Impaired Drivers: Where do they come from and can they be identified?
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Screening and assessment of impaired drivers is critical to lessen their chances of recidivism. Offenders vary on a range of socio-demographic characteristics, including age, traffic and non-traffic offences (Bailey and Bailey, 2000; Begg et al., 2003; Davis and Broughton, 2002; Stewart et al., 2002), and marital status (Ferguson et al., 1999; Nickel, 1991; Norchajski and Wieczorek, 2000). In addition, this population may use multiple drugs (Appenzeller et al., 2005; Skurtveit et al., 2002), and may also combine alcohol and drugs (Appenzeller et al., 2005; Christophersen, 1990; Soderstrom et al., 1997). Soderstrom et al. (2001) found a complex relationship between a diagnosis of a psychoactive substance use disorder, risk-taking disposition, and being convicted of driving dangerously. Bingham et al. (2008) tested the psychosocial predictors of substance-involved driving and driving behavior. Hingson et al. (2008) found that ever having experienced drug dependence was the stronger predictor of driving under the influence of drugs and motor vehicle crash among persons who consumed alcohol and drugs, and C’de Baca et al. (2009) found great risk of being in a crash while on a central nervous system depressant and great risk of a traffic conviction with a stimulant use disorder. Brady and Liu (2012) found more than half of fatally injured drivers had been using alcohol and/or other drugs and approximately 20% had been using two or more drugs.

Addiction or substance dependence is a disease of relapse. Success can be measured by the length of abstinence or longer periods between the occurrences of substance use or impaired driving incidents. In order to combat impaired driving, there are a number of tools and sanctions currently available. These include screening, assessment, brief interventions (SBIRT), DUI/DWI education courses, drug and alcohol treatment, alcohol monitoring technologies (e.g., ankle bracelet to monitor alcohol use, ignition interlock), frequent testing for alcohol and drugs, probation, and incarceration.

Screening normally will occur early in the adjudication process to identify those with substance use problems and high-risk offenders who need more intensive treatment then do low-risk offenders (social drinkers) who would benefit from shorter or broader educational programs (Wells-Parker & Popkin, 1994).

In addition to oral fluid screening for drugs, screening instruments help determine the offender alcohol or drug abuse or dependence problems based on the results of specific testing instruments. Most screening instruments are brief; some can be self-administered and some do not query about drugs (prescription or illicit). Instruments which are often used include include the Michigan Alcohol Screening Test (MAST), the Drug Abuse Screening Test (DAST), the Drug Use Screening Inventory (DUSI), the Substance Abuse/Life Circumstance Evaluation (SALCE), the Substance Abuse Subtle Screening Inventory (SASSI), and the Alcohol Screening Test (AUDIT).
In comparison, the purpose of an assessment is to determine the severity of dependence and to identify the appropriate level of care needed to address it. Assessments are more formal, comprehensive, and in-depth than screenings. They are also typically administered by trained practitioners and the process permits individual offender’s needs to be matched to a specific treatment (Wells-Parker & Popkin, 1994) to increase the effectiveness of treatment (Institute of Medicine). One widely-used assessment is the Addiction Severity Index (ASI) (McLellan et al., 1980), which examines several different areas including medical history, employment/support, alcohol and drug use, legal issues, family/social, and psychiatric disorders.

This paper is a preliminary study of the characteristics of impaired drivers who entered substance abuse treatment programs funded by the Texas Department of State Health Services. These are the purposes of this paper:

1. To identify the sources which refer impaired drivers to treatment.
2. To determine differences in offenders based on referral source.
3. To investigate characteristics of patients who are not referred by the traditional DUI/DWI system but who come into treatment from other sources.

2.1 Data sources
This is an analysis of 45,045 admission records of individuals entering treatment programs funded by the Texas Department of State Health Services (DSHS) between 2005 and 2009. Criteria for inclusion in this study included (1) reporting past year arrest for DUI/DWI; (2) reporting legal status on DUI/DWI probation; or (3) referred to treatment by DUI/DWI probation officer. For purposes of brevity, these individuals will be referred to as “impaired drivers.”

