

Screening Women with CKD for the Emperor of All Maladies

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Cancer, the so-called “Emperor of All Maladies” (1), affects individuals with CKD at a higher rate than in the general population (2,3). Timely screening for specific cancers is advocated by multiple guideline-setting bodies as an avenue for early detection and reduction of cancer-related morbidity and mortality. In this issue of the *Clinical Journal of the American Society of Nephrology*, Wong *et al.* (4) report on screening for breast and cervical cancer among women with and without CKD in Ontario, Canada. The authors found that women with CKD were substantially less likely to undergo screening for either cancer compared with women without CKD. Sociodemographic factors, including age and neighborhood-level income, modified the association of CKD with screening. Clinical factors, including comorbid disease burden, CKD stage, and renal replacement modality (*i.e.*, dialysis versus transplantation), also modified observed rates of cancer screening.

The lower rates of cancer screening observed among women on dialysis compared with the non-CKD population were as expected and consistent with the “Choosing Wisely” campaign recommendations of the American Society of Nephrology Quality and Patient Safety Task Force (5). When weighing the risks and benefits of cancer screening, life expectancy must be considered. The Charlson comorbidity index (CCI), as assessed in this study, is a method of categorizing comorbidities by mortality risk status on the basis of the International Classification of Diseases diagnosis codes (6). Chronic disease burden evaluated by the CCI is also adjusted for age. The 10-year predicted survival rates for a person with CCI scores of zero, one, two, three, four, and five are 99%, 96%, 90%, 77%, 53%, and 21%, respectively (6). Using CCI as a survival predictor, patients without any other comorbid conditions except for moderate to severe kidney disease carry a score of ≥ 3 if 50 years old or older. A study that examined a modified version of the CCI (which excludes age and kidney disease) found that each 1-unit higher modified CCI score was associated with a 16% greater risk of death among patients on hemodialysis (7). For the majority of women on dialysis, most of whom will have at least one comorbid condition, avoidance of cancer screening may be appropriate due to limited life expectancy.

Cancer is a relatively rare cause of death among patients on dialysis (8), who primarily die of cardiovascular or infectious causes. Chertow *et al.* (9) evaluated the

cost-effectiveness of cancer screening in patients with ESRD, including *via* mammography and Papanicolaou (Pap) tests, and reported a net gain of 5 days in life expectancy and reduction in mortality rate of 0.02% *via* the screening programs. Framed in this light, few patients on dialysis may perceive the benefits of cancer screening, particularly if they are burdened with comorbidities.

Wong *et al.* (4) found lower breast and cervical cancer screening rates among women with CKD not on dialysis or with a kidney transplant, despite a recent meta-analysis indicating the risk of cancer or cancer-related death to be similar among these individuals compared with those with intact kidney function (10). Thus, most women with non-ESRD CKD should be following cancer screening schedules similar to those recommended for the general population. Age, comorbid disease burden, rural residence, and low income predicted lower screening rates among patients with CKD stage 3a or 3b. Although these sociodemographic factors raise concerns about potential access to care limitations in this population, patients with CKD stage 3a or 3b saw their general practitioner a median of eight times in the year before study baseline. Therefore, other barriers to screening, such as a focus on different, perhaps more immediate, health concerns during the clinical visits, may have deprioritized referrals for cancer screening. Alternatively, referrals may have been made that were not followed up on by the patients. For patients dealing with multiple health problems, particularly if they are also socioeconomically disadvantaged, it may be very difficult to attend multiple appointments, and therefore, some patients may prioritize those appointments believed to have the most immediate effect on their health and delay others.

Given that patients with CKD are often hospitalized (11,12), there may be opportunities to offer cancer screening during their hospitalization—which many patients would find convenient. This would also align well with the growth in accountable care organizations in the United States, which should feature the ability to offer patients recommended testing when they interface with systems of care (13). In a study by Khaliq *et al.* (14) among 210 low-income hospitalized women, 39% were overdue for a screening mammogram. The commonly reported barriers to screening mammograms were failure to remember appointments and lack of transportation. Most women believed that health care providers should discuss breast cancer screening while patients are in the

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hospital, and 68% of the nonadherent women expressed that they would agree to have an inpatient screening mammogram if it was offered (14). In the future, inpatient breast cancer screening for nonadherent women may be offered at some medical centers.

Cervical cancer screening might also be offered to hospitalized patients with CKD. In the United States, some states mandate hospitals to offer all inpatient women over the age of 18 years old a Pap test unless the patient refuses, there is documentation of a Pap test within the past 12 months, or the physician orders otherwise (15). Thus, there may be emerging opportunities to reach greater numbers of women with CKD who are in need of cancer screening.

Cancer screening among patients with transplants in the study by Wong *et al.* (4) was generally less likely to occur than among the non-CKD population and in some age strata, less likely than among women with CKD. These differences were particularly striking among young transplanted women; for example, among those 21–30 years of age, only 51.5% underwent cervical cancer screening over 3 years of follow-up, which was a lower rate than that of any other clinically defined group. Notably, this estimate was on the basis of a relatively small number of patients in this age/clinical group ($n=72$; 7.6% of all patients), but it could represent a population in need of targeted screening promotion efforts, particularly given the high risk of cancer mortality among patients with solid organ transplants (16). For example, young patients with transplants might benefit from post-transplant peer navigators to support them through the many health maintenance appointments that are recommended for transplant recipients, similar to the types of navigators shown to benefit pretransplant patients (17).

Wong *et al.* (4) noted that patients with transplants had far fewer annual general practitioner visits than patients with CKD and patients on dialysis (median of four compared with seven to ten for the other groups). This calls into question whether the cancer screening referrals were primarily coming from nephrologists who, by nature of the specialty, may be less familiar with age-appropriate cancer screening guidelines and have less experience with counseling patients about their individual cancer risk. Enhanced coordination of care between nephrologists, general practitioners, and women's health care providers may serve to promote cancer screening among women with CKD. Ultimately, however, nephrologists may forge long-term trusting relationships with patients with kidney disease that will afford them the greatest opportunity to engage in shared decision making and select the cancer screening plan that is most appropriate for the patient's individual health status and personal priorities.

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Disclosures

None.

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