CHA Division on Addiction
Cambridge Health Alliance

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

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

Toward CARS

THEORETICAL FOUNDATIONS

Addiction Syndrome Model

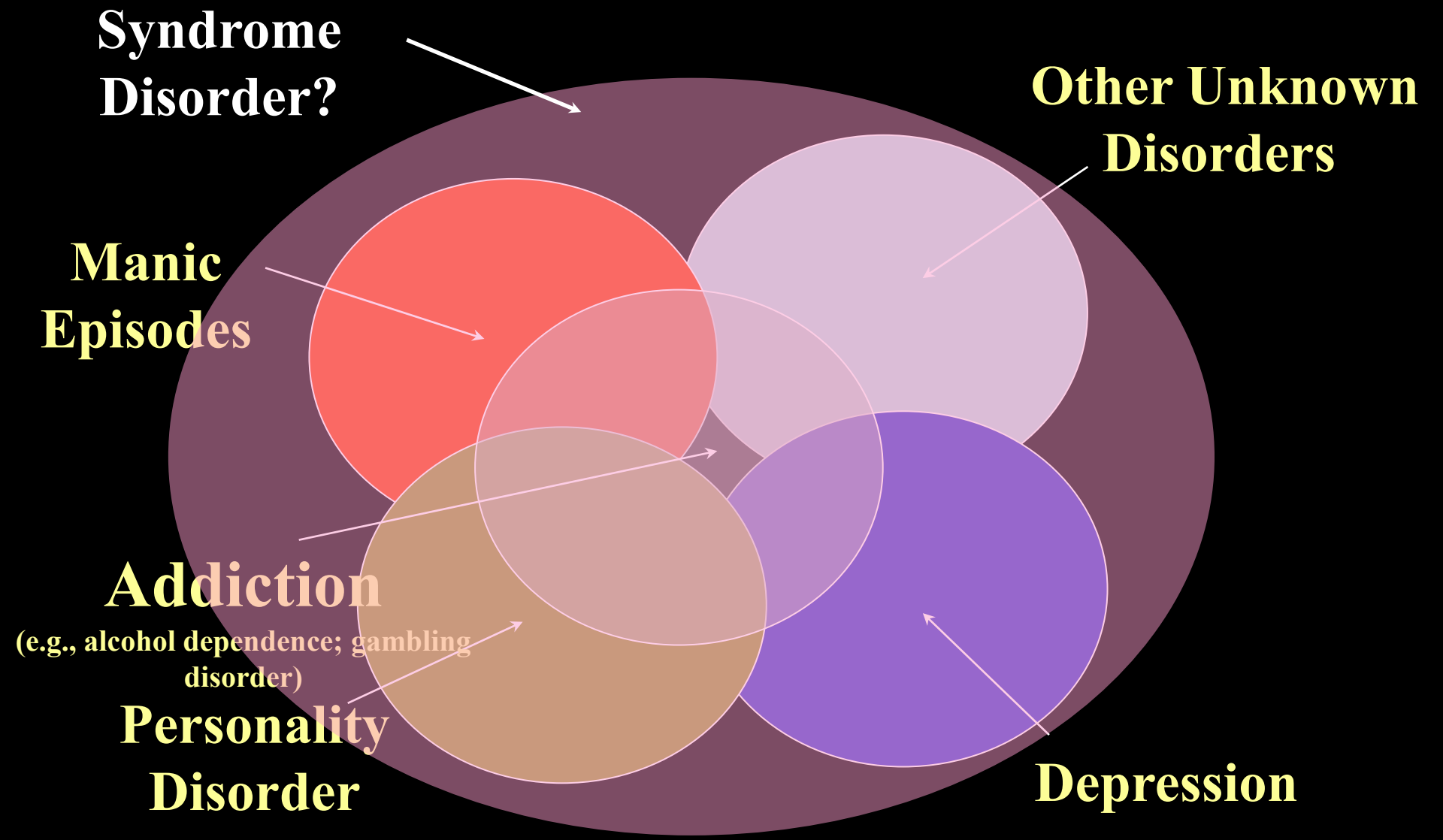
- Expressions of addiction are opportunistic and associate with vulnerable hosts
- Behavioral (e.g., gambling disorder) & chemical (e.g., alcoholism) expressions primarily have common bio-psycho-social etiology and shared sequelae
- Psychiatric disorder usually is antecedent to addiction, but sometimes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

Shaffer, H. J., LaPlante, D. A., & Nelson, S. E. (2012). *The APA Addiction Syndrome Handbook* (Vol. 1 & 2). Washington, D.C.: American Psychological Association Press.