The dataset was extracted from DSHS’ data system that reports to the federally-mandated Treatment Episode Data System (TEDS). The treatment programs reporting to DSHS provide services across the state and eligibility is based on clinical and financial need. The dataset includes programs that receive state or federal funds; it does not include private-for-profit agencies.

Data collected at admission reflect the primary and secondary substance abuse diagnoses of the individuals entering treatment (even though their DUI arrest may have been based on their BAC and they were not tested at arrest for the presence of a drug). The most common drug categories are reported in this paper; another 1% who had problems with a variety of other drugs were excluded. If the individual entered treatment more than once during this time period or reported more than one past-year arrest, the subsequent admission records were also included.

The data included the number of days in that month that the patient experienced any of the six domains of the Addiction Severity Index (ASI): health, family, employment, social, psychological, or illness due to alcohol or drug use. To facilitate comparison in this paper, the six domains were combined to produce the mean number of days in the past 30 that the patient reported having at least one problem.
DSHS provided a copy of the dataset to the author. No identifying information was received on any patient and this research was approved by the Institutional Review Board of the University of Texas at Austin. Analysis was performed in SAS (SAS/STAT software, Version 9.2, SAS Institute Inc., Cary, NC).

3.1. Findings.
The DSHS dataset includes some 68 sources of referrals to treatment. Of all the impaired drivers admitted to treatment between 2005 and 2009, 51% were referred by DUI/DWI probation departments; 14% were referred by other probation agencies that did not deal with DUI/DWI cases but handled offenders committing property or other crimes (some of which would support their substance habits); 17% by other law enforcement agencies such as drug courts, police, parole, jails and other correctional facilities (which may handle misdemeanor drug offenses or public intoxication cases); 14% were self-referred; and 4% were referred by family or friend.

There were important differences among these drivers based on their source of referral and their socio-demographic characteristics (Table 1). Those referred from DUI/DWI probation were the least likely to be female, had fewer prior treatment admissions, were among the oldest, reported more months of employment and had fewer problems than those referred from other sources. Those who were self-referred were the oldest, most likely to be female, had more previous treatment admissions, had been using the longest, and reported more problems in the last 30 days.

<table>
<thead>
<tr>
<th>Source of Referral</th>
<th>n</th>
<th>%</th>
<th>% Female</th>
<th>Age</th>
<th># Prior Treatments</th>
<th># Mos. Employed Past Year</th>
<th># 12-Step Meetings in Past Month</th>
<th>Av Days Problems in Last 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Law Enforcement</td>
<td>5930</td>
<td>17%</td>
<td>26.1</td>
<td>32.1</td>
<td>1.0</td>
<td>3.9</td>
<td>6.3</td>
<td>6.1</td>
</tr>
<tr>
<td>Non-DWI Probation</td>
<td>4760</td>
<td>14%</td>
<td>24.4</td>
<td>31.5</td>
<td>0.6</td>
<td>6.0</td>
<td>4.8</td>
<td>4.2</td>
</tr>
<tr>
<td>DWI Probation</td>
<td>17574</td>
<td>51%</td>
<td>21.9</td>
<td>36.4</td>
<td>0.5</td>
<td>7.5</td>
<td>4.8</td>
<td>2.9</td>
</tr>
<tr>
<td>% Friend/Family</td>
<td>1306</td>
<td>4%</td>
<td>25.9</td>
<td>33.4</td>
<td>0.9</td>
<td>3.9</td>
<td>2.0</td>
<td>14.0</td>
</tr>
<tr>
<td>% Self Referral</td>
<td>4791</td>
<td>14%</td>
<td>33.0</td>
<td>37.0</td>
<td>1.2</td>
<td>4.9</td>
<td>3.8</td>
<td>15.5</td>
</tr>
</tbody>
</table>

