Population Health Matters

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# The Unmet Eye Care Needs in Diabetic Patients on Hemodialysis

Type-2 diabetic nephropathy is a common cause of increasing prevalence and incidence of end-stage renal disease (ESRD).[1] Diabetic nephropathy results from damaged vessels that filter wastes. As the disease progresses, type-2 diabetic patients with ESRD, can develop retinopathy. The Trial to Reduce Cardiovascular Events with Aranesp Therapy (TREAT) showed that retinopathy was present in 47% of individuals with type 2 diabetes, chronic kidney disease (CKD) and anemia.[2]

Despite the potential for retinopathy, diabetes patients with ESRD underutilize eye care services. A study showed that only 25% of hemodialysis patients with diabetes had annual eye exams, yet diabetic retinopathy was found in 45% of the patients of the cohort.[3] Due to the nature of the disease, individuals tend not to seek eye care because they are symptom-free until they experience significant vision impairment. Additionally, hemodialysis can take up nearly 7-8 hours per day for 3-4 times a week. Consequently, patients frequently experience "treatment fatigue" and may not be willing to seek out eye care.

Hemodialysis can be a significant financial burden for patients, especially since it may not be covered by insurance. They may have limited finances available to cover the cost of eye exams and therefore be unable to utilize that healthcare service. Employability can also be an issue for patients receiving treatment in hemodialysis centers multiple times a week may be unable to secure full-time employment. This can have a significant impact on their work status and earning potential, further limiting their access to eye care services due to financial limitations.

This high-risk hemodialysis population also faces challenges in obtaining eye care due in large part to comorbidities that may be perceived to be more pressing. These comorbidities include hypertension, cardiac-related issues, dyslipidemia, and complications from end-stage renal disease (e.g., renal osteodystrophy and peripheral neuropathy). Each of these conditions requires care from various healthcare practitioners. Additionally, time and transportation can be greater challenges to this patient population than most.

At Wills Eye Hospital, a research team supported by intramural funds will test the hypothesis that there is a critical population health need for improved access to eye care by hemodialysis patients leading to undiagnosed diabetic retinopathy in this population. The study is a prospective cohort design with a single patient encounter. It includes diabetic patients at two hemodialysis centers; one urban (Walnut Towers, in downtown Philadelphia) and one suburban (Marlton, New Jersey). Of the 66 patients at the Marlton site and 100 at the Walnut Towers site, it was estimated that 70-100 total had diabetes. The inclusion criteria enrolled adult diabetes patients who were able to consent in English. The patients' demographics, last dilated eye exam, last podiatry exam, barriers to specialty doctor examinations, visual function (NEI VFQ-9), and patients' pharmacy satisfaction will all be assessed via a survey. The research assistant will administer the survey while the patients are receiving hemodialysis. Following hemodialysis, the research assistant will measure visual acuity and take an undilated fundus photo of each eye using a non-mydriatic camera. The results of the eye photographs will be notified to the patients along with recommendation of a follow-up eye care in coordination with the Hemodialysis Director.

The study has the potential to identify a gap that may exist in a high-risk diabetes population. Additionally, diagnostic imaging of the undilated fundus presents a way to identify hemodialysis patients that may need earlier treatment. These tools have overcome the eye-care screening barriers and help to identify those needing treatment earlier, lowering the economic burden to the system and improving vision outcomes.

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CONTINUED ON PAGE 2

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