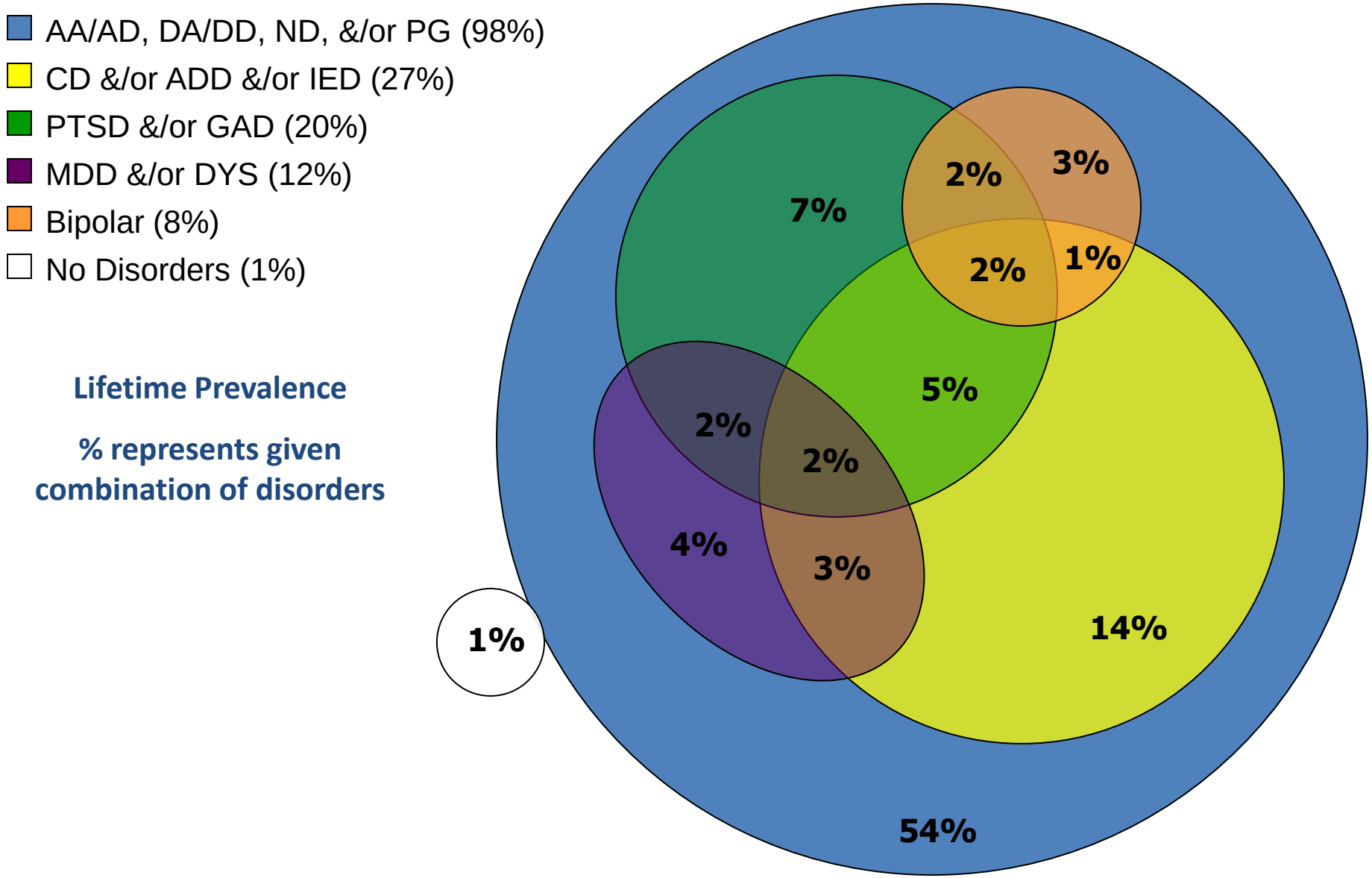
Addiction Syndrome Model

- 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?



WHEN IS DUI, DUI?



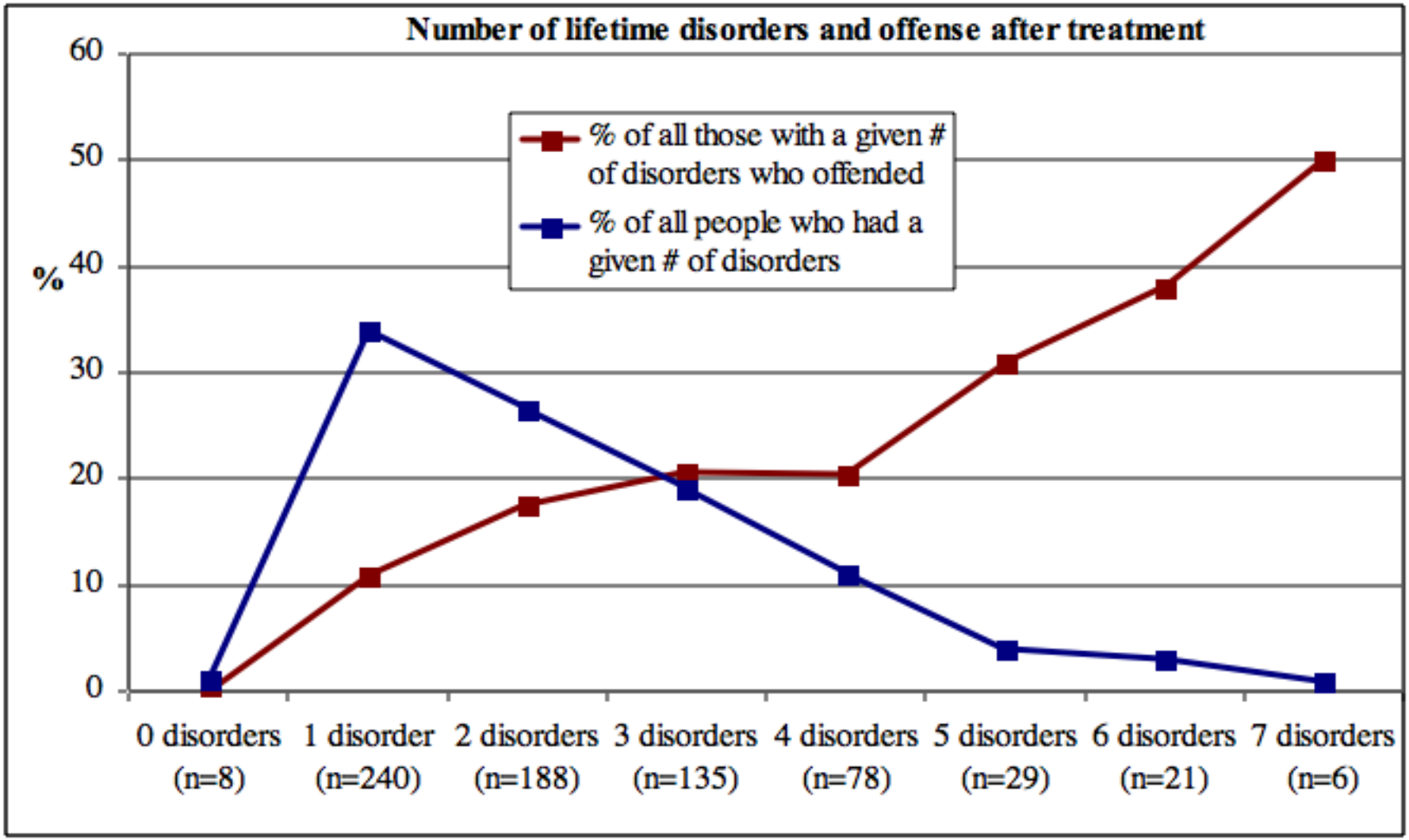
AA/AD = Alcohol abuse or dependence; DA/DD=Drug abuse or dependence; ND=Nicotine dependence; PG=Pathological gambling; CD=Conduct disorder; ADD=Attention deficit disorder; IED=Intermittent explosive disorder; PTSD=Post-traumatic stress disorder; GAD=Generalized anxiety disorder; MDD=Major depression;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