Table 2 shows that different referral sources tended to handle offenders with different alcohol and drug problems. DUI/DWI probationers were most likely to have a primary problem with alcohol or sedatives such as benzodiazepines, while those with primary problems with cannabis were the most likely to be referred by other law enforcement agencies. Those with problems with methamphetamine or powder cocaine were the most likely to come from non-DUI/DWI probation departments and those with problems with heroin, other opiates or crack cocaine tended to refer themselves to treatment.
Table 2. Sources of Referral to Treatment by Clients with a Past-Year DWI Arrest: 2005-2009

<table>
<thead>
<tr>
<th></th>
<th>Alcohol</th>
<th>Cannabis</th>
<th>Meth</th>
<th>Crack Cocaine</th>
<th>Powder Cocaine</th>
<th>Sedatives</th>
<th>Other Opiates</th>
<th>Heroin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Law Enf</td>
<td>10.4</td>
<td>35.6</td>
<td>9.1</td>
<td>8.1</td>
<td>16.0</td>
<td>6.7</td>
<td>2.6</td>
<td>7.7</td>
</tr>
<tr>
<td>Non-DWI Prob</td>
<td>7.3</td>
<td>21.6</td>
<td>23.0</td>
<td>11.1</td>
<td>23.5</td>
<td>8.6</td>
<td>6.5</td>
<td>7.1</td>
</tr>
<tr>
<td>DWI Probation</td>
<td>50.3</td>
<td>22.5</td>
<td>15.7</td>
<td>11.5</td>
<td>19.5</td>
<td>21.3</td>
<td>12.8</td>
<td>4.5</td>
</tr>
<tr>
<td>% Friend/Family</td>
<td>2.5</td>
<td>1.4</td>
<td>5.1</td>
<td>5.6</td>
<td>2.6</td>
<td>3.9</td>
<td>7.6</td>
<td>7.2</td>
</tr>
<tr>
<td>% Self Referral</td>
<td>9.9</td>
<td>2.7</td>
<td>11.8</td>
<td>20.3</td>
<td>9.3</td>
<td>15.5</td>
<td>23.8</td>
<td>34.2</td>
</tr>
</tbody>
</table>

The socio-demographic characteristics of the impaired drivers also varied by the primary substance of abuse (Table 3). The offenders with a primary problem with alcohol were the most likely to be referred by DWI probation and the least likely to have a second problem with another drug: 66% reported no second problem.

Those with a primary problem with cannabis reported other law enforcement agencies as their most common referral source. These offenders were the youngest, male, and reported fewest problem days as measured on the Addiction Severity Index; 47% of the cannabis users reported a secondary problem with alcohol.

Table 3. Characteristics of Patients With A Single Past-Year DUI Arrest by Primary Substance Problem at Admission to Treatment: 2005-2009

<table>
<thead>
<tr>
<th></th>
<th>Alcohol</th>
<th>Cannabis</th>
<th>Methamphetamine</th>
<th>Crack Cocaine</th>
<th>Powder Cocaine</th>
<th>Sedatives</th>
<th>Other Opiates</th>
<th>Heroin</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>27,295</td>
<td>5,717</td>
<td>1,812</td>
<td>1,341</td>
<td>1,963</td>
<td>638</td>
<td>1,515</td>
<td>1,076</td>
</tr>
<tr>
<td>% of All Admissions</td>
<td>67.0%</td>
<td>14.0%</td>
<td>4.5%</td>
<td>3.3%</td>
<td>4.8%</td>
<td>0.01</td>
<td>3.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Average Age (Years)</td>
<td>37.3</td>
<td>22.6</td>
<td>32.0</td>
<td>37.4</td>
<td>31.7</td>
<td>30.4</td>
<td>34.6</td>
<td>32.0</td>
</tr>
<tr>
<td>% Male</td>
<td>75.3</td>
<td>76.7</td>
<td>55.2</td>
<td>57.1</td>
<td>65.7</td>
<td>40.1</td>
<td>48.6</td>
<td>61.3</td>
</tr>
<tr>
<td>Mean Days ASI Problems in Last 30</td>
<td>6.2</td>
<td>5.6</td>
<td>9.6</td>
<td>12.7</td>
<td>7.6</td>
<td>12.4</td>
<td>15.1</td>
<td>15.1</td>
</tr>
<tr>
<td>% Used Daily in Last 6 Months</td>
<td>29.0</td>
<td>35.3</td>
<td>37.5</td>
<td>44.4</td>
<td>21.2</td>
<td>54.4</td>
<td>74.9</td>
<td>71.4</td>
</tr>
<tr>
<td>% with Secondary Sub. Problem</td>
<td>34.7</td>
<td>67.5</td>
<td>73.1</td>
<td>76.2</td>
<td>77.4</td>
<td>75.0</td>
<td>67.2</td>
<td>70.7</td>
</tr>
</tbody>
</table>

