

Substance Use Disorders and Kidney Disease:

Implications for Nephrology Social Work Practice [▲]

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Substance use disorders (SUDs) are a public health issue as well as a significant psychosocial barrier resulting in chronic kidney disease outcomes such as mortality and morbidity. Nephrology social workers need a general understanding of SUDs, SUD issues pertinent to patients with kidney disease, and best practices for working with such patients and their family members. This article provides an overview of SUDs, details SUD-related conditions in kidney disease populations, discusses implications for nephrology social work practice, and makes recommendations for such care.

INTRODUCTION

Nephrology social workers are the behavioral health specialists of dialysis and kidney transplantation interdisciplinary teams, and play a critical role in helping patients with kidney disease ameliorate psychosocial barriers to optimal outcomes. Existing barriers to care include substance use disorders (SUDs), the use of excessive alcohol/prescription medication and/or illegal drugs (Substance Abuse and Mental Health Services Administration (SAMHSA), 2015a). Nephrology social workers could benefit extensively from knowledge about SUDs, an understanding of issues relevant to kidney disease patients with comorbid SUDs, and interventions that can be useful for this population. This article reviews these subjects and can help inform and improve social work practice in nephrology settings.

SUBSTANCE USE DISORDERS— A PUBLIC HEALTH CRISIS

SUDs are a worldwide public health issue, with significant prevalence and health consequences. Internationally, alcohol use is one of the top five greatest risk factors for disease, disability, and death (World Health Organization (WHO), 2011). In the United States, 8% of the general population has an SUD (SAMHSA, 2013). About one out of ten (10.2%) Americans over the age of 12 engaged in illicit drug use during a given past month (Center for Behavioral Health Statistics and Quality (CBHSQ), 2015). An estimated 23% of Americans 12 and older reported binge alcohol use (5 or more drinks) on at least one occasion in the past month (CBHSQ, 2015). Among individuals who consume alcohol, 43.6% reported binge alcohol use (CBHSQ, 2015).

SUDs affect all demographic groups across the life span. The Substance Abuse and Mental Health Services Administration (SAMHSA, 2015b) of the U.S. Department of Health and Human Services reports that:

- 8.8% of adolescents aged 12–17 (an estimated 2.2 million adolescents) reported using illicit drugs.
- 6.2% of U.S. adolescents (an estimated 1.6 million adolescents) were binge alcohol users.
- Young adults (aged 18–25) had the highest percentage of alcohol dependence (13.0%) and illicit drug dependence (7.4%).
- 6.7% of persons aged 21 or older (an estimated 15.1 million individuals) report heavy alcohol consumption.

The individual and social consequences of SUDs make attention to this social problem a priority. For example, in March 2016, President Obama created a Mental Health and Substance Use Disorder Parity Task Force to launch a national effort to address SUDs (The White House, Office of the Press Secretary, 2016). Efforts such as these, including coverage for SUD treatment in the Affordable Care Act, highlight the significance of SUDs (Andrews, Grogan, Brennan, & Pollack, 2015).

SUBSTANCE USE DISORDERS AND KIDNEY DISEASE

Given the prevalence of SUDs, it is no surprise that this is an area of significance and concern for kidney disease populations. SUDs can directly and independently lead to acute kidney injury (AKI) and end-stage renal disease (ESRD) (Bickel et al., 2013; Buettner et al., 2014; do Sameiro Faria, Sampaio, Faria, & Carvalho, 2003; Kumar & Vasudevan, 2008; Singh, Singh, & Jaggi, 2013; Vupputuri et al., 2004; Zielezny, Cunningham, & Venuto, 1980), as well as play a role in contributing to chronic kidney disease (CKD) (Epstein, 1997; Hennessy, 2015; Kazancioğlu, 2013; Mocreft et al., 2015). For example, heroin use may lead to AKI as well as heroin-associated nephropathy that leads to ESRD (Howse & Bell, 2011). Individuals who have used heroin or other opiates have significantly higher risk for ESRD (Perneger, Klag, & Whelton, 2001). Intravenous drug use (Jung et al., 2012) and “skin popping” (injecting drugs directly into the tissue

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under the skin) of drugs can result in renal AA-amyloidosis, which can progress to CKD (Lejmi, Jen, Olson, James, & Sam, 2015). Bautista and colleagues (2015) determined that a heroin overdose was responsible for AKI due to heroin crystallization in the renal tubules. Bohatyrewicz and colleagues (2007) report a case study in which they conclude that a kidney transplant patient developed his renal failure due to membranous glomerulonephritis associated with heavy marijuana abuse. "Bath salts" crystal use (Adebamiro & Perazella, 2012) and "designer" or synthetic drug use are also associated with AKI (Luciano & Perazella, 2014; Pendergraft, Herlitz, Thornley-Brown, Rosner, & Niles, 2014).