Perspective in Science

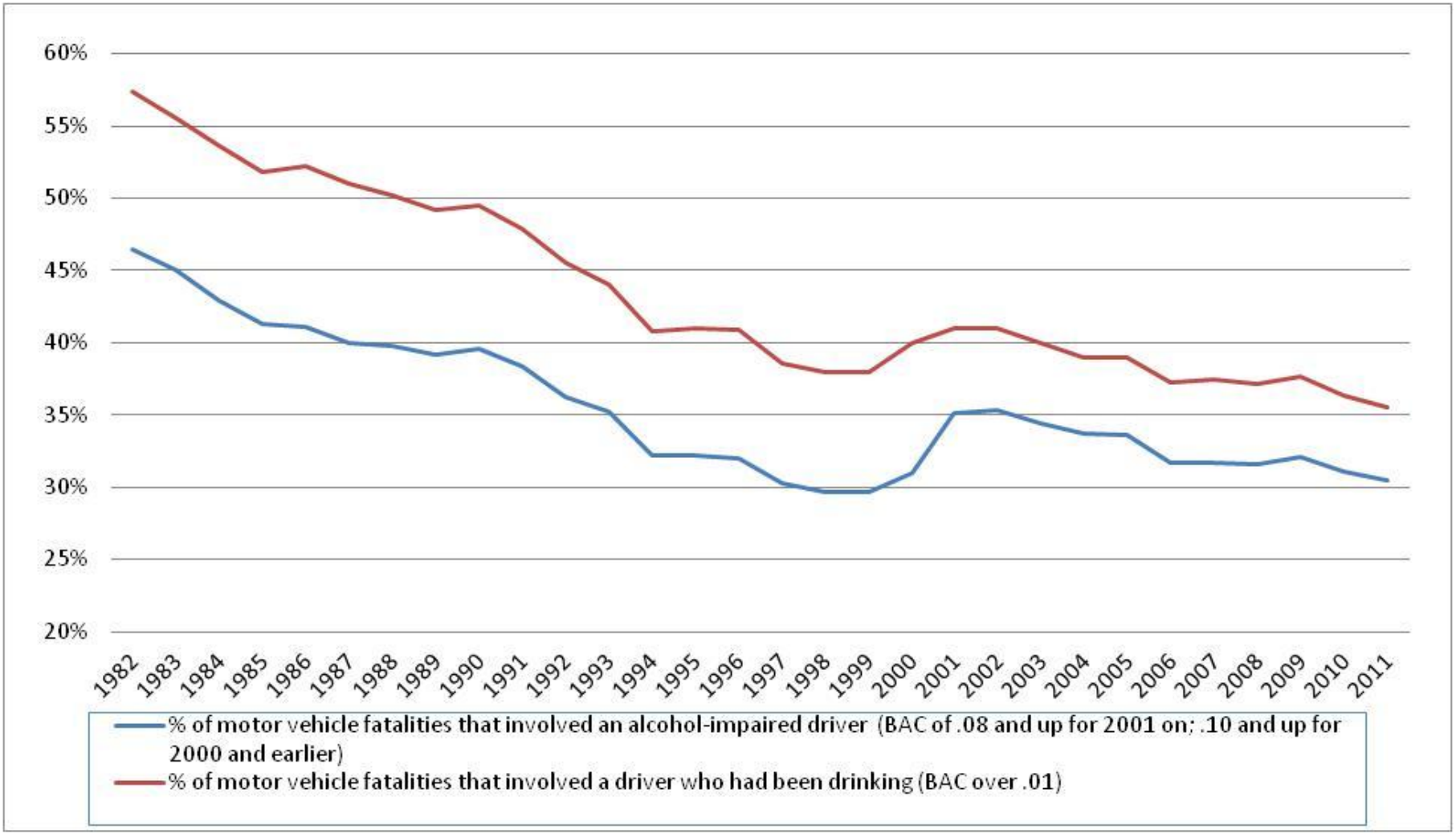
"The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them…"

Sir William Bragg (1862 – 1942)

Comorbidity & DUI Recidivism



Percent of Total Traffic Fatalities that are Alcohol-Related



Adapted from NHTSA, 1993-2010

Alcohol & Other Problems

"Focusing on alcohol misuse to the exclusion of attendant behavioral problems is quite likely inappropriate for about half the population of offenders" (p. 529).

