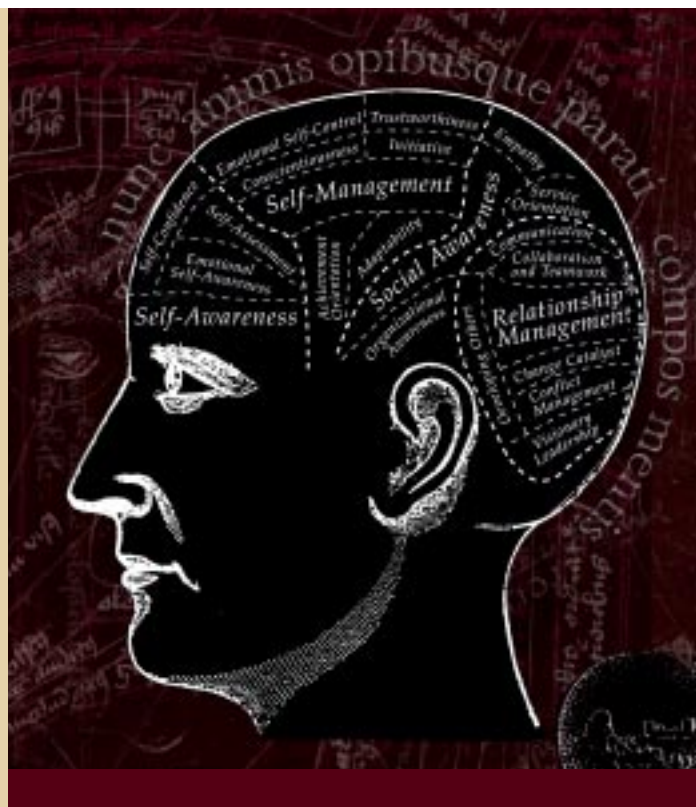


Feature
Healthcare
Profiles
Humber River Regional



Hospital
Quarterly
Initiates
International
Peer Review
see page 7



- Rate Your Emotional Intelligence p.36
- Find Your Organization's Best Leaders p.42
- Leadership Challenges of the New CEO p.46
- Sister Elizabeth Davis: Values-Based Leadership p.88
- What's Driving Consumer Demands? p.55

- How They Manage Demand in the U.K. p.60
- Good Governance Leads to Better Mergers p.63
- Recruit the Right Board Member for Your Organization p.72
- Good Doctor? Good Manager? p.76
- Do Nurses Really Want Part-Time Only? p.79
- E-Commerce That Works for Your Hospital. p.85

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The First 200 Days: Cancer Leadership in Ontario 30

Alan Hudson

Making Choices in Healthcare:
The Reality of Scarcity 48

Craig Mitton, Joan McGregor, Mike Conroy and Cam Waddell

Issues in the Governance of Canadian Hospitals:
Structure and Process 63

Mark Hundert and Robert Crawford

Leadership • Demand Management • Accountability

Overnight Success Provides International Inspiration

Nocturnal Hemodialysis at Humber River Regional Hospital

By Dr. Andreas Pierratos and Pam Lugonzo

Humber River Regional Hospital's (HRRH) groundbreaking work in the area of nocturnal dialysis allows many patients to self-administer hemodialysis each night while they sleep in the comfort of their own homes.

With six weeks of critical training, patients and their families learn to use dialysis equipment at home. Within one or two weeks they adjust well to the presence of the dialysis machines and the accompanying water purification system. As the patients sleep, trained observers at the hospital, using a telephone or Internet connection, monitor the

patients who were reasonably well? And, why not dialyze patients in their convenience in their own homes, where we already know they respond better? In fact, why not use sleep time? In 1994, with the assistance of Michaelene Ouwendyk, a registered nurse in the dialysis unit, Uldall trained his first patient to self-administer dialysis treatment at home during the night.

After Uldall's death in 1995, the pilot project continued under Dr. Andreas Pierratos as primary investigator and moved to Humber River Regional Hospital. The first

“CONVENTIONAL DIALYSIS IS LIKE RIDING IN A VOLKSWAGEN ON A DIRT ROAD, WHILE NOCTURNAL DIALYSIS IS LIKE RIDING IN A ROLLS ON A FRESHLY PAVED SURFACE.”

– Ralf Iantorno, a Humber River Regional Hospital nocturnal dialysis patient

dialysis machines, provided by Fresenius Medical Care. Patients are also trained to take their own blood samples, blood pressure and to give themselves iron and antibiotics intravenously. “Patients on conventional dialysis treatment for kidney failure experience significant symptoms and side effects,” says Dr. Andreas Pierratos, Primary Investigator of HRRH's Nocturnal Dialysis Program. These problems result from the inadequate cleansing of blood and the rapid changes in blood chemistry caused by the short duration of the procedure. This places a lot of stress on patients' internal organs, making them experience nausea, weakness, cramping, very high or low blood pressure, loss of appetite and difficulty sleeping. These side effects often make it impossible for people to resume regular activities, maintain full-time employment, or enjoy a quality of life. This led the late Dr. Robert Uldall to explore the practicality of nocturnal dialysis at Toronto's Wellesley Hospital. Uldall had noticed that unstable patients in intensive care were safely receiving dialysis around the clock. Their blood was cleaned through a circuit and therapy was slow and gentle. Since this was done on medically fragile patients, why couldn't it be done on

program of its kind internationally, it is also the largest in the world, now serving 54 people.