Cocaine use is associated with exacerbated hypertension severity, leading to AKI and ESRD (Buettner et al., 2014; Dunea, Arruda, Bakir, Share, & Smith, 1995; Goel, Pullman, & Coco, 2014; Norris et al., 2001; Rossi et al., 2016; Sánchez, Pérez, Romero, & Lorman, 2010). Interestingly, Fine and colleagues (2007) discovered that cocaine use by individuals with HIV can lead to hypertensive renal changes, even in the absence of hypertension. Methamphetamine use is linked to severe hypertension and kidney failure (Jones & Rayner, 2015). Alcohol use is related to an increase in gout in CKD patients (Jing et al., 2015).

SUDs also can be indirectly associated with ESRD. Individuals with hepatitis C are significantly more likely to consume alcohol and drugs, and have ESRD (Basseri et al., 2010; Li et al., 2014). In particular, intravenous drug use by individuals with hepatitis C may lead to AKI (Satapathy, Lingisetty, & Williams, 2014).

The relationship between SUDs and all stages of kidney disease is internationally relevant, and affects some of the most vulnerable populations with CKD and ESRD. Steele, Belostosky, and Lau (2012) discuss the unique ramifications of SUDs for adolescents with CKD, and suggest that "the deleterious effects of drug abuse on the kidney, especially in patients with pre-existing renal insufficiencies, cannot be overemphasized" (p. 19). The authors recommend that all adolescent CKD patients be screened for SUDs.

The literature also highlights the impact of SUDs among patients who are homeless, impoverished, and older. These individuals may be more susceptible to SUDs as well as comorbid conditions (such as diabetes and hypertension), due to the cumulative health risks from their life experiences and psychosocial stressors. For example, Garcia-Garcia and colleagues (2013) found that individuals who had CKD and who were experiencing homelessness in Mexico were significantly more likely to have an SUD. A study in Canada found that 45% of the individuals in their study of CKD and homelessness had alcohol or drug addictions (Podymow & Turnbull, 2013).

Similar findings about the issue of SUDs in CKD patients experiencing homelessness in the U.S. suggest that a history of SUDs significantly increases the risk of ESRD and

death, as well as the use of acute care services (Hall, Choi, Himmelfarb, Chertow, & Bindman, 2012). In a study of 15,353 urban poor CKD patients in San Francisco, Hall and colleagues (2010) found that 8% of the patients were alcoholics and 16% had SUDs. Lemke and Schaefer discovered that nursing home residents with SUDs were more likely to have kidney failure (Lemke & Schaefer, 2010).

SUDs have a significantly negative impact on individuals with kidney disease. Importantly, persons with ESRD and SUDs may be significantly more likely to commit suicide than individuals who have ESRD and no SUDs (Kurella, Kimmel, Young, & Chertow, 2005). CKD and ESRD can impair the metabolism of opioids (Hardy, Herbert, & Reymond, 2007; Mercadante & Arcuri, 2004). In addition, a history of chronic opioid use before kidney transplantation may be significantly related to higher mortality risk after transplantation (Barrantes et al., 2013).

Interestingly, some studies suggest that moderate alcohol use may be inversely related to CKD risk, with individuals who consume some alcohol having less CKD (Cheungpasitporn et al., 2014; Dunkler et al., 2015; Hsu, Pai, Chang, Liu, & Hsu, 2013; Koning et al., 2015; Kusek, 2015; Presti, Carollo, & Caimi, 2007; Sato et al., 2014). However, a systematic review of studies related to the relationship between alcohol consumption and renal impairment concludes that this beneficial relationship has not been consistently demonstrated (Buja, Vinelli, Lion, Scafato, & Baldo, 2014). A high use of alcohol and alcoholism are actually related to increased risk for AKI (Camilleri, Wyatt, & Newstead, 2003), ESRD (Perneger, Whelton, Puddey, & Klag, 1999; Schaeffner & Ritz, 2012), and CKD (Hall et al., 2010; Jain & Reilly, 2014; Sato et al., 2014; Shankar, Klein, & Klein, 2006; van Gastel et al., 2015; White et al., 2009). In addition, Almaguer and colleagues (2014) report that consumption of homemade alcohol may be associated with CKD.