Argeriou, M., McCarty, D., & Blacker, E. (1985). Criminality among individuals arraigned for drinking and driving in Massachusetts. *Journal of Studies on Alcohol, 46*(6), 525-530.

Alcohol & Other Problems

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

Wells-Parker, E., Cosby, P., & Landrum, J. (1986). A Typology for Drinking Driving Offenders: Methods for Classification and Policy Implications. *Accident Analysis and Prevention, 18*(6), 443-453.

New Treatment Target:

PSYCHIATRIC COMORBIDITY

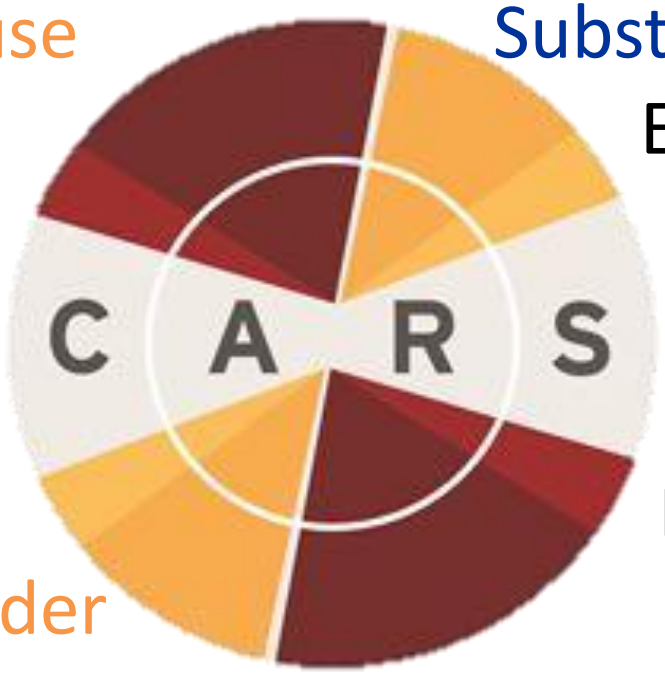
The Need for CARS

- 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

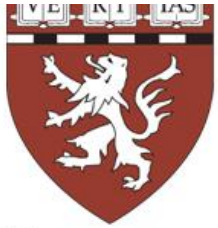
Associate Director for Research at the Division on Addiction

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 Substance Dependence Personality Eating Disorders Tobacco Use DUI Behavior Oppositional Defiant Disorder Intermittent Explosive Disorder DUI Behavior Conduct Disorder Criminal History Personality Disorder Psychosocial Risks Peer Networks Psychosis Gambling Disorder Obsessive Compulsive Disorder Attention Deficit Hyperactivity Disorder… and more



FOUNDATION FOR
ADVANCING ALCOHOL
RESPONSIBILITY



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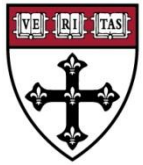


