

Diabetes: The Dialysis Outcomes Practice Patterns Study Results and Innovative Patient Care Programs

Wendy Funk Schrag, LMSW, ACSW, Fresenius Medical Care North America, Newton, KS

Diabetes is now the leading cause of chronic kidney disease (CKD) in the United States and is also growing in numbers worldwide. The cost of caring for people with diabetes and CKD is escalating and is especially highest from the month prior to starting dialysis to 6 months after beginning dialysis. According to the Dialysis Outcomes Practice Patterns Study (DOPPS), a person with kidney failure who also has diabetes is at higher risk for hospitalization, mortality, retinopathy, blindness and lower limb amputation. The dialysis health care team is challenged to develop new methods of caring for people with diabetes and CKD. Innovative programs reviewed in this article show improved clinical outcomes and an increase in patients' ability to self-manage their disease.

Diabetes is the leading cause of chronic kidney disease (CKD) in the United States. Approximately 45% of kidney failure patients have diabetes, which is a startling increase from 18% in 1980 (U.S. Renal Data System, 2005). The number of people with diabetes living in the United States is also rising. About 20 million people in the United States have diabetes, and more than 150,000 people have kidney failure as a result of diabetes. In 2003, care for people with kidney failure cost the United States more than \$27 billion (U.S. Renal Data System, 2005). In 2002, \$132 billion was spent on the care of diabetes in the United States (Centers for Disease Control and Prevention, 2005). The cost of someone with diabetes headed toward kidney failure shows a marked increase in the month prior to starting dialysis and in the first 6 months of dialysis treatment (Joyce et al., 2004). Experts in diabetes at the Mt. Sinai School of Medicine estimate that there are 150 million people worldwide who have diabetes and in 25 years that number will increase by 100 million. Although the number of people with diabetes and the cost of caring for them increases, the federal government is cutting the National Institutes of Health budget for research on diabetes. Currently, \$68 per case of diabetes is spent compared to \$16,936 per case of someone with West Nile Virus, which is much less prevalent (Ho, 2006).

COMPLICATIONS AND CAUSES OF DIABETES

Diabetes can lead to serious complications, such as blindness, kidney damage and lower-limb amputations. Heart disease is the leading cause of death for those with diabetes, and the risk for stroke is 2 to 4 times higher. Type 2 diabetes accounts for 90 to 95% of all diagnosed cases of diabetes, with increasing cases being diagnosed in children and adolescents (Centers for Disease Control and Prevention, 2003). Obesity is a rising cause of diabetes. A study conducted by End-Stage Renal Disease (ESRD) Network 6 found that out of

25,883 incident patients with ESRD in Georgia, North Carolina, and South Carolina, 23% reported a family history of ESRD. Of those patients with a family history of ESRD, 28% were overweight, 17.3% were obese, and 16.7% were morbidly obese. The study suggested that management of obesity is especially important for those with a family history of ESRD (Speckman et al., 2006).

Lower-limb amputation is one major complication of diabetes. It can be especially stressful for patients and health care staff. A study of 3,272 incident hemodialysis patients over a 4-year period found that diabetes, cardiovascular co-morbidity, and hemodialysis inadequacy were risk factors for lower-limb amputation (Speckman et al., 2004).

DATA FROM DOPPS

DOPPS is a longitudinal study of people on hemodialysis and unit practices. The first phase, DOPPS I (1997–2001), included data from patients in France, Germany, Italy, Japan, Spain, the United Kingdom, and the United States. DOPPS II (2002–2004) added Australia, New Zealand, Belgium, Canada, and Sweden. The goal of DOPPS was to identify practice patterns that improve patient outcomes. The major outcomes reviewed were mortality, hospitalization, vascular access, and quality of life.

U.S. patients in DOPPS were slightly older than those in Europe or Japan and had the highest prevalence of diabetes, coronary artery disease, congestive heart failure, peripheral vascular disease, and cerebrovascular disease. Older age and co-morbidities, such as diabetes, were also shown to put patients at an increased risk of mortality (Goodkin et al., 2004). For patients with at least one hospitalization, 42.7% had diabetes (Lopes et al., 2004). Additionally, nearly all (more than 90%) retinopathy and blindness complications occurred in

patients with diabetes (Kaur et al., 2003). Limb amputation was also analyzed using data from DOPPS I and II. The prevalence of amputation was 6% overall, from less than 2% in Japan to 10% in the United States, with a ninefold higher prevalence in people with diabetes versus without. The majority (91%) of amputations were due to peripheral vascular disease (Combe et al., 2005).

What impact did practice patterns and care process show in DOPPS research? Analyses from the U.S. DOPPS I data was conducted by randomly selecting patients from representative dialysis facilities. A total of 4,127 patients with diabetes were reviewed. Ninety-one percent of the dialysis facilities included diabetes practices, which were defined as use of a diabetes protocol, glucose monitoring by a dietitian, or regular measurement of HbA1C. Patients in the study had a high percentage of diabetic complications (78.9% with cardiac history, 24.7% with cerebrovascular disease, 38.1% with peripheral vascular disease, 28.1% with diabetic gastroparesis, and 49.4% with diabetic retinopathy). These diabetes practice patterns demonstrated a 46% lower risk of developing diabetic foot disease. Having a primary care physician in addition to standard nephrologist care was associated with a 12% lower mortality risk. Although variations in diabetes practices were found, when they were implemented there was an associated reduction in the risk of complications and mortality (Ramirez et al., 2005).