SUBSTANCE USE DISORDERS IN DIALYSIS POPULATIONS

As many as 19% of hemodialysis patients have been diagnosed with a current SUD (Cukor et al., 2007). In one study of hemodialysis patients, 27.6% of patients scored positively for alcoholism, and alcoholism was more prevalent in dialysis patients who are HIV-positive, younger, and male (Hegde, Veis, Seidman, Khan, & Moore, 2000). This study also found that alcoholic dialysis patients had lower albumin levels.

SUBSTANCE USE DISORDERS IN KIDNEY TRANSPLANT POPULATIONS

ESRD patients with a history of SUDs are significantly less likely to be on the waiting list for a kidney transplant, or to receive a kidney transplant if they are on the list (Sandhu et al., 2011).

Alcohol use may be negatively related to survival and kidney graft survival in transplant patients with alcohol dependency before or after the transplant (Gueye et al., 2007). After a transplant, an SUD may relate to poor immunosuppressant self-management and lead to graft loss (Dew et al., 2007; Parker, Armstrong, Corbett, Day, & Neuberger, 2013). Pain medications may cause nephrotoxicity in kidney transplant patients, which is exacerbated by immunosuppression regimes (Launay-Vacher, Karie, Fau, Izzedine, & Deray, 2005).

Substance use may be contributing to kidney transplant disparities (Hod & Goldfarb-Rumyantzev, 2014), including individuals who are HIV-positive (Sawinski et al., 2009). SUDs after kidney transplantation may contribute to poor transplant self-management (Bunzel & Laederach-Hofmann, 2000), and greater post-transplant mortality (Gill, Abichandani, Kausz, & Pereira, 2002). In Switzerland, one study concluded that alcohol use is less prevalent in adult kidney transplant patients than the general population and that none of their study patients were consuming alcohol excessively (Fierz et al., 2006).

There are SUD implications for kidney transplant donors as well. One study found that 4% of kidney donors had emotional, psychological, or SUD issues related to their donation, and 29% of donors had a history of psychiatric conditions or SUDs pre-donation (Jacobs et al., 2015). The kidney donors with at least one emotional, psychological, or SUD difficulty after donation were significantly more likely to feel unsupported by healthcare providers, feel that “no one paid attention” to their needs, and think that the kidney recipient did not show enough gratitude (Jacobs et al., 2015). Interestingly, there is evidence that transplants from kidney donors with a history of alcohol dependency or intravenous drug use are as successful as those from donors without such a history (Lin et al., 2005). However, methamphetamine use in kidney donors is associated with worse graft outcomes in kidney transplant recipients (Inouye, Kickertz, & Wong, 2007).

SUBSTANCE USE DISORDERS AND MENTAL HEALTH

There is a significant relationship between mental illness and SUDs, with 25.7% of individuals with a serious mental illness also having co-occurring SUDs or alcohol dependency (SAMHSA, 2012). Depression and alcohol use often frequently co-occur (Witkiewitz & Stauffer, 2014), and there is an association between high-risk alcohol consumption and anxiety as well (Knychala, Jorge, Muiz, Faria, & Jorge, 2015). Older adults with mental illness and SUDs may have greater risk for CKD (Lin, Zhang, Leung, & Clark, 2011). Substance use should be assessed along with depression, as SUD may be a comorbid condition with depression (Cohen, Norris, Acquaviva, Peterson, & Kimmel, 2007).

NEPHROLOGY SOCIAL WORK PRACTICE RECOMMENDATIONS

Nephrology social workers will greatly benefit from ongoing information and education regarding the treatment of patients with SUDs, given the significant individual and societal consequences. Many social workers are well trained to understand and deliver SUD care (Andrews, Darnell, McBride, & Gehlert, 2013), and are the primary service provider for such care (Wells, Kristman-Valente, Peavy, & Jackson, 2013). Nephrology social workers are usually the most qualified behavioral health experts in their practice settings, and should embrace leadership in this area.

As a foundation to working with such individuals, it is critically important to first be mindful of the language used to describe patients with SUDs (Chahine, 2013). In an editorial for the *American Journal of Public Health*, Wakeman (2013) strongly encourages all professionals working with these populations to be careful to use the term “substance use disorders” and never use the term “abuse.” She suggests: “‘Abuse’ is arguably the most pernicious and poorly chosen word in our medical addiction vernacular. No other syndrome in medicine in its very naming explicitly labels the patient as the perpetrator of disease” (p. e1). Nephrology social workers can do in-service trainings for their interdisciplinary colleagues to support their understanding of terminology related to SUDs, and their overall understanding of the stigma individuals with SUDs may experience during treatment.