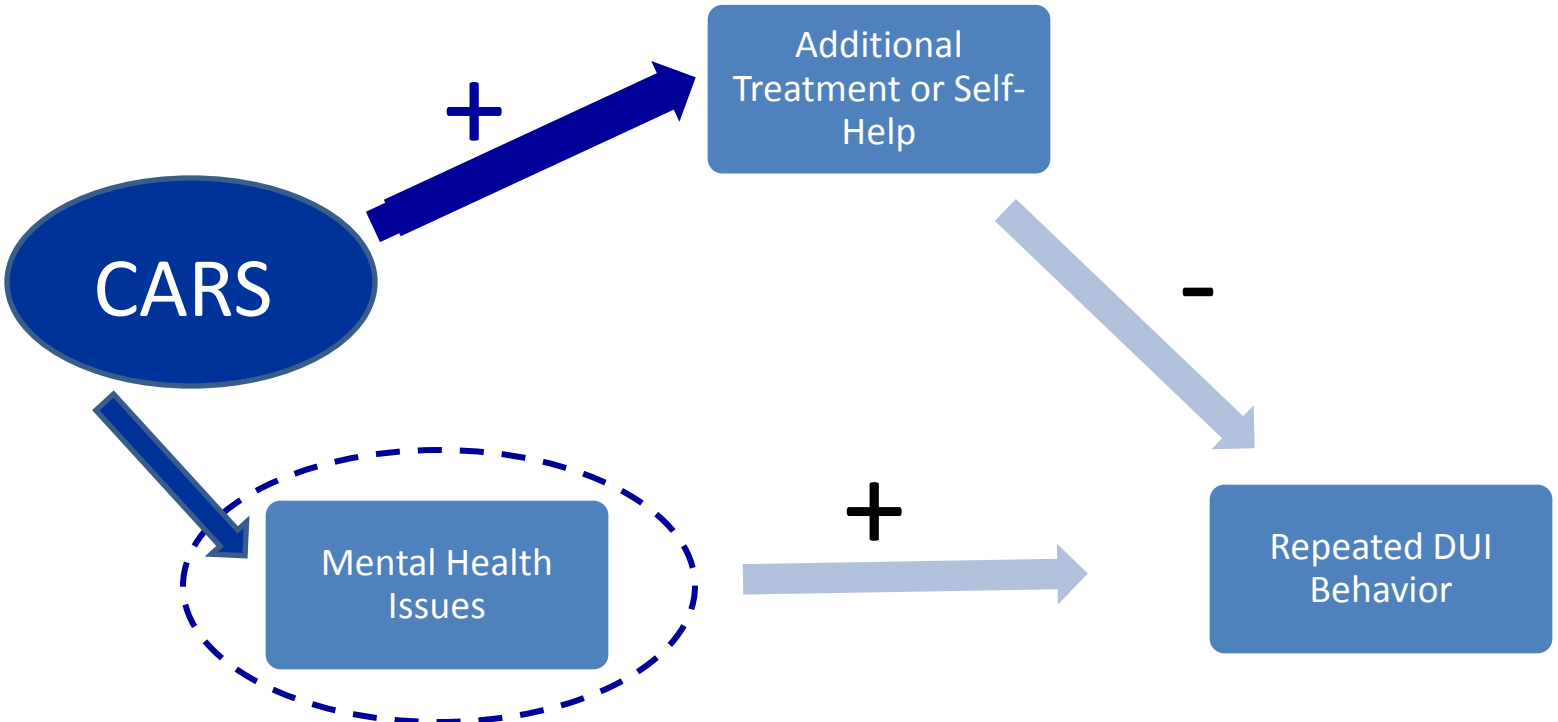
HARVARD
SCHOOL OF PUBLIC HEALTH

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

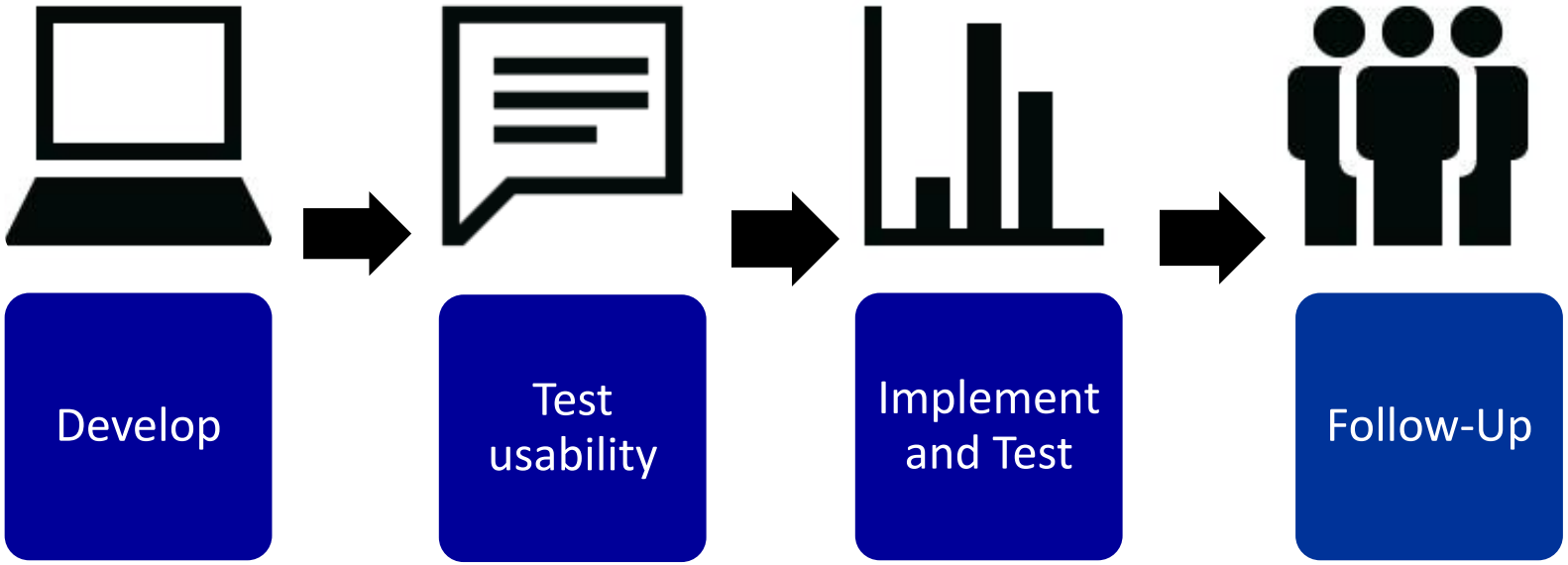
What Is the purpose of CARS?

- 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.


Develop
Test usability
Implement and Test
Follow-Up
Phase I
Phase II
Phase III
Phase IV

Testing Usability

Test usability

Method:

- 5 DUI programs
- 3 months
- Online surveys

Feedback:

