The **Computerized Assessment & Referral System (CARS)**

**Project Update**

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“The one thing that unites all human beings, regardless of age, gender, religion, economic status or ethnic background, is that, deep inside, we all believe that we are above average drivers.”

Dave Barry
Update Objectives

• Mention Theoretical Foundations for CARS
• Illustrate Psychiatric Co-morbidity among DUI Repeat Offenders
• Describe the Purpose of CARS
• Describe the 4 Phases of CARS research
  – Development; usability; randomized controlled trials; follow-up
• Future activities
THEORETICAL FOUNDATIONS
Addiction Syndrome Model

- Expressions of addiction are opportunistic and associate with vulnerable hosts.
- Behavioral (e.g., gambling disorder) & chemical (e.g., alcoholism) expressions primarily have common bio-psycho-social etiology and shared sequelae.
- Psychiatric disorder usually is antecedent to addiction, but sometimes is consequent.

Addiction Syndrome Model

• DUI recidivism is related to the extent of psychiatric comorbidity
  – ~99% of repeat DUI offenders evidenced some expression of addiction in our early work
• Few DUI treatment programs have the resources to identify psychological problems
• CARS is a technological instrument designed to identify & describe these issues, leading to more and better treatment opportunities
When is Addiction Addiction?

- Syndrome Disorder?
- Manic Episodes
- Addiction (e.g., alcohol dependence; gambling disorder)
- Personality Disorder
- Other Unknown Disorders
- Depression
WHEN IS DUI, DUI?
AA/AD, DA/DD, ND, &/or PG (98%)
CD &/or ADD &/or IED (27%)
PTSD &/or GAD (20%)
MDD &/or DYS (12%)
Bipolar (8%)
No Disorders (1%)

Lifetime Prevalence
% represents given combination of disorders

AA/AD = Alcohol abuse or dependence; DA/DD=Drug abuse or dependence; ND=Nicotine dependence; PG=Pathological gambling; CD=Conduct disorder; ADD=Attention deficit disorder; IED=Intermittent explosive disorder; PTSD=Post-traumatic stress disorder; GAD=Generalized anxiety disorder; MDD=Major depression; DYS=Dysthymia; Bipolar=Bipolar I or II.
Perspective in Science

“The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them...”

Sir William Bragg (1862 – 1942)
Comorbidity & DUI Recidivism

Number of lifetime disorders and offense after treatment

- % of all those with a given # of disorders who offended
- % of all people who had a given # of disorders

- 0 disorders (n=8)
- 1 disorder (n=240)
- 2 disorders (n=188)
- 3 disorders (n=135)
- 4 disorders (n=78)
- 5 disorders (n=29)
- 6 disorders (n=21)
- 7 disorders (n=6)
Percent of Total Traffic Fatalities that are Alcohol-Related

Adapted from NHTSA, 1993-2010
“Focusing on alcohol misuse to the exclusion of attendant behavioral problems is quite likely inappropriate for about half the population of offenders” (p. 529).

“Treatment programs focusing exclusively on changing alcohol consumption behavior are not likely to reduce accident risk for some of the offender groups” (p. 443).

New Treatment Target:

PSYCHIATRIC COMORBIDITY
The Need for CARS

- Psychiatric comorbidity in DUI populations
- Mental health issues linked to recidivism
- Screening for mental health issues beyond alcohol-use disorders is rare within DUI treatment programs
- DUI treatment providers rarely have the training or experience to identify mental health issues among their clients
Associate Director for Research at the Division on Addiction

SARAH E. NELSON, PH.D.
Generalized Anxiety Disorder  Major Depressive Disorder  Dysthymia  Bipolar I Disorder  Bipolar II Disorder  Panic Disorder  Alcohol Abuse  Alcohol Dependence  Post Traumatic Stress Disorder  Substance Abuse  Personality  Tobacco Use  Oppositional Intermittent Explosive Disorder  Conduct Disorder  Personality Disorder  Psychosocial Risks  Peer Networks  Psychosis  Gambling Disorder  Obsessive Compulsive Disorder  Attention Deficit Hyperactivity Disorder...  and more
CARS: The Computerized Assessment and Referral System

• Standardized mental health assessment adapted from the Composite International Diagnostic Interview (CIDI)

• Diagnostic report generator that gives providers and clients:
  
  • Immediate diagnostic information for DSM-IV Axis I disorders
  
  • Geographically and individually targeted referrals
What Is the purpose of CARS?