Because of the high prevalence of SUDs, all social workers need to be able to identify and assess SUDs and deliver relevant interventions (Galvani & Forrester, 2011) (see **Table 1**). As Lundgren and Krull (2014) suggest, given that the majority of individuals who have SUDs do not enter treatment, social workers play a key role in providing these services. *The National Association of Social Workers Standards for Social Work Practice with Clients with Substance Use Disorders* (http://www.naswdc.org/practice/standards/Clients_with_Substance_Use_Disorders.asp) provide the following recommendations for social work practice related to SUDs (National Association of Social Workers (NASW), 2013):

- Social workers should understand the “psychological and emotional factors, physiological issues, diagnostic criteria, legal considerations, and co-occurrences of mental health disorders and substance use” (p. 11).
- Social workers need knowledge about current evidence-based practices for individuals with SUDs (this includes seeking specialized training).
- Social workers should assess clients for SUDs.
- Social workers need to evaluate their practices to determine effectiveness.

Table 1. Substance Use Disorders Practice Resources for Nephrology Social Workers

<i>National Association of Social Worker's (NASW) Standards for Social Work Practice with Clients with Substance Use Disorders</i>	http://www.naswdc.org/practice/standards/Clients_with_Substance_Use_Disorders.asp
Substance Abuse and Mental Health Services Administration (SAMHSA)—National Registry of Evidence-based Programs and Practices	http://www.samhsa.gov/nrepp
<i>World Health Organization's (WHO) mhGAP Intervention Guide</i>	http://www.who.int/mental_health/mhgap/en/
Screening, Brief Intervention and Referral to Treatment (SBIRT)	https://www.samhsa.gov/sbirt

- Social workers have to document services related to SUDs.
- “Social workers shall organize their workloads so as to fulfill their responsibilities and clarify their critical roles while providing services to clients with substance use disorders” (p.14).
- SUD social work practice needs to reflect cultural humility.
- Social workers should exhibit interdisciplinary team leadership and collaboration to help individuals with SUDs.
- Social workers need to advocate for individuals with SUDs.

SAMHSA has a *National Registry of Evidence-based Programs and Practices* (<http://www.samhsa.gov/nrepp>) that can be helpful for nephrology social workers to learn more about best practices for individuals with SUDs. Since nephrology social work provision focuses on kidney disease care and relevant needs, social workers in dialysis and kidney transplant settings likely do not have the time or resources to be the actual provider of a full spectrum of evidence-based practices needed by patients with SUDs. *The World Health Organization's (WHO) mhGAP Intervention Guide* offers some guidelines for health practitioners in non-SUD settings to help patients with SUDs (http://www.who.int/mental_health/mhgap/en/) (WHO, 2010). Such practitioners (which include nephrology social workers) need to be able to assess for SUDs and be knowledgeable about brief interventions and community resources for SUD services.

Medical settings, such as dialysis and transplant centers, can be promising locations for screenings and brief interventions for SUDs (WHO, 2014). One helpful tool that can assist nephrology social workers in screening and referring patients for SUD services is the Screening, Brief Intervention and Referral to Treatment (SBIRT) tool. SBIRT is evidence-based (Agerwala & McCance-Katz, 2012; Field & Holleran Steiker, 2012; Gryczynski et al., 2011) and shows promise in decreasing SUDs for individuals receiving care in medi-

cal settings (Bliss & Pecukonis, 2009; Woodruff, Eisenberg, McCabe, Clapp, & Hohman, 2013). SBIRT is used in health facilities (Straussner, 2012) and nephrology social workers are well suited to implement this tool (Cochran, Roll, Jackson, & Kennedy, 2014). SAMHSA has extensive resources and trainings for social workers in SBIRT on their website <https://www.samhsa.gov/sbirt>, including information for social workers about brief SUD screenings such as the Alcohol Use Disorders Identification Test (AUDIT) and the Drug Abuse Screen Test (DAST). Nephrology social workers can complete SBIRT training online. NKF-CNSW chapters could also have trainings on SBIRT for their members. Nephrology social workers can use these tools to screen patients for SUDs, and make referrals for treatment beyond their dialysis or transplant centers as indicated.

