts published in the combined medical literature since 1966. Simply typing in the subject or subjects with key words results in a list of current references. The abstracts of these can be readily reviewed, or the full text of these abstracts can be ordered from Loansome Doc.

The Nephron Information Center contains a Networking Center <http://www.medicalresources.net/>. Here, popular renal websites from across the nation are listed according to region. One can quickly select the region from the handy map, and click onto an alphabetically listed resources. If one wishes to add a web site, simply e-mail the author.

The site also contains a physician site, <http://nephron.com/physicians.html>. This section has many handy utilities and resources, including calculators. The preESRD calculator is written in Javascript, and is designed with portability in mind. It is mainly for onsite use in the clinic. It can be easily downloaded to any laptop computer and does not require web interfacing. Since it is written in Javascript it works equally well with a Macintosh or a Windows-based computer, so long as a web browser is available. While web browsers are designed primarily for the World Wide Web, they function quite nicely for viewing local applications in Javascript. The calculator is designed to interface with and augment the NKF DOQI (Dialysis Outcomes Quality Initiative) guidelines, making some of the cumbersome calculations easily and reliably performed. Further revisions are underway. Feedback is always welcome.

The site is extensively linked to the NKF DOQI

Guidelines. The Nephron Information Center converted the NKF DOQI Guidelines, <http://www.kidney.org/professionals/doqi>, to HTML for the NKF. Hooks or anchors are little pieces of code embedded into a web document. Using these hooks, one can directly access a section of DOQI. By designing DOQI this way, users can have fast access to it without going through the introduction or the table of contents. The web is being used more frequently as a daily work tool from the physician's office or clinic, and speed, ease of use and handiness are invaluable time savers to busy renal practitioners.

The Physician section of nephron.com also links directly into many other clinical guidelines, and as well into the National Institute of Health Database. For those that need a quick reference from Pubmed, the Mesh headings have all been embedded, and can be quickly accessed from the links section, <http://nephron.com/links.html>. Nephron.com contains links

can be traveled.

Dialysis Units in the USA, <http://nephron.com/usacgi.html>, an integral part of The Nephron Information Center, enables one to easily and quickly search the HCFA national provider ESRD database. The database lists the name, telephone number and address of all Medicare approved dialysis facilities in the United States and its territories. It also contains modality, provider number, a map and driving instructions. It is searchable by name, zip code, city, state, network, region or modality. It has become an invaluable tool for social workers and other renal professionals that need a quick location of a dialysis facility in a distant city. It is also crucial for facilities, networks and regions that are trying to plan for disaster relief from the floods of hurricanes, from earthquakes, tornadoes, or any unforeseen catastrophe that could result in a dialysis facility being suddenly and temporarily closed. There is a need for similar databases to

be created for other nations in the world, and the Nephron Information Center is strongly considering tackling this project.

The site works closely with NKF cyberNephrology, and jointly hosts KIDNEY DISEASE— an e-mail discussion group for patients. There are two physician related discussion groups on the site — PREESRD and PHYSICIAN. PREESRD discusses strategies for developing a local disease management program. The PHYSICIAN site mainly discusses com-

Next steps for nephron.com are to increase revenue to the site through more marketing, e-commerce and banner advertisements. This will not detract from the value to the renal community for authentic information, and in fact will enhance it since many of the advertisements will not be medically oriented. The high traffic on the site will support this endeavor, and the increased revenue will enable quicker updates of newsworthy events. Efforts are underway by giant technology corporations to create easily accessible web interfacing using the high bandwidth of cable television.

puter-related issues like security, setting up web sites, filtering e-mail.

to several renal oriented web resources like HDCN, <http://www.hdcn.com>. HDCN (Hypertension, Dialysis, Consultative Nephrology) is an on-line web journal that has captured several key lectures from renal meetings around the world, and highlights key medical references. It is managed by John Daugirdas, but has an active advisory board. Although it is a subscription item, is a true value for clinical nephrologists. UpdoDate is a CD ROM published in hypertext format, similar to that used by the web. This extensively cross referenced renal textbook is valuable because it is updated quarterly, easy to access and use, and has been written and published by extremely reliable sources under supervision of Burton D. Rose. Ordering UpdoDate is easy from the site, as is logging into the ASN, NKF or ISN sites.

