

NHHD

Is It The Answer For Some ESRD Patients?

By Lori James-Hartwell

"The future of medicine in any area of healthcare is going to be focused on quality of patient care and outcome. Patients will be the center of the decision-making process."

--Robert S. Lockridge, Jr. MD

Editor's Note: Robert Lockridge Jr., MD, of the Virginia-based dialysis unit Lynchburg Nephrology shares with CD&N the history and the clinical outcomes of Nocturnal Home Hemodialysis (NHHD), a modality, that promises longer, healthier lives for kidney patients, while significantly reducing medication usage and the cost of hospital admissions.

CD&N: *What initially attracted you to the NHHD program?*

Lockridge: From 1980 to 1994, I, like most nephrologists, was running fast to either keep people alive on dialysis, or get them successfully transplanted. It's a harsh reality to acknowledge that in this country we have a 20 percent mortality rate in patients with ESRD. In 1992, just 10 years after I began practicing in Lynchburg, approximately 50-60 percent of patients I had placed on dialysis were deceased. The mortality rate was a significant factor in our decision to pursue NHHD. In addition, I heard a lecture in 1995 at the Renal Physicians Association (RPA) meeting in Washington, C.C., where SF36 scores for ESRD patients were compared to average American scores, confirming we needed to do something different.

CD&N: *What did the SF36 scores indicate?* **Lockridge:** The SF36 scores define how well a patient feels. An average American scores between 85-90, whereas a dialysis patient scores between 45-55. This confirmed what we suspected - dialysis patients simply do not feel well.

CD&N: *How did you arrive at the decision to organize the NHHD program?*

Lockridge: We first examined the literature concerning daily hemodialysis programs. My nurse and I traveled to Toronto, Canada to observe the dialysis program run by Dr. Andreas Pierratos. Once there, we interviewed Dr. Pierratos, the nurses and six of his thirteen patients. Upon our return, we presented the Toronto program to my partners. It was clear to all of us that we needed to try this.

CD&N: *What method did you use to interest your patients in NHHD?*

Lockridge: We sent a letter with a response form to 200 patients who were on some form of dialysis (home hemodialysis, PD and in-center hemodialysis). In the letter, we included the data we had gathered from Toronto. Thirty of the patients expressed interest in hearing more about NHHD and indicated that they would seriously consider this as a modality option.

CD&N: *Did it take long to organize the program?*

Lockridge: Yes, about five months. Luckily, Dr. Pierratos gave us his training manual. We used the manual to develop a list of supplies we would need for one month of

treatments. We then asked companies to give us a bid on the supplies. Once we decided on the supplier we started our program in September 1997.

CD&N: *Is the program cost effective?*

Lockridge: We crunched the numbers when we presented our program to HCFA for increasing reimbursement to four treatment payments per week. We lose \$1,996.79 per patient, up front above what is reimbursed for training. This included start-up expenses, the costs of shipping the machine, installing the necessary plumbing, and providing training for an average of six weeks. Once the patient is at home we estimate losing \$219.43 per patient, per month at the current reimbursement schedule of three treatment payments per week. Of course, as your program grows, and you disperse the cost over the number of additional patients in the program, that loss is reduced.

CD&N: *This does not seem like an astronomical amount, although I know many patients are on a fixed income. If patients feel better, do you think a portion of them could go back to work and earn the \$219.43 per month cost?*

Lockridge: Yes, this would be a possibility. And yes, most of our patients are on a fixed income. The average income from disability per month in our unit is about \$650.00. The good news is that the federal government passed a new law in July 1999 that allows people on disability and Medicare to earn up to \$700 per month without losing their benefits. The fear that dialysis patients have is if they return to work, they could lose their job and their benefits if they are hospitalized or absent from work. As of September 1999 we had ten patients age 20 to 55. Four of these patients prior to NNHD were working part or full time. While on NNHD seven of these ten patients are working part or full time. This new modality makes people feel better so they want to return to work.

CD&N: *How many patients have you trained for NNHD and currently are in your program? Also, how long does training take?*

Lockridge: We have trained 17 patients; two patients subsequently have been transplanted, and two discontinued NNHD and returned to in-center due to medical reasons that prevented them from continuing dialysis at home. We currently have thirteen patients at home in the program. Training takes about six weeks.

