**Hospital Strategies for Mitigation of Substance-related Community Morbidity and Mortality**

A Guide for Administrators

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**ABSTRACT:**

Substance use disorders (SUD) are highly prevalent and highly morbid resulting in significant social, financial and human costs. They are most prevalent in clinical populations, plagued with physical and mental illnesses, with up to 80% of hospitalizations involving a positive SUD toxicology screen. SUD populations are hard to reach and target at the community level, hence hospitalizations present an unique opportunity to intervene and address the substance use. Certain strategies have evidence for efficacy in improving the care of individuals with SUD leading to higher rates of patient treatment engagement, sobriety, and overall better clinical and functional outcomes. Implementing the interventions discussed in this paper will lead to a reduction of substance-related community morbidity and mortality.

**BACKGROUND AND INTRODUCTION**:

There is rather stunning evidence that for the first time in history the average life expectancy is decreasing (Case and Deaton, 2015; Xu and Murphy 2016). The conditions responsible for the epidemic of early deaths are all related directly or indirectly to addiction (COPD, lung cancer, hepatitis C, cirrhosis and fatal overdoses). By 2020, substance use disorders (SUDs) will surpass all physical diseases as the major cause of disability (SAMHSA, 2016). Tobacco use is actually the current number one worldwide cause of preventable death (WHO, 2011). The mortality statistics are more than matched by the suffering and expense associated with morbidities from substance abuse.

There is data that “high utilizers” of health care and those with frequent re-admissions to general hospitals include a high proportion of patients with addictive disorders (Sloan et al., 1989; Soderstrom et al., 1992; Bailey, 1990; Clark and Harchelroad, 1991). Such hospitalizations present an opportunity to intervene and address the substance use as these individuals represent a subset that is hard to reach at the community level. The statistics suggest that there is an imperative need for hospitals and the healthcare system to address addictions as a priority. The earlier the interventions take place, the less severe and advanced the disease progression and the more likely successful outcomes will occur. Data have shown that early interventions following first detection of SUD can make an impact. Coordinated specialized services offered during or shortly after are effective in improving clinical and functional outcomes. A recent report from the institute of Medicine and National Research Council notes a significant cost-benefit ratio for early detection and treatment interventions, reducing costs related to healthcare, criminal and juvenile justice, educational and lost productivity (IMNRC, 2009).

Emphasis has been placed on the need for more substance abuse trained physicians to alleviate the treatment gap and increase system capacity. There is also an effort to increase the capacity of general providers to perform more upstream public health approaches to address high risk SUDs before requiring specialty care. This can reduce the health risk associated with use and decrease the burden on more costly health care specialties (AMA, 2004). It is in this role that physicians best impact care of SUD individuals.

Here we discuss several interventions, with evidence for efficacy, geared at reduction of substance-related community morbidity and mortality.

**EVIDENCE-BASED INTERVENTIONS**:

**1. Primary Prevention**

There are several strategies that reduce addictive behaviors in vulnerable populations (CSAP, 1993). These rely primarily in identifying subsets at risk and providing education about the nature and extent of drug use with emphasis on negative outcomes and impact on the individual and family. Dissemination vehicles include media campaigns, brochures, health fairs and media announcements. Providing individuals with information on gateways for healthy activities (ie. community centers, mentoring programs) that enable enjoyment offers alternatives to entertainment that do not involve use of substances. Environmental approaches such as advertisement practices (alcohol billboards) and product (cigarettes) pricing can be undertaken to establish community codes and attitudes (Lindsey et al., 2003).

Deaths secondary to opioids have quadrupled over the past fifteen years (CDC, 2015). Efforts have been underway to decrease prescribing of opioid analgesics. Those undergoing surgeries are at risk of becoming opioid users due to prevalent rates of prescriptions (Sun et al., 2016). By defining postoperative opioid requirements through patient surveys and disseminating operation-specific guidelines for prescribing to surgery departments, the number of prescriptions can be decreased significantly (Hill et al., 2017).