The nocturnal dialysis program at HRRH has served as a global model, and has attracted doctors from the Netherlands, Japan, Sweden, United States, Australia and



Humber River Regional Hospital patient training to self-administer nocturnal dialysis on equipment from Fresenius Medical Care.

This sponsored feature supported by Fresenius Medical Care.

“Patients use less medication and have fewer hospital stays, for a net savings of some \$11,000 per year per patient.”

– Dr. Andreas Pierratos

other countries. Other Ontario hospitals like the University Health Network in Toronto and the London Health Sciences Centre have started similar programs. Humber River Regional Hospital is collaborating with the University Health Network and St Michael’s Hospital (Toronto) on several research projects involving patients on nocturnal hemodialysis.

It is hoped that nocturnal hemodialysis can be made available routinely in Canada, and internationally, and fulfil its promise to be a breakthrough in the treatment of End-Stage Renal Disease.



Dr. Andreas Pierratos holds baby Jennifer during a visit to the dialysis unit with proud mom Zoeanne Smith

In people with end-stage renal disease, the kidneys are permanently impaired and no longer function normally. Three treatment options are available: hemodialysis, peritoneal dialysis and transplantation. Dialysis is a life-prolonging process that removes toxic materials from a patient’s bloodstream and maintains the fluid and electrolyte balance. Typically, patients who require hemodialysis receive it three times weekly, for four hours at a time, in a hospital or satellite setting. But, conventional dialysis is very aggressive and takes a lot out of the patients who are then likely to have post-dialysis fatigue and nausea. In effect, patients lose three days a week to therapy.

“Nocturnal dialysis allows the body to function more efficiently by cleansing the blood daily over a longer period of time with less intensity,” says Pierratos (to say nothing of removing a patient’s commute, finding parking and losing the average day’s treatment time). Patients do not experience the side effects of aggressive conventional dialysis, and welcome changes including the removal of all dietary

restrictions with most of them discontinuing or taking lower levels of medications. Most patients assume full-time employment and those temporarily switched to daily dialysis are usually anxious to resume nocturnal dialysis. And, some patients who’ve had unsuccessful transplants elect to go on nocturnal dialysis rather than undergo another transplant.

Because conventional dialysis is so hard on the body, patients have more doctors’ appointments, more hospitalizations and use more medication, thereby increasing healthcare costs significantly. Pierratos says “Nocturnal dialysis not only results in healthcare benefits to the patient, but also to society in general. With conventional dialysis, patients regain 15% of their kidneys’ functions, while nocturnal dialysis provides a 30-40% return to normal functioning. Patients use less medication and have fewer hospital stays, for net savings of some \$11,000 per year, per patient.” Remarkable when you consider that a transplant provides a 55% return to normal kidney function.

Mini Case 1 In the spring of 2002, Zoëanne Smith was the first nocturnal dialysis patient to give birth. Unlike conventional dialysis, the ultra-efficient technique of nocturnal dialysis sees a return of regular or semi-regular menstrual cycles among most female patients of childbearing years.

Mini Case 2 After a failed kidney transplant and problems experienced on conventional dialysis, nocturnal dialysis appeared to be the only option for patient Ralf Iantorno. "There were so many things I was not able to do while on dialysis. My diet was restricted and having to take medications regularly plagued my days with thinking about dialysis," he says. Iantorno had very little energy and was not able to play with his infant daughter. On one occasion, he remembers feeling so fatigued while driving to work that he pulled over to rest. Now he marvels at the improvement in his quality of life, his ability to play with his daughter, eat most foods and live normally. He adds, "Without nocturnal dialysis, my business would have failed and I don't think I would be alive today."

Mini Case 3 In the summer of 2002, 13 year-old Jatin and his mother Seema Sudhir successfully trained at the Hospital for Sick Children to self-administer nocturnal hemodialysis. His parents had explored all other treatment modalities. Introduction of nocturnal hemodialysis significantly improved Jatin's quality of life. HRRH provides the remote monitoring services for Jatin.

