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Frailty and sarcopenia AFTER KT

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Frailty and sarcopenia have long been recognized as risk factors for poor quality of life and increased morbidity and mortality among patients with advanced chronic kidney disease (CKD). The CKD epidemic, an aging population, and the need for equitable access to transplantation have led to increase public attention to practices in kidney transplantation. The transplant community now recognizes frailty and sarcopenia as important research topics to inform our clinical practice patterns. Measures developed from the field of geriatrics are used to study the epidemiology of frailty in CKD. The prevalence of frailty or pre-frailty among patients on dialysis has is estimated at 80%. The prevalence in kidney transplant candidates and recipients is lower. This is because kidney transplant candidates and recipients are highly selected to be among the healthiest of the CKD population. In the US, the prevalence of frailty and those who are at least pre-frail is 16-18% and 30-80%, respectively. Among kidney transplant recipients at the time of transplant, the estimated prevalence of frailty and those who are at least pre-frail is 18% and 44%, respectively. Regional variability exists in frailty among kidney transplant candidates and recipients is considerable. Living donor kidney transplant recipients were substantially less frail than deceased donor transplant recipients (8% vs. 18%). Risk factors for frailty include older age, African-American race, and Hispanic ethnicity. Sarcopenia is a contributor to frailty and is incorporated in some frailty measures. The body of literature on sarcopenia in advanced CKD and kidney transplant is less developed. Studies on body composition and muscle pathology in advanced CKD is emerging. Conventional definitions of sarcopenia are based on low appendicular lean mass index (ALMI) as a measure of skeletal muscle. It is determined by dual-energy x-ray absorptiometry (DXA). Newer indices that adjust for fat mass index (FMI) have demonstrated stronger associations with physical function and disability. These studies are now being applied to the advance CKD population. New studies have demonstrated abnormal muscle morphometry and architecture in patients with advanced CKD. Whether and to what extent this reverses after kidney transplantation is largely unknown. Research in frailty and sarcopenia before and after kidney transplantation is needed to inform clinical practice guidelines in the current era. Adapting tools into clinical practice must take into consideration realities of clinical healthcare delivery. The most used and comprehensive research tool for frailty and sarcopenia are the Fried Frailty Phenotype

(FFP) and the Short Physical Performance Battery (SPPB). The only proxy for frailty and sarcopenia that is systematically recorded in the US national registry is the Karnofsky Performance Score (KPS). Practical issues such as patient capacities (geographic, socio-economic, literacy and language) and health delivery system capacities are critical to successful and broader implementation of effective and efficient use tools for assessing frailty and sarcopenia. We present one such model that incorporates the 6-minute walk test and sit-to-stand test into our transplant readiness assessment process. We also demonstrated a strong correlation between these tests and the SF-36 PF. SF-36 is a patient questionnaire instrument that is collected annually at dialysis centers. Future studies should be aimed at calibrating pre-existing frailty tools for prospective use in kidney transplantation. Delivery of prehabilitation and rehabilitation programs are emerging. Such peri-transplant interventions to mitigate reversible frailty and sarcopenia are needed.