**2. Direct Interventions**

**2.1 Screening, Brief Intervention, and Referral to treatment (SBIRT)** is an evidence-based practice geared at identifying, reducing, and preventing development of problematic substance use, abuse and dependence (Kahan e al, 1995; Reid et al., 1999). It assists providers in referring individuals to treatment who are unlikely to seek treatment for SUD-related harms or those at risk for such harms (Barbor et al., 2007). Here, providers assess patients using standardized screening tools, engage them in a conversation to raise awareness of risky use through feedback and advice, and provide referral for the appropriate level of treatment.

Screening begins with the introduction of systematic screening of patients in medical facilities and community setting where those with substance use disorders are likely to be found. Tools were initially developed to identify active cases of substance dependence. However, focus has later shifted towards identifying risky use patterns and at risk individuals. Broad scales with high sensitivity and inclusivity are preferred, as he population of those with risk factors greatly exceeds that of individuals with dependence (Barbor et al., 2000).

Brief Intervention refers to any provider effort geared at offering information or advice, increase motivation to cease substance use, or train in skills that could change the behavior. Depending on screening result, brief intervention is delivered to those at low to moderate risk.

Treatment is typically offered to those identified through screening as being moderate or high risk, or dependent. This can begin immediately involving cognitive behavioral or motivational enhancement interventions or pharmacotherapy. Depending on the severity of use, medical implications, and risk assessment, it can also involve referral to a higher level of care. Platforms such as American Society of Addiction Medicine (ASAM) patient placement criteria exist to help providers determine the appropriate level of care warranted, taking into consideration a biopsychosocial model (Mee-Lee et al., 2013).

**2.2 Medication Assisted Treatment (MAT)** involves the use of FDA-approved medications in conjunction with counseling and psychosocial interventions for treatment of those with SUD, helping them sustain recovery. This combination has evidence for efficacy superior to either alone (Conner et al., 2015) and can increase compliance with treatment (Mattick et al., 2009) and reduce other health risk behaviors associated with substance use (Tsui et al., 2014). Pharmacotherapies include using buprenorphine, methadone or naltrexone in opioid use disorders, disulfiram, naltrexone or acamprosate in those with alcohol use disorders or bupropion and varenicline in tobacco users. Initiating such medications has been evaluated in a number of settings.

Emergency department (ED) initiated buprenorphine-naloxone has been shown to lead to better outcomes in comparison to simple referral to treatment centers and brief interventions (D’Onofrio et al., 2015). Targeting such a hard to reach population, which often relies on the ED for medical care in the ED setting results in increased engagement in addiction treatment. Hospitalizations for medical complications stemming from substance use, such as infective endocarditis, also represent an important opportunity to initiate MAT with good long term outcomes (Suzuki et al., 2016), as well as following detoxification and prior to discharge from such facilities (Stein et al., 2017).

**2.3 Sponsorship of addiction treatment programs** should be encouraged in addition to participation in psychosocial interventions such as Alcoholics/Narcotics Anonymous, abstinence classes. There is evidence in support of the added benefit in abstinence maintenance (Witbrodt et al., 2012). Sponsors help consumers set goals, develop a plan, and work towards and maintaining recovery as well as provide support and advice during high-risk situations, preventing relapse (Reif et al., 2014). High recidivism patients have difficulty engaging in peer mentorship as outpatient hence such connections are best established during the hospitalization (Tracy et al., 2011).

**2.4 Smoking cessation** interventions that begin during the hospital stay, and continue after discharge, have evidence for efficacy in improving quit rates (Rigotti et al., 2000). Benefit is independent on admitting diagnosis and treatment setting (ie. urgent care versus long term rehabilitation). Addition of nicotine replacement therapy to counseling increases cessation rates over counseling alone. When FDA-approved pharmacotherapy such as bupropion, and especially varenicline, are utilized the results are even more favorable (Cahil et al., 2013). These medications can also be used in individuals with co-morbid, but stable, psychiatric or substance abuse conditions (Anthenelli et al., 2016). Addressing smoking in patients with other substance use disorders is imperative as ongoing tobacco use can lead to relapse (Weinberger et al., 2017)

**2.5 Harm reduction strategies** are possible in hospitalized patients. It is advisable for providers to check state monitoring websites prior to prescribing. This is especially important when it comes to controlled substances. One way to reduce harm is to avoid prescribing benzodiazepines to those with comorbid opioid use disorders (FDA, 2016; Dowell et al., 2016). This combination is particularly harmful due to the risk of synergistic respiratory depression and the risk of overdose attributed to this combination is on the rise and contributes to a significant number of presentations to the ED (SAMHSA, 2014).

