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## Incorporating Geriatric Assessment into Nephrology Clinic: Preliminary Data from Two Models of Care

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### Abstract

Older adults with advanced chronic kidney disease (CKD) experience functional impairment that can complicate CKD management. Failure to recognize functional impairment may put these patients at risk of further functional decline, nursing home placement, and missed opportunities for timely goals of care conversations. Routine geriatric assessment could be a useful tool for identifying older CKD patients who are at increased risk of functional decline and provide contextual information to guide clinical decision-making. We implemented two innovative programs in the Veterans Health Administration that incorporate geriatric assessment performed concurrently with a nephrology visit. In one program, standardized geriatric assessment tools were performed on CKD patients 70 years by a geriatrician embedded in a nephrology clinic

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(Comprehensive Geriatric Assessment for CKD) (CGA-4-CKD). In the second program, a nephrology clinic employed comprehensive appointments for patients ≥ 75 years to conduct both geriatric assessments and CKD care (Renal Silver). We report data on 68 Veterans who had geriatric assessments through these programs between November 2013 and May 2015. In CGA-4-CKD, difficulty with one or more ADLs, history of falls, and cognitive impairment were each found in 27.3% of patients. ADL difficulty, falls and cognitive impairment were found in 65.7%, 28.6%, and 51.6% of patients in Renal Silver. Geriatric assessment guided care processes in 45.4% ( $n=15$ ) and 37.1% ( $n=13$ ) of Veterans in the CGA-4-CKD and Renal Silver programs, respectively. Findings suggest there is a significant burden of functional impairment in older adults with CKD. Knowledge of this impairment is applicable to CKD management.

## Keywords

renal insufficiency; functional status; veterans; frail elderly; dialysis decision-making

## INTRODUCTION

Older adults with advanced chronic kidney disease (CKD) are more likely to experience functional decline than those without CKD.<sup>1–3</sup> These patients often become increasingly frail and functionally dependent as CKD progresses.<sup>4,5</sup> At dialysis initiation, 50% of older adults are dependent in both basic and instrumental activities of daily living (ADLs) and 28% require nursing home care.<sup>6–8</sup> Given the increased risk of healthcare utilization and death among older CKD patients with functional limitations,<sup>4</sup> there is a need for consideration of functional status in CKD care.

Geriatric assessment has been shown to improve recognition of geriatric conditions and has the potential to improve health outcomes.<sup>9–11</sup> Because geriatric assessment has been used to identify geriatric conditions in dialysis patients,<sup>12</sup> it could also be a useful tool for pre-dialysis CKD patients. Identification of problems, such as functional limitations, cognitive impairment, or frailty, can lead to a more individualized, patient goal-directed approach to care.<sup>13</sup> Providers can recommend actionable solutions (e.g., assistive device) or tailor management goals (e.g., blood pressure targets). In dialysis decision-making discussions, providers can address prognostic concerns associated with poor survival on dialysis (e.g., non-ambulatory status, frailty) to help patients make an informed decision regarding conservative management.<sup>14,15</sup>

Incorporating geriatric assessment into routine nephrology care for older adults is a novel approach to CKD management. We implemented two innovative programs: 1) a geriatrician embedded in a nephrology practice, and 2) a nephrology clinic with extended appointments for geriatric assessments. This article describes these two programs and care processes that result from problems identified through geriatric assessment.

## METHODS

Simultaneous interest in geriatric care for CKD patients inspired the development of two novel programs (Table 1). First, the Comprehensive Geriatric Assessment for CKD (CGA-4-

CKD) Program was developed as a clinical demonstration project involving a geriatrician conducting geriatric assessments in a nephrology clinic. Second, the Renal Silver Program involved geriatric assessment conducted by nephrology providers. Although distinct programs, they had a similar goal of identifying and managing geriatric conditions for an individualized CKD plan of care.