Those with primary problems with heroin or other opiates were the most likely to be self-referred to treatment and the most impaired. They were among the most likely to report more days of ASI Index problems in the last 30 days and more likely to report daily use. For those with a primary problem with heroin, their second favorite problem drug was cocaine, which, in combination with heroin, is known as a “speedball.”

Users of opiates and sedative tended to prefer “downer” drugs as their second drug of abuse: 26% of those with a primary problem with other opiates reported sedatives/benzodiazepines as their second drug of abuse and 19% reported alcohol, while of those with problems with sedatives, 17% had a secondary problem with other opiates and 31% had a second problem with alcohol.

The offenders with a primary problem with powder cocaine were the least likely to report daily use, but they were the most likely to report a second drug problem, with the
favorite drug being alcohol (49%). The offenders with a primary problem with crack cocaine were the oldest, were equally likely to have been referred by DWI or non-DWI probation, and 45% had a secondary problem with alcohol. Alcohol, when combined with cocaine, produces cocaethylene, a substance which intensifies cocaine’s euphoric effects (McCance et al., 1995).

Those with problems with methamphetamine were among the most likely to report problems with other drugs, with alcohol being a problem for 30% of them and marijuana being a problem for another 23%. Overall, alcohol as a secondary problem varied by drug, with nearly half of those using powder cocaine or marijuana also having a problem with alcohol, while less than 20 percent of those using heroin or other opiates reported a secondary problem with alcohol.

4. Discussion

The majority of DUI/DWI referrals to Texas treatment between 2005 and 2009 were from the criminal justice system, but many of the offenders were not on DUI/DWI probation but came from other referral sources. In addition, many of the DUI/DWI offenders were poly-substance abusers, who can pose significant treatment challenges. Oral fluid tests should be routinely administered to all persons suspected of a DUI/DWI, and followed by a blood or urine test if drugs are found by the oral test (Brady and Li, 2012).

In-depth screening and assessment using instruments which query about use of alcohol and drugs and toxicology results should be used for all individuals arrested for DUI/DWI to identify the extent of their substance use. A DUI/DWI is a good predictor of further potential alcohol and drug use problems (Brady and Li, 2012), as well as other anti-social or offending behaviors, and a first arrest offers an opportunity to intervene with substance users before their conditions become more severe and and additional driving infractions occur (Wieczorek & Nochajski, 2005). It should be recognized that DUI/DWI is a broad social screening mechanism for alcohol and other drug problems (Maxwell et al., 2007) and these referring agencies need to identify and address the underlying substance abuse problem as well as reduce the risk of further driving recidivism.

The finding that DWI probation departments handled more of the drivers impaired by sedatives is an indication that the physical effects of these drugs may make their behaviors more likely to be noticed in a traffic stop, while users of the stimulant type drugs (methamphetamine, crack cocaine, powder cocaine) may go unnoticed in a traffic stop.

Additional monitoring of drug use, as well as alcohol use, during and after treatment is recommended. Monitoring for alcohol use may result in impaired drivers switching to use of cannabis (Maxwell et al., 2007), and especially to the use of the synthetic cannabis products, which may or may not be capable of being tested even in drug confirmation procedures. Monitoring for a range of drugs is needed.

Screening should also include psychological status. An earlier study of this group of offenders found they were at an increased risk of experiencing comorbid psychiatric
disorders, and such mental health concerns are likely to have a significant negative impact on a range of issues, including recidivism rates (Freeman & Maxwell, 2007).