When encountering patients that are not motivated to quit opioid use despite brief motivational interventions, and even in anyone with history of IV heroin, it helps to provide education on potential to overdose and on the use of naloxone rescue kits (Lott et al., 2016). Lastly, some parts of the country offer “safe injection sites” (Broadhead et al., 2002). These aim to provide clean injection equipment, education on safer injection, medical response in overdoses as well as resources for entering detoxifications, other substance abuse treatment programs, health and social services and legal assistance (Kimber et al., 2005; Small et al., 2009. The existence of such sites has been shown to lead to reduction in overdose mortality (Marshall et al., 2011), syringe sharing (Kerr et al., 2005; Fast et al., 2008) and demand for ambulance services (Salmon et al., 2010). It has also led to increased referral and uptake of detoxifications and other substance use treatment (Wood et al., 2007; Tyndall et al., 2006) and prevent HIV and HCV cases and overdose deaths (Irwin et al., 2016).

As a last resort, if patients are endangering themselves or others through ongoing substance use, there is evidence for efficacy in relapse prevention through coercive substance abuse treatment (Anglin et al., 1998). Currently, 37 states and the District of Columbia have statutes in place allowing for such involuntary commitment for substance use (NASMDL, 2017).

**2.6 Case management** is an effective approach to repeat utilizers (Siegel et al., 1995). It consolidates to a single point responsibility for clients who otherwise receive services from multiple agencies. When implemented, case management will enhance the scope of addiction treatment and recovery continuum. As a single point of contact, they develop a personal relationship being able to better understand the needs, and individualize it, as well as better being able to predict relapse triggers and crisis. It is anticipatory and flexible. Case managers also help clients access a wide variety of services at different levels such that their conditions do not escalate to the inpatient level (SAMHSA, 2000).

**3. Population-based Strategies**

Although there is not a lot of evidence currently, these could be a focus of pilot programs or trials. One example is an online drug monitoring system through self-report (GDS, 2017). Here participants can anonymously report their use, receive feedback in comparing their use to the peers, and also gain insight into condition, dangers of use and receive resources for help. These also work at a smaller, community, level (AreYouAwareNC, 2017). The NIAAA has a cruder version in the form of a printable planner, “Rethinking Drinking”, which allows individuals to analyze their own drinking and offers the latest, research-based information on the most effective ways to cut down, if necessary (Rethinking Drinking, 2016). TakeControl is a mobile application initially developed by Drexel for binge eating and is now being developed for substance use disorders. It acts on the CBT principle, tracking users’ individual patters of consumption and binge drug use behavior, alerting them at times when they are more susceptible to use (TakeControl, 2012). This allows users to record multiple mood states, binge drug use activities and urges and whether medications have been taken.

**CONCLUSION:**

Hospitalizations present an unique opportunity to identify those with SUD and prompt sufferers into treatment. Several approaches mentioned here have proven efficacy and should be considered in order to better address the needs of our SUD population and minimize potential morbidity and mortality.

Primary preventive strategies target vulnerable, at risk, populations and prevent exposure. These rely heavily on providing education either to the individuals or other specialties involved in the care.

Direct interventions act on individuals who are already advanced in their addiction. These can include a wide range from SBIRT and MAT, to interventions geared at smoking cessation, to providing repeat utilizes with case managers as well as sponsors. There is also support for harm reduction approaches to those with less motivation for abstinence.

Population-based strategies constitute an up and coming approach at targeting a wide range of individuals, helping them recognize that they have a disorder, gain insight into the condition and severity, and providing them with resources to pursue treatment.

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