Nephron.com also supplies links to renal organizations, renal journals and government organizations. There is a special section for managed care, and for quality care. One can access national meetings from nephron.com. The key to making the site successful — averaging approximately 75,000 hits per week, is its organization, cross-linking and the ease with which it

The site is also a gateway to NEPHROL, the cyberNephrology e-mail discussion group that hosts nearly 2000 nephrologists around the world.

In addition for having a variety of resources related to medical issues for physicians, the site also has valuable patient education resources that physicians are invited to download and distribute to patients wanting reliable information about kidney disease. There is a dialysis handbook and a preESRD section, as well as a links page that brings together a variety of other resources for anyone interested in kidney disease. The preESRD section provides the Kidney Associates PreESRD Curriculum, a popular and practical program established to manage patients with renal disease at various levels. Stage I patients often have minimal symptoms, but there is a great need for early intervention to reduce or minimize the risks of disease progression, and to help reduce the cardiovascular risk factors that so badly plague dialysis patients. Stage 2 patients have early symptoms and chronic renal insuf-

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CONTINUED: From Page 1

cytokines, particularly TNF(, one of the most powerful cell death triggers.

3) The chronic activation by hemodialysis membranes of PMN leukocytes may lead to LDL modification and up-regulation of surface molecules and chemotactic factors which mediate the adhesion to endothelium, and the migration through the endothelial wall of activated phagocytes, thus translating oxidative stress into tissues.

4) Other events of possible clinical relevance in the proinflammatory effect of hemodialysis are the secretion of acute-phase molecules including complement components, C-reactive protein and serum amyloid A.

5) The attack of ROS on red blood cell membrane lipids can influence their life-span and increase their susceptibility to intra-vascular hemolysis, an important event which perpetuates and further promotes oxidative stress.

6) Finally, an important oxidant-related injurious process occurring particularly in HD patients is related to an increased formation of reactive carbonyls species deriving in a large part from the accumulation of protein glycation products and lipid oxidation. The process of cell membrane and plasma lipids peroxidation induces the formation of bioactive lipids (prostaglandin-like molecules) such as the F₂-isoprostanes with effects on the vascular relaxation and cell function/proliferation. Several other classes of by-products are formed in this process including reactive carbonyls such as the malondialdehyde (MDA). The latter molecule is able to interact with the lysine residues of target proteins with consequent molecular damage.

All these damages may occur in conjunction with an imbalance between oxidant stress and antioxidant conditions. Some defects in cell defenses and a possible defective antioxidant status in plasma of hemodialysis patients have been proposed even though contradictory information appeared in literature. A loss of hydro-soluble antioxidant substrates such as ascorbic acid through the dialysis membrane together with their increased utilization may contribute to a decreased antioxidant power of plasma. Beyond these factors, a further cause of oxidant stress in HD can be the increased demand of Vitamin E (lipo-soluble antioxidant), which constitute one of the main defenses against lipid peroxidation in humans. Also protein, free thiols (particularly cysteine residuals contained in the albumin) and glutathione can represent important targets of the pro-oxidant effect of hemodialysis and the uremic status.

Several efforts have been undertaken by the scientific community and industry to study and develop

new technological and clinical solutions to improve dialysis biocompatibility and possibly to eliminate some clinically relevant consequences of the blood-membrane interaction including the oxidative stress. Based on the assumption that chronic HD patients may require an increased antioxidant protection, several approaches oriented to providing a supplementation with non-enzymatic antioxidants have been carried out. Vitamin E, one of the most important naturally occurring antioxidants, has been widely used in HD. Its utilization in supplementation trials has provided the most interesting results with regard to the correction of the lipid peroxidation in blood cells and plasma. Although in some studies the serum levels of vitamin E in HD patients have been observed to be in the normal range, interesting results have been provided by supplementation trials. The protective effects of vitamin E have been proposed to be mainly directed against the lipoprotein and erythrocyte membrane lipids. Thus, vitamin E supplementation could be important to lower the atherogenetic risk in HD patients and in correcting uremic anemia.