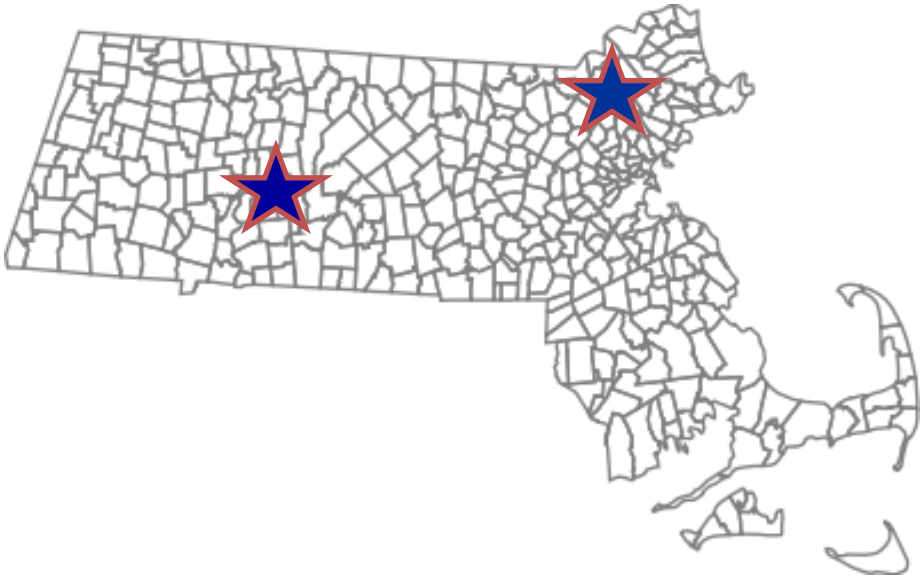
- Average time = 1 hour
- Longer than counselors preferred
- Clients rated the report as the most useful part of the experience.

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

Implement and Test

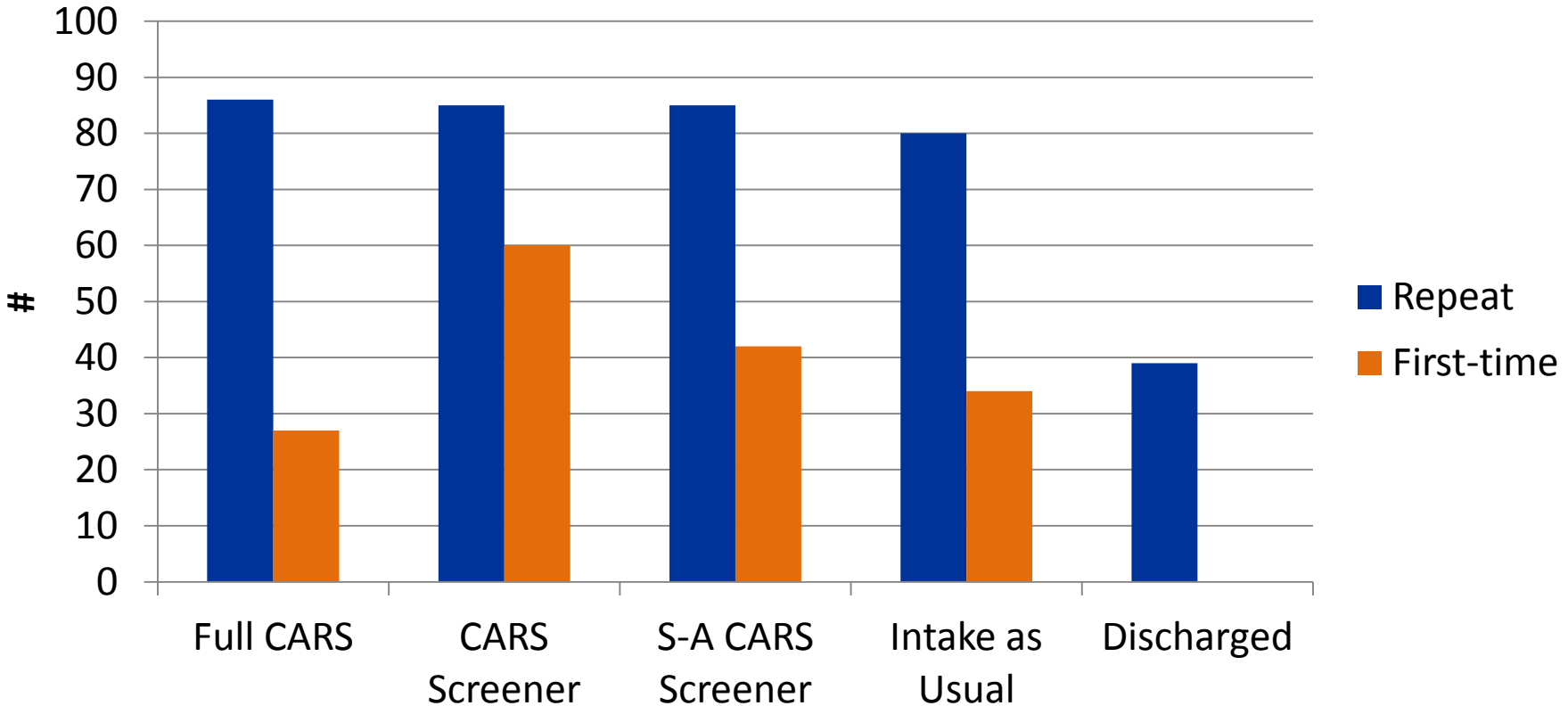


Implementation Trial

- 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+)