Nephrology social workers can also provide SUD patients with emotional support and encouragement to seek SUD services. In particular, dialysis and kidney transplant social workers can provide supportive counseling to patients who have CKD because of SUDs. These patients may be struggling with feelings of guilt or anger that their kidney failure was a result of SUDs. For example, the use of methylenedioxymethamphetamine (ecstasy) can lead to kidney failure (Campbell & Rosner, 2008; Howse & Bell, 2011; Pendergraft et al., 2014; Ricaurte & McCann, 2005). This can happen after only one dose of methylenedioxymethamphetamine (Campbell & Rosner, 2008). Patients in that situation likely will need social work support as they cope with their diagnosis and treatment regimen. Nephrology social workers can also provide patients' families with emotional support as they cope with their loved ones' SUD. Nephrology social workers in pediatric settings also need to be mindful of SUDs in their adolescent populations (Steele, Belostotsky, & Lau, 2012).

As SUDs in pre-transplant ESRD patients predict SUDs after kidney transplant (Dew et al., 2007), kidney transplant social workers need to include SUD assessment in their evaluation of patient suitability for transplants (or need to refer patients to team mental health professionals who are responsible for such screenings). In addition to assessing for current risk of SUDs, it is recommended that transplant social workers also explore patients' motivation to discontinue SUD behaviors and past attempts to quit the use of alcohol and drugs (Kuntz, Weinland, & Butt, 2015). In kidney transplant populations, hair toxicology testing of transplant recipients is recommended to detect alcohol and substance use, and is preferable to breath, blood, and urine tests (Haller et al., 2010).

Kidney transplant social workers can create some best practice guidelines for working with ESRD transplant candidates who have SUDs. These situations can lead to ethical challenges, as there are no common guidelines regarding the length of time a patient needs to be substance-free before being placed on a kidney transplant list. In addition, in states that now legalize marijuana, there are no common guidelines about kidney transplant candidacy and marijuana use.

Adolescent kidney transplant patients may require close follow-up by social workers. One small Belgian study of kidney transplant patients aged 10–18 reported alcohol use by 35% of the sample, and one of the respondents was using illegal drugs (Dobbels, Decorte, Roskams, & Damme-Lombaerts, 2010). Encouragingly, a qualitative study of adolescent kidney transplant patients in Australia suggests that these patients want information about alcohol and drug use (Tong, Morton, Howard, McTaggart, & Craig, 2011).

With the Affordable Care Act expanding Medicaid benefits for integrated health services that include SUD treatment (Andrews et al., 2015; Dey et al., 2016), nephrology social workers may find additional resources in their community to help patients with SUDs. Dialysis and kidney transplant social workers can work with their colleagues in local SUD treatment facilities to best provide services for kidney disease patients (and may bring these colleagues to local CNSW meetings for trainings). They can also advocate for expanded SUD services that work for kidney disease patients. This may be particularly necessary in rural areas that have SUD service gaps (Browne et al., 2015) or for inpatient services that will accommodate dialysis. Advocacy to enhance patients' insurance coverage for integrated kidney disease and SUD care is also needed across the country, as healthcare is reformed with our new administration, and the Affordable Care Act is potentially dismantled.

Nephrology social workers can work with their local communities to improve housing resources, as individuals experiencing homelessness are particularly at risk for poor CKD and ESRD outcomes when they have SUDs (Hall et al., 2012). Social workers employed by ESRD Networks across the country can improve available resources for nephrology teams and patients with SUDs. Dialysis social workers can also advocate for their patients receiving SUD care within their own clinic if patients need alternative or flexible dialysis scheduling to accommodate SUD appointments.

In order to best help CKD patients with SUDs, nephrology social workers may need to advocate within their own practice setting as well as at a policy level. If dialysis social workers are overwhelmed with high caseloads and inappropriate clerical tasks (Merighi & Browne, 2015), they will not have the time to provide clinical social work interventions needed to help patients with SUDs. Kidney transplant social workers need to advocate in their own clinics as well as at a policy level for support for post-transplant social work services. Nephrology social workers can find information and support for such professional advocacy by becoming a national member of the Council of Nephrology Social Work (<https://www.kidney.org/professionals/CNSW>), and joining the Council's email listserv, as well as attending the annual National Kidney Foundation Spring Clinical Meetings (<https://www.kidney.org/spring-clinical>). The NKF Spring Clinical Meetings have an entire track of continuing education sessions related to nephrology social work practice.

Substance use affects many people around the world, and can lead to severe health consequences, including death and disability. Overall, the intersection of SUDs and kidneys is complex, affecting all stages of kidney disease and all kidney disease populations. Nephrology social workers can play an important role in helping patients with SUDs, and work with their interdisciplinary teams to best help patients with SUDs.

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