In the last years, new approaches to the antioxidant therapy in HD have been introduced, namely the hemolipodialysis, the infusion of antioxidants by dialysate, and the vitamin E-bonded membranes.

Even if introduced only in the last years, the possibility to bound vitamin E to membranes is now a clinical reality being used since the early 90s. The main goals of this technological strategy are the reduction of oxidative stress of blood cells and the improvement of biocompatibility of the hemodialysis membrane.

The recent literature in the field offers an extensive overview of oxidative stress and vitamin E in uremia and dialysis, and presents several experimental and clinical observations that can be of relevance in understanding the meaning and the potential of these new antioxidant strategies. Meanwhile, the most recent papers in the field could represent a tool for learning and following the development of an innovative concept of biocompatibility in which a bio-reactive natural molecule can be successfully employed in conjunction with various techniques of blood purification.

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International Conference on Dialysis II

Advances in ESRD — 2000

January 13-14, 2000

The Westin Innisbrook Resort, Tarpon Springs, Fla.

DAY 1 — Thursday, January 13

7:00-7:25 A.M. CONTINENTAL BREAKFAST

7:25-7:30 Welcome — Morning Session Chair, Nathan Levin, M.D.

7:30-8:15 Keynote address

Hypotension and ultrafiltration physiology in dialysis

Karel Leunissen, M.D.

8:15-8:35 Debate- Should we treat patients with incremental dialysis prescriptions?

John Burkart, M.D. (Yes)

8:35-8:55

Thomas Golper, M.D. (No)

8:55-9:15 Panel Discussion of Debate:

John Burkart, M.D., Thomas Golper, M.D., Brian Pereira, M.D.

9:15-9:35 Hemodiafiltration: Mechanisms, techniques and schedules

Claudio Ronco, M.D.

Understanding Membranes

9:35-9:55 Limitations of membrane structure and other issues that affect

Norma Ofsthun, Ph. D.

large solute removal in dialysis

9:55-10:15 Influence of blood-side and dialysate-side resistances on

William Clark, M.D.

small solute removal in dialysis

10:15-10:30 Break

10:30-11:00 Continuous flow peritoneal dialysis (preliminary results)

Jose Diaz-Buxo, M.D.

11:00-11:20 Debate- Are “cross sectional” (USRDS) data studies as effective as

Robert Wolfe, Ph.D. (Yes)

11:20-11:40 randomized trials? (HEMO, AASK)

Thomas Greene, Ph. D.. (No)

11:40-12:00 Panel Discussion of Debate:

Robert Wolfe, Ph. D., Thomas Greene, Ph. D., Philip Held, Ph. D.

12:00-1:00 P.M. Lunch

Afternoon Session Chair, Eberhard Ritz, M.D.

Special Session on Chronic Inflammation in Dialysis

1:00-1:25 Overview of chronic inflammation in renal failure

Eberhard Ritz, M.D.

1:25-1:50 Interaction between nutrition and inflammation

Bruce Bistrain, M.D.

1:50-2:15 Interpretation of plasma protein measurement: Inflammation vs. malnutrition

George Kaysen, M.D.

2:15-2:40 Carbonyl chemistries in uremia in dialysis patients

Toshio Miyata, M.D.

2:40-3:05 Measurement of oxidative stress and inflammation in dialysis patients

Garry Handelman, Ph. D.

3:05-3:30 Cytokines as a marker of outcomes

Brian Pereira, M.D.

6:30 Cocktail Party/ Dinner

Short history of dialysis membranes: From parchment to polymers

Prof. Dr. Ing. Jorg Vienken

ACCREDITATION

Beth Israel Medical Center/St. Luke's-Roosevelt Hospital is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians and take responsibility for content, quality and scientific integrity of this CME activity.