### **CGA-4-CKD Program**

The Atlanta Veterans Affairs Medical Center (VAMC) CGA-4-CKD Program was a partnership between geriatric medicine and nephrology designed to improve recognition of geriatric conditions and support patient-centered treatment plans for nephrology patients (see Table 1 for eligibility). Eligible patients were assessed by the geriatrician or triage nurse following a standardized template in the electronic health record (EHR) developed for the CGA-4-CKD program. Based on findings from our previously published studies of older adults with CKD, we chose to include assessment of basic and instrumental ADLs, falls (self-report of falls within prior 12 months),<sup>2</sup> mobility (inability to walk 3–4 blocks or needing assistance to get out of one's neighborhood),<sup>1</sup> cognition (dementia diagnosis or mini-cog test), frailty [Study of Osteoporotic Fracture frailty criteria],<sup>16</sup> and urinary incontinence; the template was designed to be completed in less than ten minutes. Findings from the template were reported in the EHR. The geriatrician discussed abnormal findings in person with the nephrologists and, when needed, developed plans for further evaluation and co-management.

### **Renal Silver Program**

The Renal Silver Program at the Durham VAMC was originally developed from a renal palliative care clinic for patients with advanced kidney disease. After recognition of the potential benefit of geriatric assessment, a nephrologist who received additional training in geriatrics (16 hour-long geriatric fellowship lectures) sought to expand the existing clinic to include geriatric assessments. Thus, the program was designated for older adults with advanced kidney disease (see Table 1 for criteria), including patients who did not need palliative care for symptom management. Patients who did not meet these criteria were also seen in this clinic by referral. Appointments were led by either the nephrologist or a nurse practitioner (with geriatrics and nephrology certifications) and lasted 45 minutes. After consideration of clinic time constraints and existing evidence on the use of geriatric assessment for risk stratification,<sup>17</sup> the geriatric assessment included routine assessment of ADLs, falls (self-report of falls within prior 12 months), mobility (self-reported use of assistive device), and cognition (dementia diagnosis or mini-cog test). Findings from the geriatric assessment informed the CKD treatment plan, including dialysis decision-making discussions, and triggered specific care processes and/or discussions with local geriatricians to manage abnormal findings.

### **Program Evaluation**

Using a systematic approach, we abstracted patient characteristics, findings from geriatric assessment, and care processes associated with those findings from the EHR. Next, we conducted a formal qualitative analysis of medical records to identify common themes about the impact of geriatric assessment. This analysis involved abstraction of text from progress

notes, development of *a priori* codes (anticipating risks, setting priorities, identifying preferences, tailoring treatment, and recognizing healthy aging), coding of the clinical text, categorization of the text by code, and summarization of codes by program. Two authors reviewed the text and summary statements for agreement and development of predominant themes. Here, we present the program evaluation along with clinical cases that demonstrate how geriatric assessment can inform treatment.

## RESULTS

Demographic and clinical characteristics of 68 Veterans [CGA-4-CKD ( $n=33$ ); Renal Silver ( $n=35$ )] who were seen between November 2013 (March 2014 for CGA-4-CKD) and May 2015 are described in Table 1. At both sites, at least 25% of Veterans had difficulty with one or more ADLs, a positive falls history, or cognitive impairment (Figure). In CGA-4-CKD 48.5% ( $n=16$ ) of Veterans had difficulty walking 3–4 blocks, 24.2% ( $n=8$ ) screened positive for frailty, and 24.2% ( $n=8$ ) for urinary incontinence. In Renal Silver, 80.0% ( $n=28$ ) of Veterans used a cane, walker, or wheelchair.

Geriatric assessments led to at least one care process in 45.4% ( $n=15$ ) and 37.1% ( $n=13$ ) of Veterans in the CGA-4-CKD and Renal Silver programs, respectively. In CGA-4-CKD, care processes included additional diagnostic tests (e.g., serum Vitamin B12 level) [27.2% ( $n=9$ )], medication changes (e.g., avoid methocarbamol) [18.2% ( $n=6$ )], consideration of future geriatrics consultation [6.1% ( $n=2$ )], further clinic evaluation (e.g., additional cognitive testing) [6.1% ( $n=2$ )], and communication with primary care for co-management [6.1% ( $n=2$ )]. In Renal Silver, 20.0% ( $n=7$ ) of recommendations were dialysis decision-making discussions that favored conservative management (instead of dialysis), 17.1% ( $n=6$ ) were social work referrals for assistance with advance directives or ADL assistance, and 8.6% ( $n=3$ ) were consultations for Palliative Care. Although recommendations differed between the two programs, there were similar proportions of geriatric consultations placed for either general geriatric care or cognitive impairment [6.1% ( $n=2$ ) in CGA-4-CKD, 8.6% ( $n=3$ ) in Renal Silver].