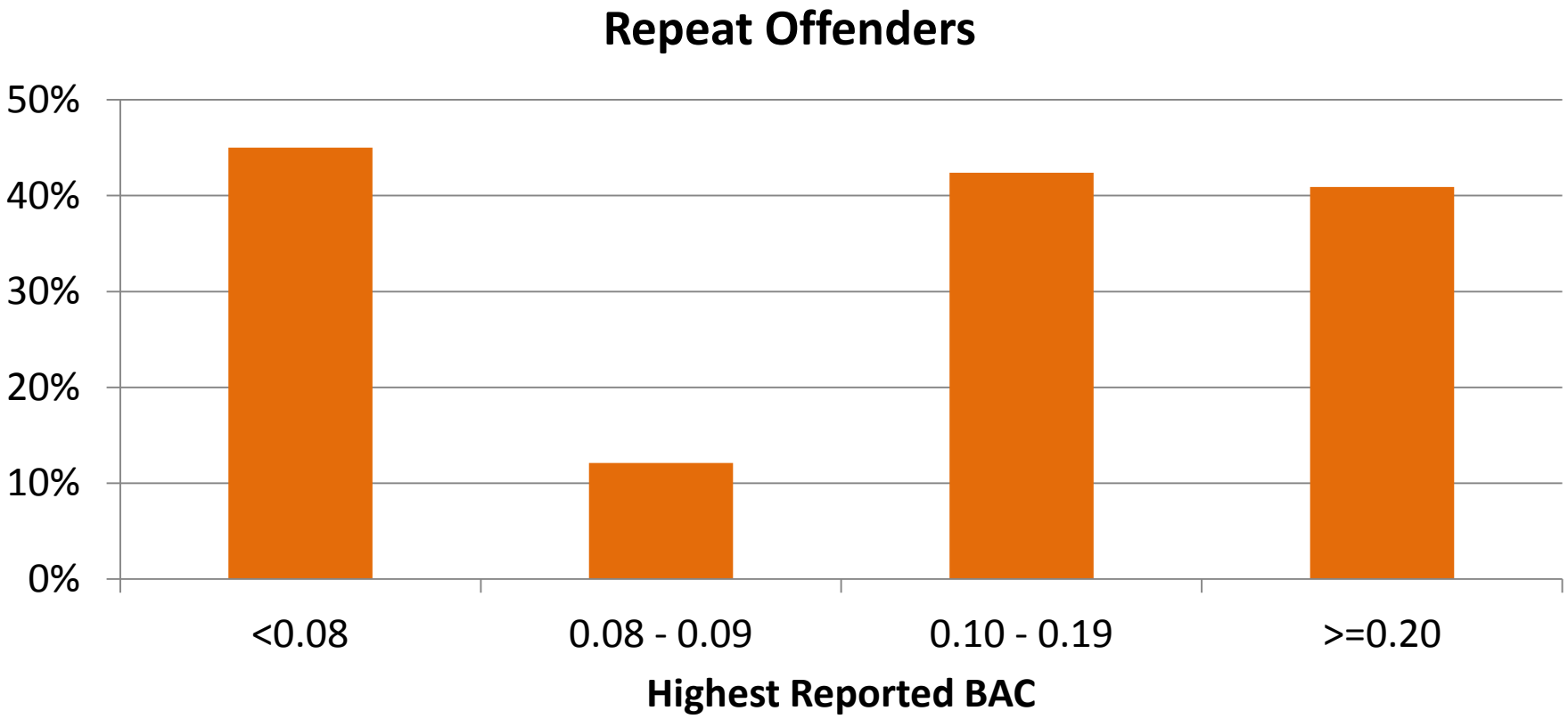
Implementation Trial: Preliminary Findings