Beth Israel Medical Center designates this activity for a maximum of 5.5 hours for Jan. 12 activity and 12.5 hours for Jan. 13-14 activity in Category 1 Credit towards the AMA Physician's Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

This CME activity was planned and produced in accordance with the ACCME Essentials.

FACULTY DISCLOSURE

The “Faculty Disclosure Policy” of Beth Israel Medical Center/St. Luke's Hospital requires that faculty participating in a CME activity disclose to the audience any relationship with a pharmaceutical or equipment company which might pose a potential, apparent or real conflict of interest with regard to their contribution to the activity and any discussions of unlabeled or investigational use of any commercial product or device not yet approved in the United States.

Special course for Fellows and others interested in “How to Run a Dialysis Unit” — Wednesday, Jan. 12th

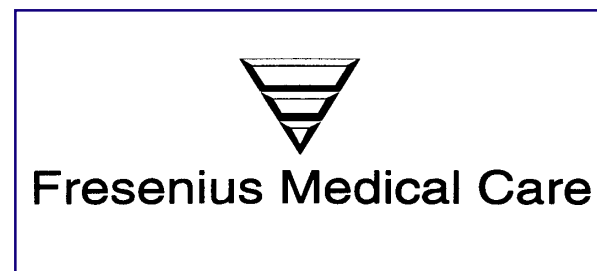
This two day educational activity for practicing nephrologists, research academicians and fellows will contain these primary segments of focus:

A series of debates on major controversies in the ESRD and dialysis fields, supported by panel discussions involving experts with experience in these issues.

New hemodialysis and peritoneal dialysis technology.

Review of the latest epidemiologic findings including a wide variety of intermediate outcomes.

Expert discussion of legislative, regulatory and financial factors affecting dialysis.



DAY 2 — Friday, January 14

7:00-7:25 A.M. CONTINENTAL BREAKFAST

7:25-7:30 Welcome — Morning Session Chair, J. Michael Lazarus, M.D.

7:30-8:15 Keynote Address

International Reimbursement: Implications of a timely and incremental approach to dialysis regarding finances and clinical outcome

Roger Greenwood, M.D.

8:15-8:35 Debate- Is there a role for protein restriction in chronic renal failure?

McKenzie Walser, M.D. (Yes)

8:35-8:55

Karl Nolph, M.D. (No)

8:55-9:15 Panel Discussion of Debate:

McKenzie Walser, M.D., Karl Nolph, M.D., Thomas Golper, M.D.
Glenn Chertow, M.D.

9:15-9:45 Biofilm in dialysis— New developments

William Costerton, Ph.D.

New Vascular Access Update

9:45-10:15

Vasca

John Moran, M.D.

Biolink

David Warnock, M.D.

Access monitoring methods

Anatole Besarab, M.D.

10:15-10:30 Break

10:30-11:00 The relationship between biology and psychosocial assessment in dialysis

Paul Kimmel, M.D.

11:00-11:20 Debate- Is Kt/V the best dialysis dose parameter?

Frank Gotch, M.D. (Yes)

11:20-11:40

Edmund Lowrie, M.D. (No)

11:40-12:00 Panel Discussion of Debate:

Frank Gotch, M.D., Edmund Lowrie, M.D., Friedrich Port, M.D.,
Roger Greenwood, M.D.

12:00-1:00 Lunch

Afternoon Session Chair, Claudio Ronco, M.D.

1:00-1:30 Set point controlled dialysate sodium modeling in hemodialysis:

Marcia Keen, Ph. D.

A practical approach

Infections In Dialysis Patients

1:30—2:00 Staph aureus nasal carriage treatment in dialysis

Beth Piraino, M.D.

2:00-2:30 Infections due to drug resistant bacteria in dialysis patients

Jerome Tokars, Ph. D.

Special Talk

2:30-3:00 Wall Street and Dialysis—2000: Current evaluations and what can be expected

Elaine Claar Campbell

CreditSuisse/First Boston

**To register, please contact RRI, 207 E. 94th, New York, NY 10128
Telephone 212-360-4900 Fax 212-360-7233
email:scevallos@rriny.com**

Announcing....