From the qualitative analysis, three themes emerged regarding the role of geriatric assessment in CKD patients. First, geriatric assessment allows providers to *anticipate risks and prioritize patient concerns*. Some problems were clinically significant because of risk associated with the problem or ongoing unmet need (e.g., recurrent falls or increasing ADL dependence and insufficient assistance at home). Thus, providers were able to determine if other conditions should be prioritized over traditional CKD management. Other problems were important considerations for CKD management (e.g., cognitive impairment impacting CKD-self management). Second, geriatric assessment helps patients and their caregivers *recognize and discuss preference-sensitive treatment decisions*. Specifically, some patients expressed interest in conservative management after understanding that their functional limitations were likely to worsen with the physical demands of dialysis. In these instances, geriatric assessment was pivotal in simplifying CKD management through omission of care processes involved in preparing for dialysis (e.g., dialysis access placement). Third, geriatric assessment helps providers *identify resilient older adults experiencing healthy aging*. Healthy aging was present across a wide range of ages and estimated glomerular filtration

rates. Patients without geriatric conditions may be most likely to benefit from traditional CKD management (i.e., efforts to prevent CKD progression that require a long time-horizon to benefit).

### **CGA-4-CKD Case**

An 80 year old African American male with advanced CKD secondary to diabetes mellitus, poorly controlled hypertension, and an atrophic right kidney was evaluated by the CGA-4-CKD program. Geriatric assessment identified falls, mobility impairment and cognitive impairment. Although he lived alone, he had limitations in several IADLs including performing house work, cooking, and shopping. Findings from this evaluation supported an integrated care plan from geriatrics, nephrology and primary care. The geriatrician contacted the patient's daughter to engage her to attend all appointments and supervise diabetes and hypertension management. The primary care provider arranged physical therapy and social work to facilitate mobility support through the local rapid transit system and home health support of ADLs. The nephrologist adjusted his medications to address his uncontrolled blood pressure and significant edema, and arranged closer follow-up for monitoring of his kidney function.

### **Renal Silver Case**

An 87 year old white male with dementia and advanced CKD secondary to diabetes and hypertension arrived for nephrology consultation. His daughter served as his primary caregiver and surrogate decision-maker and brought him to clinic to re-establish nephrology care for hemodialysis initiation. Geriatric assessment revealed that he needed assistance with all IADLs and transfers, used a cane, and experienced falls. He had a poor appetite, decreased energy, and reported a nearly ten pound weight loss in the two months prior. The nephrologist explained that his functional impairment and comorbidity burden may negatively impact his survival and quality of life with hemodialysis.<sup>18</sup> The Veteran's daughter expressed that his quality of life was most important and opted for conservative management. Follow-up care focused on CKD management and functional limitations. Over 12 months, the patient experienced further decline in his functional status, and palliative care arranged for home hospice services.

## **DISCUSSION**

The addition of geriatric assessment to routine nephrology care is an innovative approach to caring for older adults with CKD. In both programs, at least 25% of Veterans had functional limitation identified by geriatric assessment. Cognitive impairment and difficulty with instrumental ADLs were commonly identified. Such problems were addressed through further evaluation or specialty referrals. Importantly, the providers considered these problems in development of an individualized treatment plan. Overall, these programs support the practical application of geriatric assessment in guiding CKD care and dialysis decision-making.

The care processes and clinical cases described herein revealed that geriatric assessment is valuable for identifying problems that are important considerations in CKD management. In

the first case, the geriatrician coordinated care with nephrology, primary care, and the patient's family to align efforts to support the patient's cognitive impairment and chronic disease self-management. In the second case, the geriatric assessment led to discussions about conservative management as an alternative to dialysis. Geriatric assessment facilitated appropriate care in both cases because current CKD guidelines endorse chronic disease self-management for CKD and recommend considering conservative management for patients with significant functional impairment.<sup>19</sup> Both cases also demonstrate how geriatric assessment uncovers patient and caregiver concerns and priorities to guide an individualized approach to the CKD treatment plan.<sup>13</sup>

## Lessons Learned

We learned that there are varying levels of experience in geriatric assessment among nephrologists. For nephrologists with limited experience, the geriatrician's treatment recommendations in the CGA-4-CKD program are necessary for practical application. Alternatively, the Renal Silver providers' prior geriatrics training and work experience allow them to perform and apply the findings from geriatric assessment without geriatrician oversight. However, local geriatricians are essential resources for advice or formal referrals. Additionally, we recognized heterogeneity in geriatric assessment similar to existing evidence on heterogeneity in CKD progression in this population.<sup>20</sup> Thus, a program that incorporates some elements of both models (i.e., an EHR-based geriatric assessment tool along with a defined care pathway for conservative management) may be necessary to meet the needs of this population.