FOR THE RECORD:

1. *Some 15,000 patients receive dialysis in Canada, costing between \$40,000 and \$80,000 per patient annually. In Ontario, 5,500 require dialysis (some 2,000 in Toronto). Dialysis usage and costs skyrocketed in the 1990s. In 2000, 4,386 new patients started treatment, a 60% increase over 1991 (Canada Institute for Health Information). Operating costs of nocturnal hemodialysis are similar to peritoneal dialysis and lower than hemodialysis.*
2. *A 2001 study by Dr. Patrick Hanley, Head of Respiriology and Director of the Sleep Medicine Program at St. Michael's Hospital and Humber River Regional Hospital's Dr. Andreas Pierratos found sleep apnea can be improved or corrected using nocturnal hemodialysis.*
3. *HRRH nephrologist Dr. Andreas Pierratos was the only Canadian named among 10 worldwide recipients of research grants, recently awarded by the International Society of Nephrology in August 2002. Part of the Society's Renal Discoveries Grant Program, the award will help Dr. Pierratos continue research into the Impact of Nocturnal Hemodialysis on the Malnutrition-Inflammation-Arthrosclerosis Axis*

Dr. Andreas Pierratos, MD, FRCPC, is a Nephrologist at Humber River Regional Hospital.

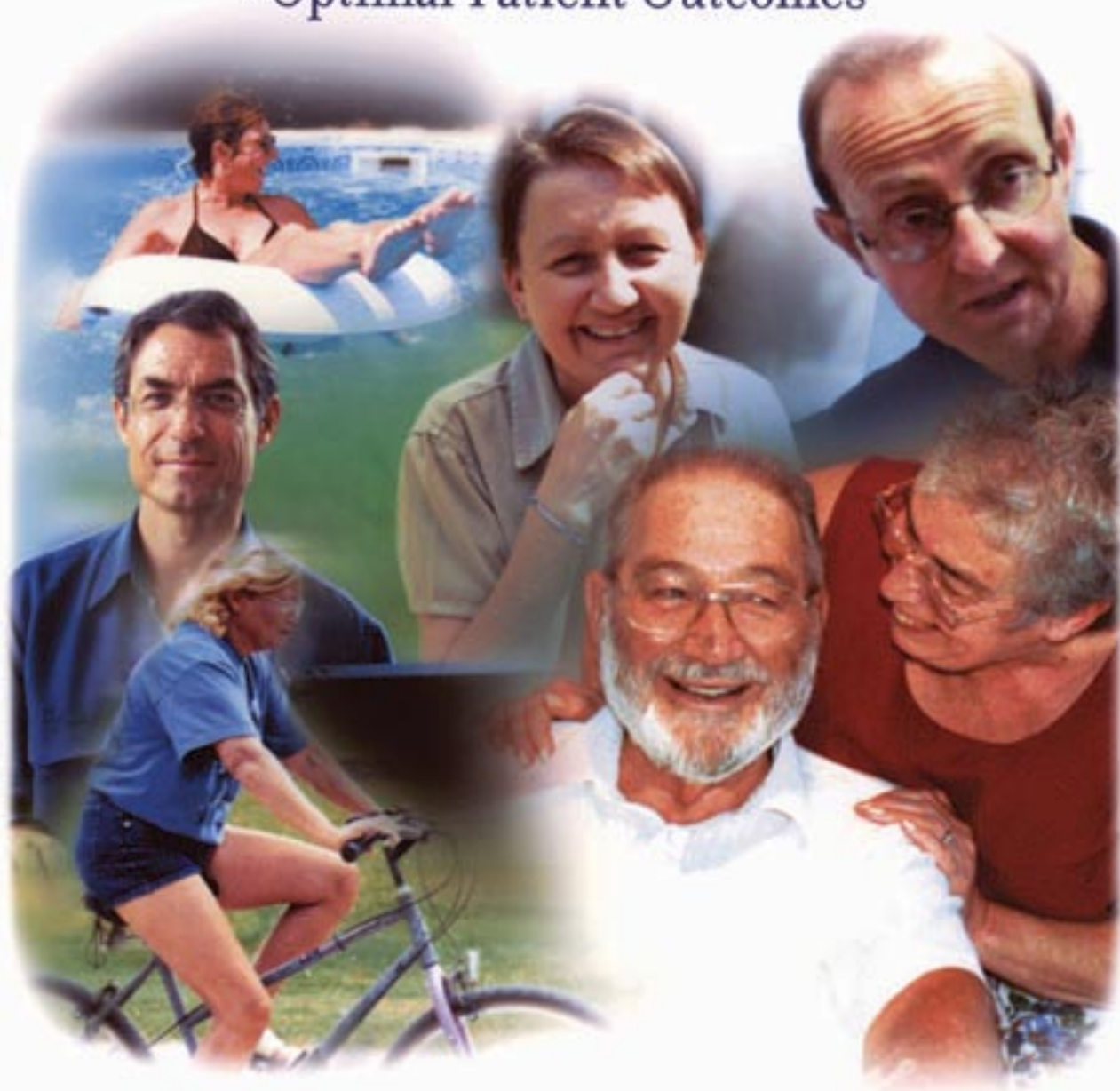
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