AAKP Patient Plan

TAMPA, Fla. — The American Association of Kidney Patients (AAKP), celebrating its 30th anniversary, has developed a novel approach to educating kidney patients regarding their health care. This concept, called the AAKP Patient Plan, has identified the different phases of care for renal patients and is creating and compiling material to address the specific issues which typically occur during different phases.

At this time, patients and family members must seek out information about living with renal failure from numerous sources. One of the concerns of this information seeking process is that a newly diagnosed patient may receive information directed toward a long-term patient or vice versa. The information therefore is not relevant for this patient and can cause confusion and undue stress.

The concept behind the AAKP Patient Plan is to provide the correct phrase information when the patient is ready to receive it. This monumental undertaking will, when unveiled in July, 2000, provide a new form of education derived from the patient/family perspective. The AAKP Patient Plan, through phenomenal resources, will be distributed to ESRD patients nationwide. As with all AAKP materials, patients will receive the information without cost.

Program components
AAKP believes the patient moves back and forth along the continuum of phases and within each phase there are health and life issues that need to be addressed by the patient, family members and healthcare professionals.

The four phases of the AAKP Patient Plan are:

1. Diagnosis to treatment choice.
2. Treatment choice to initiation.
3. Stabilization.
4. Ongoing treatment.

The AAKP Patient Plan has four major components.

1. Patient/Caregiver checklists.
2. Phase books.
3. Phase newsletters.
4. Phase "tool kit" for professionals.

Each phase will include a book of educational materials and checklists as well as a phase newsletter containing information related to a specific stage. Each phase will also include a postage-paid return card to request the next phase when the patient or family member feels they are ready and want to gather information along the continuum of care. AAKP is also developing a professional guide to accompany the four phase books for use by healthcare professionals. This guide will include teaching programs and suggestions to increase, improve and effectively use the interaction between patients and family members and healthcare professionals.

Distribution

AAKP has several methods of distributing the literature.

◆ The Health Care Financing Administration has agreed to mandate the distribution of the first book and newsletter to all new dialysis patients starting in July, 2000. The distribution will occur through the ESRD Networks who will mail the piece directly to patients as part of a "new patient package."

◆ AAKP will distribute a letter and summary brochure to each nephrologist in the United States informing them about the program.

◆ Each dialysis unit in the United States will receive a copy of the entire plan including all books, newsletters and professional guides directly from AAKP.

◆ AAKP is working with managed care health plans and disease management organizations to encourage distribution as part of their education and prevention goals.

◆ AAKP will undertake a national publicity campaign encouraging patients to call our 800 number to request the plan.

Materials will also be distributed to non-renal physicians through a nurse educator program with professionals who are trained to work specifically with non-renal physicians on pre-ESRD education.

AAKP Patient Plan goals

◆ Provide important information to patients, family members and healthcare professionals on kidney disease and its appropriate management from the patient perspective.

◆ Provide educational materials that reinforce clinical recommendations.

◆ Maximize patient compliance with prescribed treatment for better quality of life and quality of health.

◆ Support the efforts of family members to manage kidney disease and suggest ways to alleviate their stress.

◆ Distribute appropriate, user friendly checklists and assessment tools to help patients and family members monitor progress in the various phases.

◆ Provide tools to patients and caregivers to communicate to healthcare professionals.

Funding resources

Funding for the AAKP Patient Plan is a significant undertaking. Thus far, contributors have made generous gifts to AAKP to ensure the success of this important program. Amgen, Inc. Baxter Healthcare, Fresenius Medical Care and Kidney Care Foundation have provided substantial funding for the project.

AAKP continues to solicit companies, individuals and foundations to ensure the longevity of this project. For more information on how to become involved contact Kris Robinson, AAKP executive director at (800) 749-2257 or via email at aakpkri@ibm.net

AAKP Physician Membership Application
American Association of Kidney Patients
100 South Ashley Drive, Suite 280, Tampa,
Florida 33602
1-800-749-2257 (813-223-7099) /
Fax 813-223-0001

Please enroll me as a physician member of AAKP. I enclose my check for \$100 payable to AAKP. Send details of AAKP's programs and organization.