## Future Directions

These programs provide preliminary evidence on the value of geriatric assessment in nephrology practices. Although this report provides insight into feasibility, target patient population, and salient outcome measures, we acknowledge that our preliminary data is insufficient to make a formal recommendation for routine geriatric assessment in all older adults with CKD. A formal evaluation of resources for geriatric assessment (e.g., skillset required, time, and space) in a nephrology clinic and patient and provider perspectives is warranted. Ultimately, clinical trials are necessary to assess the value of integrated care from the perspective of the patient and the health system. Overall, incorporating geriatric assessment into nephrology practice may be an effective approach to improving health outcomes and quality of life for older adults with CKD.

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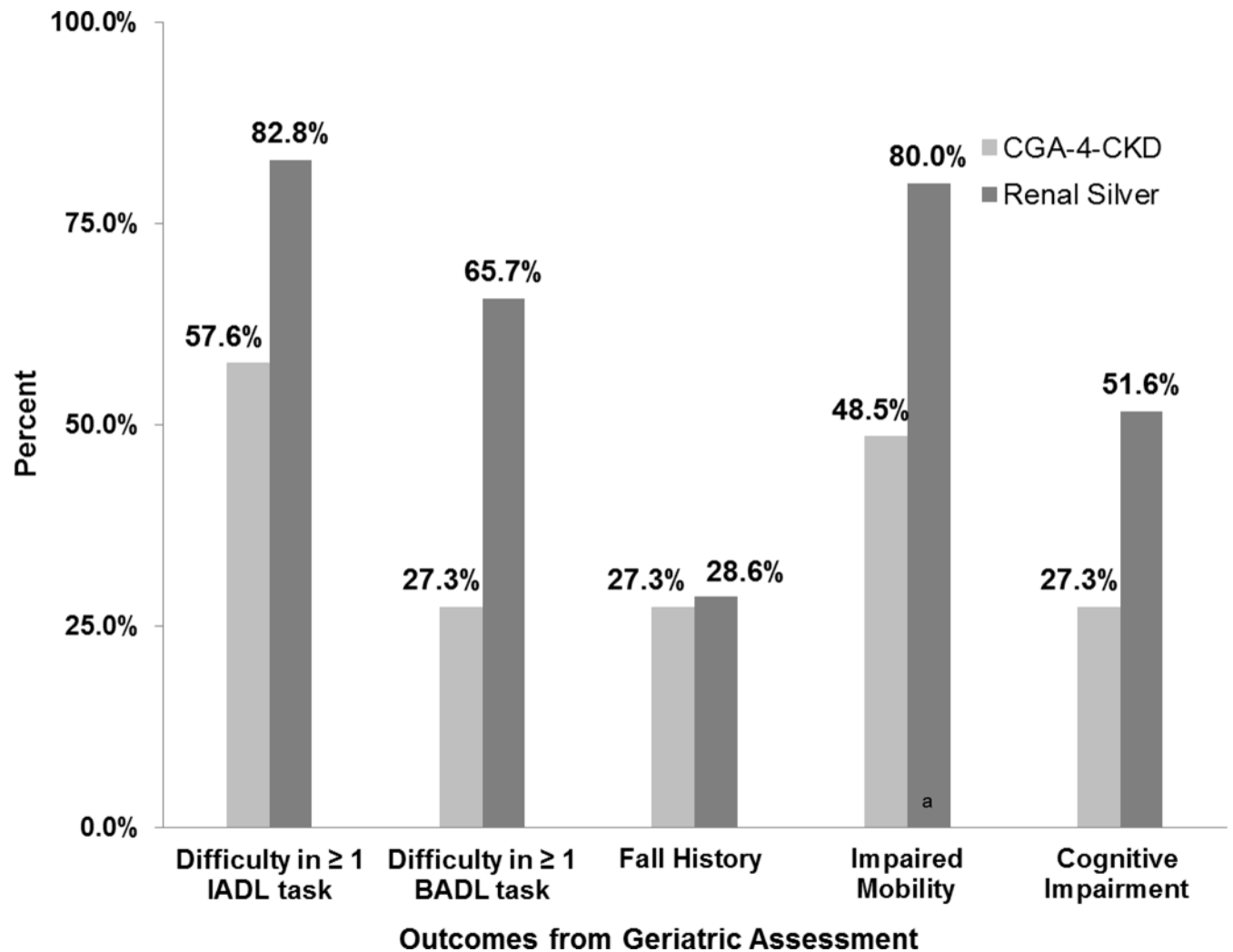
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**Figure. Prevalence of Functional Impairment and Geriatric Conditions**