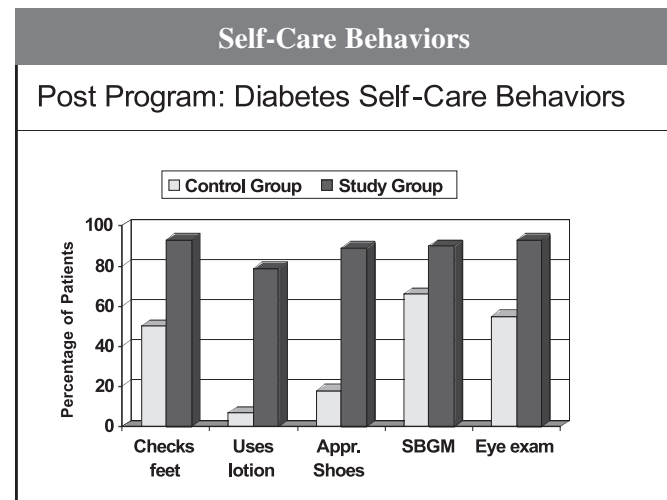
IMPLICATIONS FOR PRACTICE

The combination of the rising number of people with CKD who have diabetes and published research results identifying the mortality risks and complications associated with diabetes has resulted in some innovative programs showing some positive steps toward improving patient outcomes. A structured treatment and teaching program in a German hospital conducted since 1996 focusing on patients with type 2 diabetes demonstrated that patients who received the program had significantly better results 6 months following the program in their ability to self-manage their diabetes. Even those patients who had some impaired cognitive function showed improvement. Because of the presence of impaired cognitive function, the teaching program relied less on theory and more on practical exercises. A lower number of patients also required help from others following the teaching program than before (Schiel et al., 2004).

A 1-year diabetes management study conducted in Northeast Indiana dialysis clinics with 83 dialysis patients studied the differences in patient outcomes between a control group and a study group of patients who received intensive education and were followed by

a diabetes care manager. The care manager provided self-management education, diabetes self-care monitoring and management, motivational coaching, and foot checks. Results demonstrated a number of significant differences between both groups and improvements in the study group. There were no amputations in the study group versus five amputations in the control group. Ten patients in the control group were hospitalized with diabetes- or vascular-related admissions versus one patient in the study group. Diabetes-related quality-of-life scores in the study group increased as well as self-management behaviors. Table 1 illustrates the comparison of control versus study group compliance at the end of the program with checking feet, using lotion on the feet, wearing appropriate shoes, self-blood glucose monitoring, and annual eye exams (McMurray et al., 2002).

Table 1



SPECIFIC IMPLICATIONS FOR SOCIAL WORK PRACTICE

Social workers can assist patients with diabetes by helping them access needed resources and encouraging them to be compliant with their treatment requirements. Education should be provided to all new patients about Medicare or other private insurance coverage of diabetic supplies, including Medicare Part D insulin coverage. Barriers to accessing needed supplies or attending physician appointments, eye exams, etc., should be explored.

Compliance of blood sugar testing is a common problem with many patients complaining of the pain involved in the procedure. Despite new advances in less painful techniques and noninvasive monitoring methods on the horizon, painful needles may not be the main issue. It could be the cost of supplies, or just the fact that patients may have other problems they need to

deal with before they can focus on their diabetes care. Laura Jones, MSW, LGSW, a social worker who works in a community health care diabetes clinic, states, "...if you do not address what the individual with diabetes considers to be the number 1 issue, you will be unable to eventually move down the list and address the diabetes...Try managing your diabetes when you are eating at the soup kitchen...Try managing your diabetes when you are without shelter and living on the street or when you are at a homeless shelter." Jones also mentions people being reluctant to work with their employers for appropriate breaks or meal times to manage their diabetes requirements (Newfield, 2006). In addition to some of the barriers Jones listed, dialysis patients also have the requirements of following their dialysis treatment requirements and diet. Social workers can assess patients' needs and, by helping them work on issues that may be completely unrelated, take care of concerns that inhibit patients from being able to focus on taking care of themselves properly.

NATIONAL KIDNEY FOUNDATION NEW GUIDELINES FOR DIABETES AND CKD

In response to the underdiagnosis of both diabetes and CKD that leads to kidney disease progression, the National Kidney Foundation (NKF) presented the new Kidney Disease Outcomes Quality Initiative (KDOQI) Clinical Practice Guidelines for Diabetes and CKD at the NKF 2006 Spring Clinical Meetings. The Guidelines include recommendations on the process for screening and diagnosing diabetic kidney disease, managing diabetes and CKD (including hyperglycemia and general diabetes care, hypertension, dyslipidemia, and nutrition), the impact of diabetes and CKD in special populations, the importance of behavioral self-management, and the value of intensive multifaceted interventions.

CONCLUSION

Because diabetes is the leading cause of chronic kidney disease and is also a national health concern that costs billions of dollars each year, more attention is being given to diagnosing, managing, and treating this disease. Research from DOPPS and other studies confirms that patients with diabetes are at increased risk for mortality and hospitalization. Innovative programs have been tested and shown to result in positive outcomes in decreasing hospitalizations and lower-limb amputations and an increase in self-management behaviors of patients. Social workers can help in the effort by educating patients on available resources, helping to obtain resources, and working with patients on psychosocial barriers to compliance. The NKF's new KDOQI

Guidelines on diabetes will help encourage a standard of care for treating diabetes and helping patients manage their disease.

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