Name: _____ Specialty: _____

Title: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ e-mail: _____

Comments:

Nephron Information Center

CONTINUED: From Page 2

iciency. The program outlines the need for making a modality decision early, since AV fistulae often take several weeks to mature properly. Here, the focus is on managing the problems of predialysis renal disease — anemia, metabolic acidosis and early secondary hyperparathyroidism. By stage 3, ESRD is imminent. The curriculum stresses the need to measure parameters of nutrition, make certain that the access is functional, and refer the patient for dialysis therapy when DOQI criteria are met. The main problems with preESRD education and disease management are related to education of primary referring physicians and the dissemination of information to primary physicians, staff and to patients. The site tries to address all these needs, and the information is layered so that each group can benefit.

The Nephron Information Center has many utilities from around the web; there is a really helpful resources section <http://reallyhelpful.html> that includes lookup links for currency conversion, travel arrangements, area code and zip code. Movie buffs can find out quickly what other films their favorite actors starred in, and get a variety of movie statistics. There is even a link to BUYTHINGS. Buythings.html is a site that enables physicians to shop online, just in case the stores were closed by the time one finished evening rounds.

Next steps for nephron.com are to increase revenue to the site through more marketing, e-commerce and banner advertisements. This will not detract from the value to the renal community for authentic information, and in fact will enhance it since many of the advertisements will not be medically oriented. The high traffic on the site will support this endeavor, and the increased revenue will enable quicker updates of newsworthy events. Efforts are underway by giant technology corporations to create easily accessible web interfacing using the high bandwidth of cable television. As bandwidth increase, the web will expand capacity to provide meaningful content. Illustrations, animations and even movies will download faster. The web will reach into virtually every home with a television set, and ultimately will be integrated into the television and the telephone. To create more content, the site developer is creating a professional advisory board that will review articles and educational materials submitted for placement on the site, and is contemplating a full time staff that can install and manage some of the new technologically advanced features that in the very near future will be common place to web users everywhere. The creation of background databases, transparent high security and more access to valuable resources will create a next generation tool that will be easier to use, and more useful to the nephrologist, and other members of the renal community.

The major hindrance to Internet usage by physicians as well as others in the renal community, is that it is difficult to obtain what one needs quickly, yet there is often extraneous information that bombards and distracts the user. If the Internet is slow and site selection is incorrect, the Internet can be a nuisance and not an asset. With rapid downloads, even with the increase in Internet traffic, the Nephron Information Center will continue to offer a valuable service to the renal community.

Nephrologists should see their patients on dialysis (more often than they do now)

By Nathan W. Levin, M.D.

In 1996, the Renal Physicians Association approved a document which suggested that it was in the interests of hemodialysis patients that they be seen weekly or at least monthly during the actual dialysis treatment. The document emphasizes that the recommendations were not intended to be standards. The recommendations seem reasonable, given that the monthly capitation payment (MCP) is paid to cover the complete care of the patient (as defined in another RPA document). In addition, a strong professional incentive for nephrologists to see their patients must surely be their high morbidity and mortality given the obvious concern that intradialytic events may be associated with negative outcomes. Further, the wide variety of prescribable choices that the nephrologist has in directing dialysis treatment such as dry weight assessment, dialysis dose, blood flow rate, treatment duration, dialyzer choice, dialysate electrolyte concentrations, access assessment and monitoring and drug prescription would seem to require nephrologist presence. Finally, at a visit the opportunity is presented for patients to bring early, yet significant symptoms, to their doctor.

Given the above why is it that nephrologists in general do not see their patients at least weekly? There is little factual data supporting this, except for a recent paper suggesting that increased physician contact is associated with lower adjusted mortality (McClellan

W, Soucie J, et al. J Am Soc Nephrol 9:1940-1947, 1998).

In our New York experience, the Queens and South Queens dialysis units, under the director of R. S. Supta colleagues, have consistently reported SMRs over the past years significantly lower than one, often between 0.5 -0.7. In these units patients are seen on virtually every shift by the medical group. No other variable appears to be significantly different from the other New York units observed by us.