- Identify mental health issues that influence DUI.
- Identification of these issues is a first step toward intervening to reduce their impact on DUI and improve offenders’ chance of rehabilitation.
How is **CARS** unique as a mental health assessment?

- **CARS** is adapted from an internationally validated assessment, the Composite International Diagnostic Interview (CIDI)
- **CARS** can be used by non-clinicians to identify psychiatric disorders for which a client qualifies or is at risk.
- **CARS** generates user-friendly reports at the click of a button.
- **CARS** runs on free open source software.
Phase I: Develop
Phase II: Test usability
Phase III: Implement and Test
Phase IV: Follow-Up
Testing Usability

Method:
• 5 DUI programs
• 3 months
• Online surveys

Feedback:
• Average time = 1 hour
• Longer than counselors preferred
• Clients rated the report as the most useful part of the experience.
Screener Enhancement

• Primary issue with CARS has been length

• Original screener could not stand alone

• Used evidence from past study to add questions to the screener to increase diagnostic accuracy.

• Now offer a CARS Screener that takes 20-50 minutes to complete and offers good indication of diagnostic areas that need further assessment.
Implementation Trial
Implementation Trial

• First offender and repeat offender programs
• Randomization w/in program
• CARS Screener vs. Comprehensive CARS
• Self-administered CARS Screener vs. Interviewer-Administered CARS Screener
• Follow-up Outcomes (6 months+)
Implementation Trial: Preliminary Findings

- **375** repeat DUI offenders enrolled (51.6% of all)
- **163** first-time DUI offenders enrolled (71.2% of all)

- **CARS** data available for **256** repeat offenders and **129** first-time offenders
Plan to compare >=.20 group to others on psychiatric comorbidity and outcomes
Implementation Trial: Screener Findings

- Positive screen indicates that further assessment is required, NOT that the respondent qualifies for the disorder.
- Full CARS provides diagnostic information
Implementation Trial:
Repeat Offender Screener & Full CARS Findings

- Gambling Disorder
- Tobacco Dependence
- Drug Use Disorder
- Alcohol Use Disorder

Past Year Met Criteria (Full CARS) | Past Year Screen | Lifetime Screen
Implementation Trial:
Repeat Offender Screener & Full CARS Findings

Social Phobia
- Past Year Met Criteria (Full CARS)
- Past Year Screen
- Lifetime Screen

PTSD

Generalized Anxiety

Panic Disorder

Past Year Met Criteria (Full CARS) Past Year Screen Lifetime Screen
Implementation Trial:
Repeat Offender Screener & Full CARS Findings

- Mania
- Suicidal Ideation
- Depression (excl. mania)
- Depression (incl. mania)

- Past Year Met Criteria (Full CARS)
- Past Year Screen
- Lifetime Screen
Implementation Trial:
Repeat Offender Screener Findings (NOT definitive diagnoses)

- Attention Deficit Hyperactivity Disorder
- Intermittent Explosive Disorder
- Oppositional Defiant Disorder
- Conduct Disorder

Past Year Screen vs Lifetime Screen

- Past Year Screen
- Lifetime Screen
Implementation Trial:
Repeat Offender Screener Findings (NOT definitive diagnoses)

- Cluster A (schizotypal, schizoid, paranoid)
- Cluster C (avoidant, dependent, obsessive-compulsive)
- Borderline
- Antisocial

Bar chart showing percentages for probable and possible cases.
Implementation Trial: Self-Administered vs. Interviewer-Administered

• Screening results did not differ significantly by condition, with one exception
  – DUI offenders were more likely to report symptoms qualifying them for conduct disorder in the SA condition than in other conditions

• Offenders in the SA condition tended to have more positive screens than others, but this result only approached significance (p = .06-.09)
Implementation Trial: Conclusions To Date

• Continued evidence of comorbidity in the repeat DUI population
  – Particularly anxiety-related disorders

• CARS screener does a very good job of identifying substance use disorders; might be overly sensitive for other disorders
  – 100% of positive screens qualify for SUDs
  – ~40-50% of positive screens qualify for mood & anxiety disorders
  – ~20% of positive screens qualify for PTSD
Implementation Trial: Conclusions To Date