CD&N: *How often do patients receive a treatment?* **Lockridge:** Patients usually run an average of six to nine hours per treatment, six days a week. Some people like to sleep nine hours, so we drop the dialysis flow rate from 300ccs/minute to 200ccs/minute in order for the bicarbonate bath to last the longer treatment time. We believe everyone needs a night off. If they want to take two nights off to travel, they must carefully watch their fluid intake and their diet.

CD&N: *Do patients need to have a primary care giver with them during the treatment?*

Lockridge: We believe patients can go home by themselves with this modality. We train the patient to be his or her own primary care giver. Two of our seventeen trained patients live at home by themselves.

CD&N: *What are the patient demographics?*

Lockridge: Of the 17 patients we have trained, half are African American and half are Caucasian, and their ages range from 27 to 73 years old. Their educational backgrounds range from a tenth grade education to college graduates. Any patient is trainable, regardless of the background. The only requirements are that they can read and have the desire to learn. We believe that about 30 percent of all patients could be candidates for this treatment option.

CD&N: *How often do patients visit the dialysis clinic?*

Lockridge: For the first month that the patient is at home, we see them once a week. During the second month at home, we see them every two weeks and then once a month unless the patient is having problems. They bring their dialyzers in every week and exchange them for a new batch. Once they are in the third month they draw blood monthly at home on a Sunday night prior to dialysis and bring the blood to the unit the following morning. They come to the unit once per month on a Tuesday morning, two to three hours post treatment to draw a monthly mid-week lab.

CD&N: *Are patients' appetites affected? In addition, can they return to a "normal diet?"*

Lockridge: We do not place any dietary restrictions on patients unless they miss a treatment. Unfortunately, the patients who have been on a restricted diet for a length of time sometimes have a tendency to go overboard in the beginning or not eat enough phosphorus containing foods to maintain their serum phosphorus levels in the normal range. They eventually seem to level off and eat healthier. They experience a resurgence of a healthy appetite. We have done dietary histories on all the patients, prior to NHD, and at three, six, twelve, eighteen and twenty four months during NHD. The results indicate that they have changed their eating habits for the better.

CD&N: *What type of vascular access is required?*

Lockridge: All of our patients have a tunneled permanent catheter placed in their right internal jugular vein.

CD&N: *Catheter infection is a major problem in the renal community. What measures are you taking to prevent infection?*

Lockridge: We train the patient in how to change their dressing and how to care for the catheter. Patients use an Interlink device when they are connecting or disconnecting to the machine that prevents the inside of the catheters from exposures to air. As of September 1999, our infection rate for 132 patient months on NHD is one septic event in 66 patient months or .50 septic events per 1000 patient days. Actually, the outcomes are better than grafts. Fibrin sheaths and clotting are normally the cause of catheter failure. We have taken the approach of placing every patient on 2mg of Coumadin during training. If the patient has catheter problems, then we increase the Coumadin dose to obtain a goal INR of 1.5-2.5 monitoring their INR monthly.

CD&N: *Have you considered using a graft or fistula?*

Lockridge: Yes, Dr. Pierratos has about eight or nine patients who are using A-V fistula for access in his program. We wanted to use the buttonhole technique in an A-V fistula

and tried it on one of our patients. His fistula was in his upper arm and we couldn't safely anchor the needles. There will be a segment of the patient population on NHHD that will use A-V fistula as their access. I am not sure about the use of grafts. The key issue is to determine how to safely anchor the needles. We believe, in the future, a single needle device using the buttonhole technique in an A-V fistula may be the access of choice for NHHD patients.

CD&N: *Are Patients apprehensive about sleeping on NHHD?*

Lockridge: Actually NHHD improves patients' sleep patterns. Dr. Pierratos has conducted sleep studies that clearly indicate that patients sleep better because they are better dialyzed. Once past the first two week at home fifteen of the seventeen of our patients have had no problem sleeping while dialyzing.

CD&N: *How is the catheter secured to prevent the patient from tugging at it during the night?*

Lockridge: The catheter is held in place with a Velcro band that goes around the arm. If something pulls the bloodline, it tugs against the patient's arm instead of the catheter. The patient learns how to deal with it, much like being on a CCPD cyclor at night. They learn how not to kink the catheter.