The RPA, being ahead of its membership, explains how pressure of work, reduction in the relative number of nephrologists, distance between units and other responsibilities may be a deterrent to visits by dialysis patients. Is this explanation sufficient and could it be argued that it is enough for a nephrologist to be available at all times and to review laboratory results and drug prescriptions at regular intervals without patient contact? We strongly disagree on the grounds that the MCP is paid to provide a level of care appropriate to the high mortality in the dialysis population and that this care cannot be provided for many dialysis patients without more frequent interaction.

Claudio Ronco has suggested in a widely copied slide that $Kt/V = MDt/P$ where $MDt/P = \text{Physician time/patient}$. Now that Kt/V is reaching an acceptable level it is time for nephrologists to increase the amount of time they spend with their dialysis patients. This is professionally appropriate, socially conscious and, probably, a very prudent move.

AAKP

Medal of Excellence dinner set for March in Washington

TAMPA, Fla. — The American Association of Kidney Patients (AAKP) is hosting the fifth annual Medal of Excellence Award dinner at the Renaissance Mayflower Hotel in Washington, D.C. on Sunday, March 26, 2000. As in previous years, the dinner will be held in conjunction with the Renal Physicians Association's annual meeting.

The Medal of Excellence is one of AAKP's most prestigious awards and may be bestowed upon either an individual or an association. The individual nominees are renal healthcare professionals who have achieved continued and outstanding success in caring for end-stage renal disease patients. The association nominees have displayed continuing dedication to the renal community.

A judging committee which consists of peers, knowledgeable and experienced in various renal professions, will vote to decide on the award during the week of Jan. 9, 2000.

Previous Medal of Excellence Award recipients include:

1999 — John D. Bower, MD, University of Mississippi Medical Center, Jackson, Miss. And Renal Physicians Association, Washington, D.C.

1998 — A. Peter Lundin, MD, State University of New York, Health Science Center, Brooklyn, NY.

1997 — Clive O. Callender, MD, Howard University Hospital, Washington, D.C.

1996 — Eli Friedman, MD, State University of New York, Health Science Center, Brooklyn, NY.

It is with much appreciation that AAKP acknowledges American Regent Laboratories Inc., R&D Laboratories Inc. Renal Care Group and Sigma Tau Pharmaceuticals for their current sponsorship commitment to endure that the 2000 Medal of Excellence is once again successful.

Sponsorship and advertising opportunities are still available for the award dinner and AAKP invites the entire renal community to display their appreciation to the Medal of Excellence winner. Tickets to the dinner are also available. Please contact Jay McGee, AAKP Program Manager at the national office, (800) 749-2257.

AAKP is a voluntary patient organization which, for 30 years, has been dedicated to helping renal patients and their families deal with the physical, emotional and social impact of kidney disease. Programs offered by AAKP are designed to help ESRD patients and their families better understand kidney disease, adjust more readily to their circumstances and assume normal and productive lives within their communities.

International Conference on Dialysis II

SPECIAL SESSION

for Fellows and other professionals running dialysis centers

HOW TO MANAGE A DIALYSIS CENTER

Wednesday, January 12, 2000

Westin Innisbrook Resort, Tarpon Springs, Fla.

COURSE DIRECTOR

Nathan Levin, M.D.,

Medical and Research Director

Renal Research Institute

12:30-1:00	What does an administrator really do?	Linda Donald, MBA
1:00-1:15	Staffing patterns in a dialysis unit	Althea Alto, RN
1:15-1:30	Safety issues and OSHA guidelines	Larry Park
1:30-2:00	Quality outcomes and improvements	Sandy Parnell, RN
2:00-2:30	The duties and role of the Medical Director	Tom Golper, M.D.
2:30-3:00	Management information systems role in dialysis	J. Michael Lazarus, M.D.
3:00-3:20	Break	
3:20-3:50	How the patient fits in: Patient satisfaction and quality of life	John Newmann, Ph.D.
3:50-4:10	Reimbursement and managed care in dialysis	Ramon Hannah, M. D.
Technical Issues		
4:10-4:40	Water treatment and reuse	Robert Levin
4:40-4:55	Dialysis membranes: State of the art, 2000	Jorg Vienken, Dr. Ing.
4:55-5:10	Laboratory Issues	Craig Dawson
Adequacy of Dialysis		
5:10-5:40	Assuring the delivery of the prescribed dose	Claudio Ronco, M.D.
5:40-6:10	Other prescribable factors	Nathan Levin, M.D.
6:10-6:30	Vascular access monitoring	Anatole Besarab, M.D.