N=33 for Comprehensive Geriatric Assessment for Chronic Kidney Disease (CGA-4-CKD).

N=35 for Renal Silver, except for cognitive impairment, N=31.

<sup>a</sup>Impaired Mobility defined as difficulty walking 3–4 blocks in CGA-4-CKD clinic, but it is defined as use of cane, walker, or wheelchair in Renal Silver clinic.

BADL = basic activities of daily living; IADL = instrumental activities of daily living.



**Table 1**

Clinic Description and Patient Characteristics of the Comprehensive Geriatric Assessment for Chronic Kidney Disease (CGA-4-CKD) and Renal Silver Clinics

| Characteristic                                     | CGA-4-CKD   | Renal Silver                                      |
|--|---|---|
| <b>Clinic description</b>                          |   |   |
| Target Population                                  | 70 years old, not currently in a geriatrics clinic                                  | 75 years old, advanced CKD                        |
| Care Model   | - Standardized assessment tools in the HER<br>- Geriatrician embedded in CKD clinic | Nephrology provider conducts geriatric assessment |
| Geriatric Assessments                              | ADLs, falls, mobility, cognition, frailty, urinary incontinence                     | ADLs, falls, mobility, cognition                  |
| <b>Patient characteristics</b>                     |   |   |
|  | CGA-4-CKD<br>N=33   | Renal Silver<br>N=35                              |
| Age, mean ( $\pm$ SD)                              | 78.0 ( $\pm$ 6.3)   | 83.9 ( $\pm$ 5.9)                                 |
| Male, n (%)  | 31 (93.9)   | 35 (100.0)  |
| Black, n (%)                                       | 17 (51.5)   | 14 (40.0)   |
| Hispanic, n (%)                                    | 0 (0.0)   | 0 (0.0)   |
| <b>Clinical Variables</b>                          |   |   |
| Diabetes, n (%)                                    | 21 (63.6)   | 17 (48.6)   |
| Hypertension, n (%)                                | 31 (93.9)   | 35 (100.0)  |
| Stroke, n (%)                                      | 0 (0.0)   | 5 (14.3)  |
| Coronary Artery Disease, n (%)                     | 10 (30.3)   | 16 (45.7)   |
| Congestive Heart Failure, n (%)                    | 7 (21.2)  | 4 (11.4)  |
| No. of Medications, mean ( $\pm$ SD)               | 10.9 ( $\pm$ 4.6)   | 12.3 ( $\pm$ 4.9)                                 |
| <b>Chronic Kidney Disease</b>                      |   |   |
| eGFR, ml/min/1.73m <sup>2</sup> , mean ( $\pm$ SD) | 39.7 ( $\pm$ 10.6)  | 27.0 ( $\pm$ 11.2)                                |
| <b>eGFR Category</b>                               |   |   |
| >60 ml/min/1.73m <sup>2</sup> , n (%)              | 1 (3.0)   | 0 (0.0)   |
| 45–59 ml/min/1.73m <sup>2</sup> , n (%)            | 11 (33.3)   | 3 (8.6)   |
| 30–44 ml/min/1.73m <sup>2</sup> , n (%)            | 15 (45.5)   | 10 (28.6)   |
| 15–29 ml/min/1.73m <sup>2</sup> , n (%)            | 5 (15.2)  | 17 (48.6)   |
| <15 ml/min/1.73m <sup>2</sup> , n (%)              | 1 (3.0)   | 5 (14.3)  |

ADLs = activities of daily living; CGA-4-CKD = Comprehensive Geriatric Assessment for Chronic Kidney Disease; eGFR = estimated glomerular filtration rate; EHR = electronic health record; SD= standard deviation