• Results from self-administered screener do not differ fundamentally from those for the interviewer-administered screener
  – Might be more sensitive
• Both counselors and clients are able to use CARS in a DUI program setting.
CARS: Follow-Up

• Currently conducting follow-up interviews with first-time and repeat offenders
• Key measures:
  – Alcohol and drug use
  – Treatment
  – Lapses and relapses
  – Probation violations
  – Behavioral changes
  – Mental health check-in
CARS

NEXT STEPS
Next Steps:
Finalize CARS for Distribution

• Code finalization and standalone .exe
• Module validity
• Reliability
  – Pre- and post-conviction
• Continued testing and version modification
Next Steps:
Standardization and Accessibility

• Develop online CARS portal for information, dissemination, support, & maintenance
• Develop and standardize protocols & procedures for training, installation, maintenance, updates, reports, & data transfer
Next Steps: Moving Beyond

• Move beyond Massachusetts
  – 5 pilot sites throughout US

• Move beyond 1st offender and 2nd offender programs
  – Pre-sentencing
  – Initial sentencing
  – Probation
  – Aftercare
  – DWI Courts
Next Steps: Move Beyond MA

• Develop criteria for site selection
• Select national pilot sites
• Integrate referrals for new sites
Next Steps: Move Beyond Post-Conviction DUI Programs

The time between sentencing and DUI treatment represents an assessment opportunity for at-risk clients.
Time to Treatment

• In our study, 48% of repeat offenders entered the mandatory inpatient treatment program more than 12 months after their offense

• 33% entered 6-12 months after their offense

• Only 12% entered within 2-6 months of their offense
“Treatment depends upon diagnosis, and even the matter of timing is often misunderstood. One does not complete a diagnosis and then begin treatment; the diagnostic process is also the start of treatment. Diagnostic assessment is treatment; it also enables further and more specific treatment.”
The **Computerized Assessment & Referral System:**

Q & A
Do I need to use full CARS or just the CARS screener?

• **CARS** is adapted from the Composite International Diagnostic Interview (CIDI).

• To generate full DSM-IV diagnostic level information consistent with the diagnoses generated by the CIDI, full **CARS** is necessary.

• The **CARS** screener identifies mental health risk areas and takes less time than full **CARS**.
  – The screener takes between 15-50 minutes to complete.
Do I need to use full CARS or just the CARS screener?

• Which version you use depends on your resources and goals
• We are currently testing how well the screener identifies mental health risk areas compared to full CARS.
• Possible to use the screener and then follow-up at a later time or with select clients with further CARS modules.
Is **CARS** a risk/needs assessment?

- Not in the traditional sense.
- However, **CARS** identifies specific mental health disorders for which an offender is at-risk.
- These identified mental health issues and the generated report in turn inform the user about the offender’s treatment needs.
Can CARS predict DUI recidivism?

• The primary purpose of CARS is to
  – identify mental health issues that might influence
    DUI behavior, and
  – facilitate additional treatment for those issues.

• Currently, CARS identifies DUI risk based on
  known predictors from the research literature.

• As we collect data from CARS, we will be able to
  modify this risk scale using empirical data
  to linking specific mental health profiles to recidivism risk.
How does CARS compare to the APPA Impaired Driving Assessment?

- The primary purpose of the APPA’s tool is to predict DUI recidivism and match this to level of supervision. A secondary use is to identify possible service needs, one of which is mental health.
- The primary purpose of CARS is to identify mental health issues among DUI offenders and facilitate treatment referral for those issues. A secondary use will be to predict DUI recidivism risk from those mental health profiles.
- If resources are available, the two could be used in a complementary fashion.
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- CARS Advisory Panel
- Staff and clients of:
  - Massachusetts Driving Under the Influence of Liquor Treatment Program
  - Advocates, Inc.
  - High Point
  - Lowell House
  - Behavioral Health Network
Additional Resources

• [www.divisiononaddiction.org](http://www.divisiononaddiction.org)
  – Division on Addiction’s main website
  – Current projects and publications

• [www.basisonline.org](http://www.basisonline.org)
  – Brief science reviews and editorials on current issues in the field of addictions
  – Addiction resources available, including self-help tools

• [https://www.facebook.com/divisiononaddiction](https://www.facebook.com/divisiononaddiction)
  – The Division’s facebook page

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  – Email us with any additional questions
References

References