CD&N: *One of the most impressive aspects of your data points to a reduction in medications. Share with our readers some of your outcomes.*

Lockridge: To date, none of our patients are on phosphate binders. We are unable to reach dry weight and normalize their BP using fewer medications. Preliminary data for echocardiograms at pre NHHD and at six, and twelve months on NHHD are showing a 22 percent reduction on LVH mass. In addition, we have reduced the amount of Epogen given per patient per month pre NHHD by 40 percent once on NHHD.

CD&N: *The cost of hospitalizations represents a major portion of the Medicare budget. Have you been successful in reducing hospital admissions for these patients?*

Lockridge: We have been able to capture all the hospital days prior to NHHD on our patients in the program. The average hospital days prior to the patient starting on NHHD is .64 patient days per month, which translates into 7.7 patient days per year. In September 1999, we had 132 patient months of data concerning hospitalization rates for patients on NHHD. Their hospital rate was .33 patient days per month or 4 patient days per year. Essentially, we are cutting hospital admissions in half.

CD&N: *Are large corporations interested in this modality choice?*

Lockridge: The two corporations that have expressed an interest in the new modality to us are Fresenius and Aksys. Fresenius is interested because of the large number of patients they care for in their system. They have focused on this new modality as a means to improve quality of care for a percentage of their population. Aksys is interested because they are in the process of developing a patient friendly machine for short daily dialysis and hopefully in the future a machine for long nightly dialysis. Unfortunately, if HCFA's decision to only reimburse for three treatments a week for NHHD continues, this

new modality will not be offered to a large segment of the ESRD population. This will mean that cost will control quality for patients on dialysis.

CD&N: *HCFA will pay for an extra treatment if the patient is at risk for going into congestive heart failure, but they won't pay for extra treatments that will improve a patient's outcome.*

Lockridge: That is correct. It does not make a lot of sense. The good news is that HCFA now is requiring documentation of URR's on bills submitted to Medicare, and they are implementing clinical performance measures based on the DOQI guidelines. They are trying to tie reimbursement to quality of care and outcomes. The future of medicine in any area of healthcare is going to be focused on quality of patient care and outcome. Patients will be the center of the decision-making process. MedPac has recommended to Congress that HCFA develop a two tiered reimbursement system that would allow for more reimbursement for more dialysis such as NHHD.

CD&N: *Are there any complications connected with NHHD that concern you?*

Lockridge: The concerns we have are: Will this amount of dialysis result in a deficiency state? Will the exposure to heparin cause increasing osteoporosis? Will the length of exposure to the membrane cause any problems for the patients? Will making these patients PTH levels normal cause worsening problems with bones? Neither Dr. Pierratos with six years of experience nor we with twenty-seven months of experience have identified any such problems. We will need to continue to study these patients for any unforeseen problems. However, the benefits clearly outweigh the unknown negatives.

CD&N: *I know you are lobbying Congress to reimburse for this modality choice. What do you think needs to be accomplished to convince them?*

Lockridge: It would be nice to have a multi-center randomized study to compare NHHD to standard three times per week in-center hemodialysis. How long would the study need to be? How many patients would be in each arm of the study? Who would pay for the study? These are questions that must be answered in order for this study to take place. The data continues to grow supporting that more frequent and longer dialysis is better. The question that should be asked: Is the concept of this new modality any different than the concept of CAPD twenty years ago. To my knowledge there is not a single multi-center randomizing study comparing CAPD/CCPD to in-center three times per week hemodialysis. How was reimbursement created for CAPD? Why was CCPD reimbursement changed by Congress for Method II in 1989 to 130% of the composite rate? Adequacy of dialysis, high mortality rates, and rehabilitation potentials are the issues in 1999 for patients with ESRD. NHHD addressed these issues. These issues should be the driving-force for changing reimbursement for NHHD.

CD&N: *What is your future plans to improve the program?*

Lockridge: In the future, we hope to set up a self care unit allowing us to train the patients on the machine that they will go home on which will ultimately shorten training time. Hopefully a patient friendly machine will be developed that will decrease set up and take down time and will be connected to the Internet for monitoring. Also, hopefully there will be other units in the country that do NHHD thereby allowing patients to travel.

CD&N: *In closing, are your NHHH patients helping to educate others on this modality choice?*

Lockridge: Yes, our patients sell this to our other patients. Some patients have accompanied me on a visit to our local congressman, and some have spoken at educational meetings. The problem is that the patients go back to work and they get busy, so their time is limited.

To learn more about NHHH, current medical statistics and patient testimonials visit their website at www.lynchburgnephrology.com.

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