Our earlier studies also found there are different protective and risk factors associated with successful treatment completion. Protective factors include a residential treatment environment, medication for anxiety/depression, the involvement of family and friends in the treatment process, attending 12-step meetings, more months employed prior to treatment entry, and the overall length of stay in treatment. The factors that are likely to negatively affect their ability to successfully complete treatment are the use of injected drugs, daily substance use, and being female.

At 90-day follow-up after treatment, protective factors included more 12-step meetings attended in the last 30 days. The risk factors included living in an environment where there is exposure to alcohol and/or drug use, daily substance use in the six months prior to treatment, more DUI/DWI arrests in the past year, and more family/psychological/employment problems.

Ultimately, abstinence and recidivism outcomes can be lessened with close coordination between treatment and probation. Communication between these parties can facilitate monitoring and lead to improved supervision and treatment plans through the sharing of information. Other strategies/interventions that should be given consideration are sober housing for those who are at high risk of relapse, the use of mental health medications, medication-assisted therapy for substance dependence, and the use of alcohol and drug monitoring technologies for those who are high-risk.

Components of Treatment:

Screenings and Brief Interventions (SBIRT) are delivered following admission to an emergency room or trauma department. They are designed to help problem alcohol and drug users initiate change and seek treatment for their dependency issues. Many SBIRTs rely on the use of motivational interviewing, a one-on-one patient-centered, non-confrontational counseling session that can include direct advice to reduce or stop substance use.

Treatment itself is a long-term and ongoing process that begins with intensive services and eventually tapers off into regular 12-step meetings. Treatment can encompass a range of interventions at various levels of care. The appropriate level for an individual offender is determined based on the findings of an assessment. Different levels of treatment include:

Detoxification – Detoxification—hospital, medical unit in a treatment program, outpatient. Removal of toxins and and treatment of medical problems. It is not treatment but is a precursor to treatment. It is not cost effective unless followed by treatment.

Residential—may last 30-90 days in an intensive live-in program that is recovery oriented. Some programs take the mother and her children. The 24-hour community experience is a fundamental aspect, and elements of the therapeutic process can include encounter groups, individual therapy, educational sessions
and residential job functions. The use of privileges and sanctions is a method of motivating behavior though the stages of the program.

**Outpatient** – Outpatient can vary from full day programs to occasional visits with a therapist or counselor in individual or group therapy settings.

Both residential and outpatient programs include medical management, family therapy, individual and group counseling, Alcoholics Anonymous/Narcotics Anonymous/12 Step membership, vocational services, parenting skills, behavior modification, frequent urinalysis & drug testing (24/7), medication-assisted treatment, etc.

There are FDA-approved pharmacological treatments available to treat alcohol and drug dependence.

**ALCOHOL (FDA Approved)**

Naltrexone (Revia)-1 pill per day  
Depo-Naltrexone (Vivitrol)-injected every 30 days.  
Naltrexone reduces relapse to heavy drinking. Useful for alcohol patients with a long history of relapses. Naltrexone lowers euphoria after drinking but may lose effects after a year. Use in appropriately selected patients with psychosocial therapies. Vivitrol improves adherence and reduces side effects and blocks impulses to discontinue its use.

Acamprosate (Campral) pills-3x/day  
Disulfiram (Antabuse) 1 pill/day. It is effective for those who are highly compliant or receiving medications under supervision. May simplify urges to use.

**Under study**

Topiramate (2 oral doses per day)-May prove more effective than naltrexone.  
Ondansetron  
Selective Serotonin Reuptake Inhibitors (SSRI)

**OPIATES (FDA Approved)**

Naltrexone (Revia)-1 pill per day  
Depo-Naltrexone (Vivitrol)-injected every 30 days.  
Naltrexone is an antagonist—blocks opioid receptors so patient cannot experience euphoria

Methadone-daily oral dose  
Buprenorphine-daily pill or film  
Duo (Suboxone is buprenorphine and naloxone in a combination that is a partial agonist that causes withdrawal if used with opioids)  
Mono (Subutex)
REFERENCES


