A major frustration for any physician is watching a noncompliant patient deteriorate, particularly one with a long-term condition like kidney disease. So the turnaround New York City’s Mount Sinai achieved through an accountable-care-style program with a 55-year-old patient on dialysis with poorly controlled diabetes and heart problems provides a hopeful example.

Esther Redd was a frequent emergency room visitor who was hospitalized seven times in the first five months of 2013. After the hospital brought to bear resources from its Preventable Admissions Care Team (PACT) during her seventh admission, Redd avoided rehospitalization at Mount Sinai for the rest of the year.

The hospital mines the electronic health records of all patients admitted and uses its own predictive algorithm to automatically calculate their risks of readmission. When a hypertensive emergency led to her seventh hospitalization in May, Redd was singled out for intervention by the PACT. Over a two-year period, among 600 highest-risk patients, the program reduced 30-day readmissions by 43 percent and emergency room visits by 51 percent.

The incentives and penalties in the Affordable Care Act designed to improve the efficiency of care spawned the PACT as a pilot program. Although separate from Mount Sinai’s accountable care organization (ACO), the PACT shares many characteristics with its ACO, and began as the organization geared up to adjust to the Affordable Care Act’s new incentives, including those for ACOs. Some 10 percent of Medicare patients are in ACOs and private insurers have agreements with more than 200 ACOs, so Mount Sinai’s experience is instructive.

Social worker Derrick Williams, MSW, spent more than an hour in Redd’s room discussing her situation. With her multiple ailments and a 13-year-old daughter to care for, Redd was feeling overwhelmed. “When I met her in the hospital, she seemed defeated. It was spiraling out of control,” Wil-

Physical Activity, Even in Small Amounts, Benefits Kidney Health

Even small amounts of physical activity may slow kidney function decline in patients with chronic kidney disease (CKD), according to two studies recently published in the Journal of the American Society of Nephrology. The studies, from two different teams at the same institution, suggests that exercise may have powerful effects on kidney health, such as reducing the risk of developing kidney stones in the general population.

Effects on kidney function

Because few new interventions have proven useful in slowing the progression of CKD, identifying modifiable risk factors for progression is critical for reducing the morbidity, mortality, and health costs linked to the disease. Cassianne Robinson-Cohen, PhD, an epidemiologist at the University of Washington’s Kidney Research Institute in Seattle, and her colleagues previously showed that physical inactivity is linked with kidney function decline among older adults in the general population. The finding led them to question whether physical activity might help maintain CKD patients’ kidney health.

“We hypothesized that physical activity might be particularly beneficial for reducing the morbidity, mortality, and health costs linked to the disease.”
Reducing kidney stone risk

Another research team at the University of Washington in Seattle found that small amounts of physical activity may also decrease the risk of developing kidney stones in the general population, while consuming too many calories and while consuming too many calories increased dramatically, especially in women. Research in recent years has revealed that kidney stones may lead to systemic problems: their links with obesity, diabetes, metabolic syndrome, and cardiovascular disease demonstrate that the process of stone formation extends beyond the kidney.

Mathew Sorensen, MD, led a team that sought to evaluate whether energy intake and energy expenditure relate to kidney stone formation. Sorensen is assistant professor of urology at the University of Washington and director of the Comprehensive Metabolic Stone Clinic at the Puget Sound Department of Veterans Affairs.

The researchers studied 84,225 postmenopausal women participating in the Women’s Health Initiative, which has been gathering information such as dietary intake and physical activity in women since the 1990s.

After adjusting for multiple factors including body mass index, the researchers found that physical activity was associated with up to a 31 percent decreased risk of kidney stones. The intensity of the activity did not seem to matter—even mild-to-moderate weekly activity was protective against stones.

Women could get the maximum benefit by performing 10 metabolic equivalents per week, which is equivalent of about three hours of average walking (2 to 3 mph), four hours of light gardening, or one hour of moderate jogging (6 mph).

The researchers also found that consuming more than 2200 calories per day increased the risk of developing kidney stones by up to 42 percent. Obesity was also a risk factor for stone formation.

“Even taking into account dietary intake, calorie intake, and activity, we also found that BMI/obesity remained a risk factor for stone formation,” Sorensen said. “Thus the increased risk of stones linked to BMI is not primarily due to dietary choices, or macronutrient intake.”

He noted that being aware of caloric intake, watching one’s weight, and making efforts to exercise are important factors for improving health overall, and for reducing kidney stone risk.

Additional research is needed to verify the findings, as noted in an accompanying editorial by John Lieske, MD, of the Mayo Clinic in Rochester, NY. Lieske said that because the study focused on postmenopausal women only, similar research is needed in other populations. He added that it is possible that women who exercise regularly have other healthy habits that decrease stone formation. “Nevertheless, conservative (nonpharmacologic) counseling for patients with stones often centers almost exclusively on diet, stressing increased fluid intake, normal dietary calcium, lower sodium, moderate protein, and reduced dietary oxalate,” he wrote. “The results of Sorensen et al. suggest that a recommendation for moderate physical activity might reasonably be added to the mix.”

Physical Activity

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in patients with CKD, a condition with a high pre-existing oxidative and inflammatory burden, and that patients with CKD may represent a group that is highly physical activity–responsive,” Robinson-Cohen said.

She noted that randomized trials will be needed to evaluate exercise’s safety and feasibility in the CKD population, as well as to provide estimates of its effectiveness. “However, before such trials are undertaken, we felt it wise to determine if, in a nonrandomized setting, physical activity in patients with CKD was related to retention of renal function.”

Robinson-Cohen and her team studied participants in the Seattle Kidney Study for an average of 3.7 years. The analysis included 256 patients with moderate-to-severe CKD. The Seattle Kidney Study follows the health of people with kidney disease over time.

The investigators discovered that physical activity was inversely related to kidney function decline in a graded fashion and to a degree stronger than previously reported in the general population. Patients performing more than 150 minutes of physical activity per week had the lowest rate of kidney function decline. Each 60-minute increment in weekly physical activity was linked with a 0.5 percent slower decline per year in kidney function.

“This study demonstrated that even small amounts of physical activity, such as walking 60 minutes per week, might slow the rate of kidney disease progression,” Robinson-Cohen said. “Physical inactivity is now emerging as one of the few risk factors for kidney disease progression that is actually amenable to intervention.”

Samuel Headley, PhD, who was not involved in this study and is a professor of exercise science and sport studies at Springfield College, in Springfield, MA, noted that the findings support the notion that exercise is medicine.

“Nephrologists can use these results to encourage individuals with CKD to engage in the recommended levels of physical activity to not only enhance cardiovascular health but also preserve kidney function,” Headley said. “These results also suggest that a concerted effort should be made to encourage those who are most likely to have CKD—such as minority groups—to get the weekly recommended levels of leisure time physical activity.”

Reducing kidney stone risk

Another research team at the University of Washington in Seattle found that small amounts of physical activity may also decrease the risk of developing kidney stones in the general population, while consuming too many calories may increase risk.

The prevalence of kidney stones has increased dramatically, especially in women.