

# AMERICAN SOCIETY OF NEPHROLOGY—ASP JUNIOR DEVELOPMENT AWARD IN GERIATRIC NEPHROLOGY

## *Award Recipient:*



MARK UNRUH, MD  
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### PROJECT:

SLEEP AND FUNCTION: INFLUENCES OF AGING AND KIDNEY FAILURE

### MENTORSHIP TEAM:

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Poor sleep and fatigue are commonly encountered in the practice of nephrology when caring for older adults undergoing hemodialysis. In the general population, sleep studies using polysomnography show a substantial prevalence of sleep-disordered breathing and other causes of sleep fragmentation in healthy older adults that contribute to sleepiness and fatigue, hypertension, and cardiovascular disease. Potentially, such sleep disorders could contribute to the very high rates of sleepiness, morbidity, and mortality in the kidney failure population. We have demonstrated that at least 80 percent of dialysis patients report sleep problems, over twice the rate in the general population. However, older adults have also been shown to have a higher risk of sleep problems and note difficulties with sleep initiation and maintenance. Poor sleep quality and sleep disorders in patients with end-stage renal disease are accompanied by a high rate of hypnotic use and diminished quality of life. A few very preliminary studies using polysomnography suggest that sleep-disordered breathing may affect the majority of dialysis patients. It remains unclear if the high rates of sleep apnea and sleep problems reported by patients undergoing hemodialysis represent an effect of uremia or an effect of aging on the hemodialysis population. Given the complexity of causes of fatigue and poor sleep in this population, polysomnography is needed to determine the full range of potential sleep disorders that may disrupt sleep and impair daytime function.

To determine the role of kidney failure as a factor that may contribute to sleep disorders and subsequent impact on daytime functioning, we will take advantage of the opportunity to study older adults undergoing hemodialysis and compare them to participants in the National Institutes of Health Sleep Heart Health Study that represent a well-

characterized community-dwelling cohort of older adults. The proposed study of hemodialysis subjects will demonstrate the impact of a kidney failure and its treatment on sleep and daytime functioning independent of aging. In addition, the proposed study will examine the extent to which sleep-disordered breathing is associated with sleep quality, health-related quality of life, and cognitive function. Further, the proposed studies will lead to the development of meaningful understanding of the relationship between kidney failure, sleep, and daytime functioning and serve as a foundation for future studies. Finally, the proposed study augments my training in geriatric nephrology by complementing direct experience in study design and database development with additional formal coursework and hands-on mentored training. I have developed a two-year career development plan to achieve expertise in the three content areas of biostatistics, sleep, and aging by a combination of formal coursework, mentorship, and seminars.

Overall study aim: To characterize sleep and daytime functioning among older adults undergoing hemodialysis.

1. To describe sleep-disordered breathing and sleep quality among older adults on hemodialysis compared to community-dwelling older adults.
2. To describe self-reported physical and mental well-being and cognitive function among older adults undergoing hemodialysis compared to community dwelling older adults.
3. To determine if sleep disorders impact on sleep quality and daytime functioning in older patients undergoing hemodialysis compared to community-dwelling older adults.