This program will offer continuing education credit hours

To register:

Please contact

RRI, 207 E. 94th,

New York, NY 10128

Telephone 212-360-4900 Fax 212-360-7233

email:scevallos@rriny.com

Excitement builds for “International Conference on Dialysis II — Advances in ESRD-2000

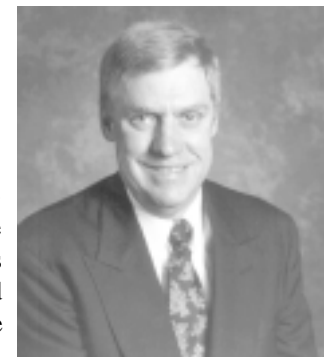
Only one month remains to register for our second conference on dialysis. The full agenda is on pages 4 and 5 of this edition of Dialysis Times. The faculty and program have been carefully selected to provide an excellent educational opportunity. Last year's attractive mix of debates on renal issues, new information in epidemiology and technology and reference to current legislative and financial trends in the industry has been followed again, since this approach is of interest to practicing nephrologists and academic clinicians across the country. This year's conference will also be offering publication credits for nursing and other dialysis clinicians.

There will also be a Special Session on Wednesday January 12, 2000 on “How to Manage a Dialysis Center”. This session was added by the program committee, specifically with the 100 fellows who will be attending the conference in mind, but also for all other clinicians who want information in this area. The fellows are being sponsored by Fresenius Medical Care North America. One fellow from each academic institution, who is selected by the Program Director of that school, is sponsored to attend the conference up to the first 100 registered.

The meeting will also have a full exhibit area consisting of the majority of all renal companies in the dialysis community. This meeting is open to all renal companies interested in exhibiting.

BEN LIPPS TO SPEAK AT DINNER MEETING

Dr. Ben Lipps, President and CEO of Fresenius Medical Care (FMC), will speak at the Dinner Thursday night January 13th. Dr. Lipps will discuss the latest developments at FMC and the latest trends in the industry, as well as where FMC is headed in the next millennium.



Dr. Ben Lipps

Dr. Claudio Ronco joins RRI

The Renal Research Institute is proud to announce that Dr. Claudio Ronco will be the Director of the Beth Israel/RRI Dialysis Research Laboratory for the year 2000. Dr. Ronco will be a member of the RRI Research Board. He will also be a Visiting Professor at the Albert Einstein School of Medicine.

Dr. Nathan Levin, Medical and Research Director of RRI commented that, Dr. Ronco is one of the world's leading clinical nephrologists who has made contributions in many fields; particularly dialysis dynamics and technology, bio-engineering and continuous renal replacement therapies. He is a renowned teacher with inexhaustible enthusiasm and naturally is an admirable mentor for people in training. We are very pleased to have Dr. Ronco with us.”

After graduating in 1976 at the University of Padua, Dr. Ronco specialized in nephrology in 1979 and pediatric nephrology in 1989. Since 1977 he has worked at St. Bartolo Hospital in Vicenza, Italy, in charge of hospital patients suffering from hypertension, kidney diseases and renal insufficiency. Dr. Ronco is also responsible for patient care at the outpatient peritoneal and hemodialysis centers and for the organizing of substitutive dialysis care for heart surgery patients.



Dr. Claudio Ronco

Dr. Ronco is Professor of Surgery at the University of Padua. He has published over 300 papers, 17 books and is a member of the editorial boards of 12 scientific journals.

We hope he has a productive and enjoyable year in New York at RRI.