- **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

Implementation Trial: Preliminary Findings

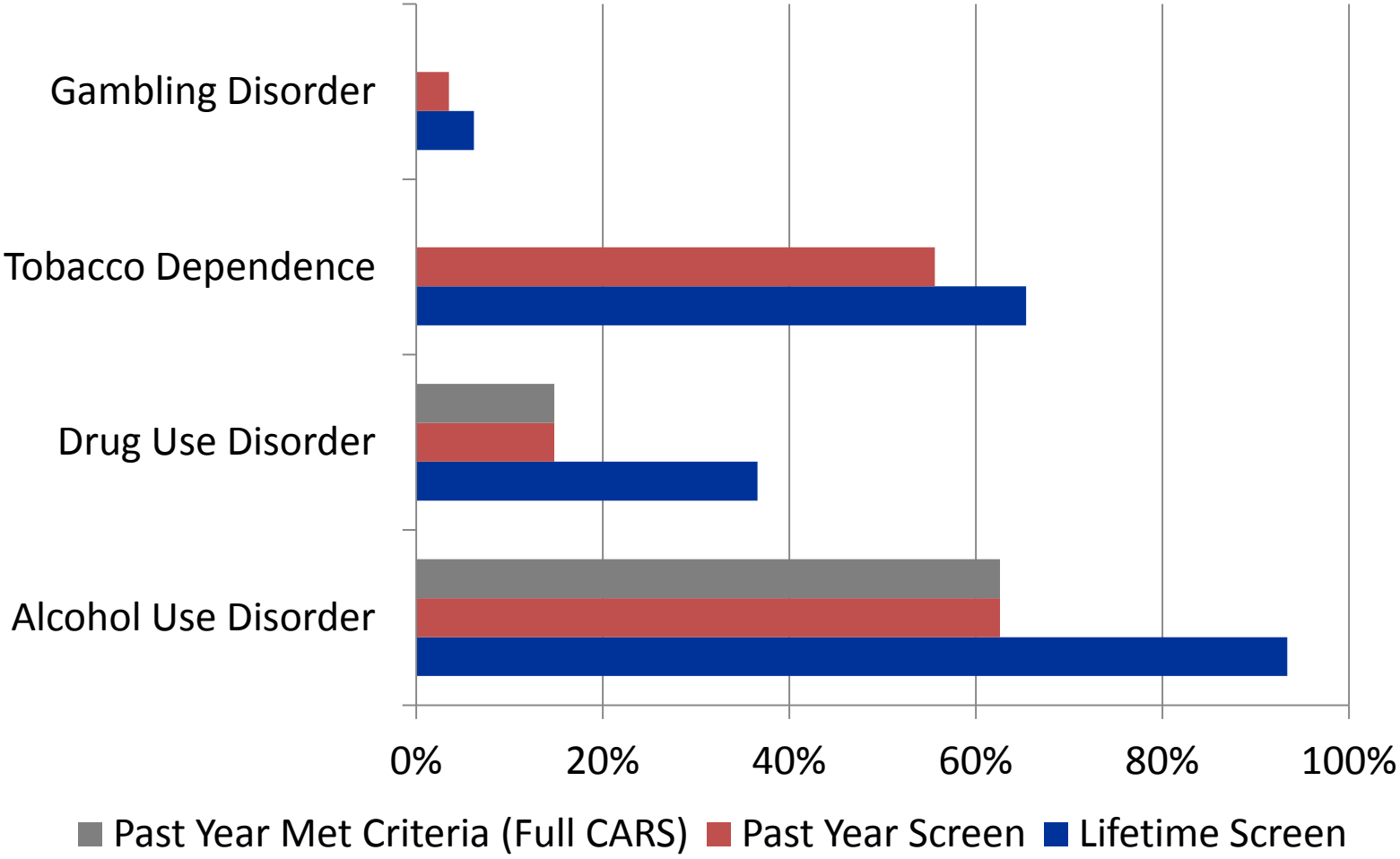


Plan to compare >=.20 group to others on psychiatric comorbidity and outcomes

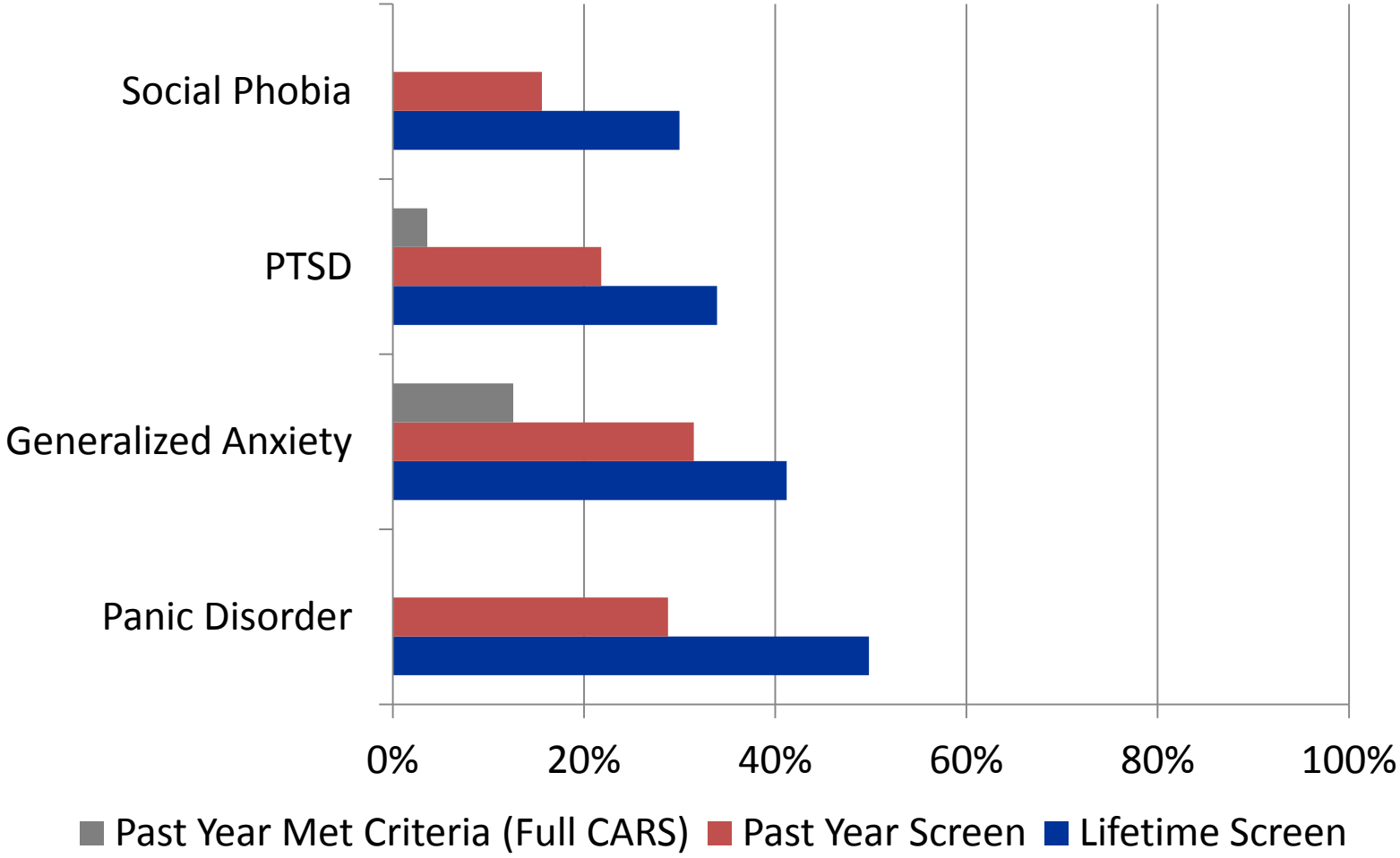
Implementation Trial:
Screener Findings

- Positive screen indicates that further assessment is required, NOT that the respondent qualifies for the disorder.
- Full CARS provides diagnostic information

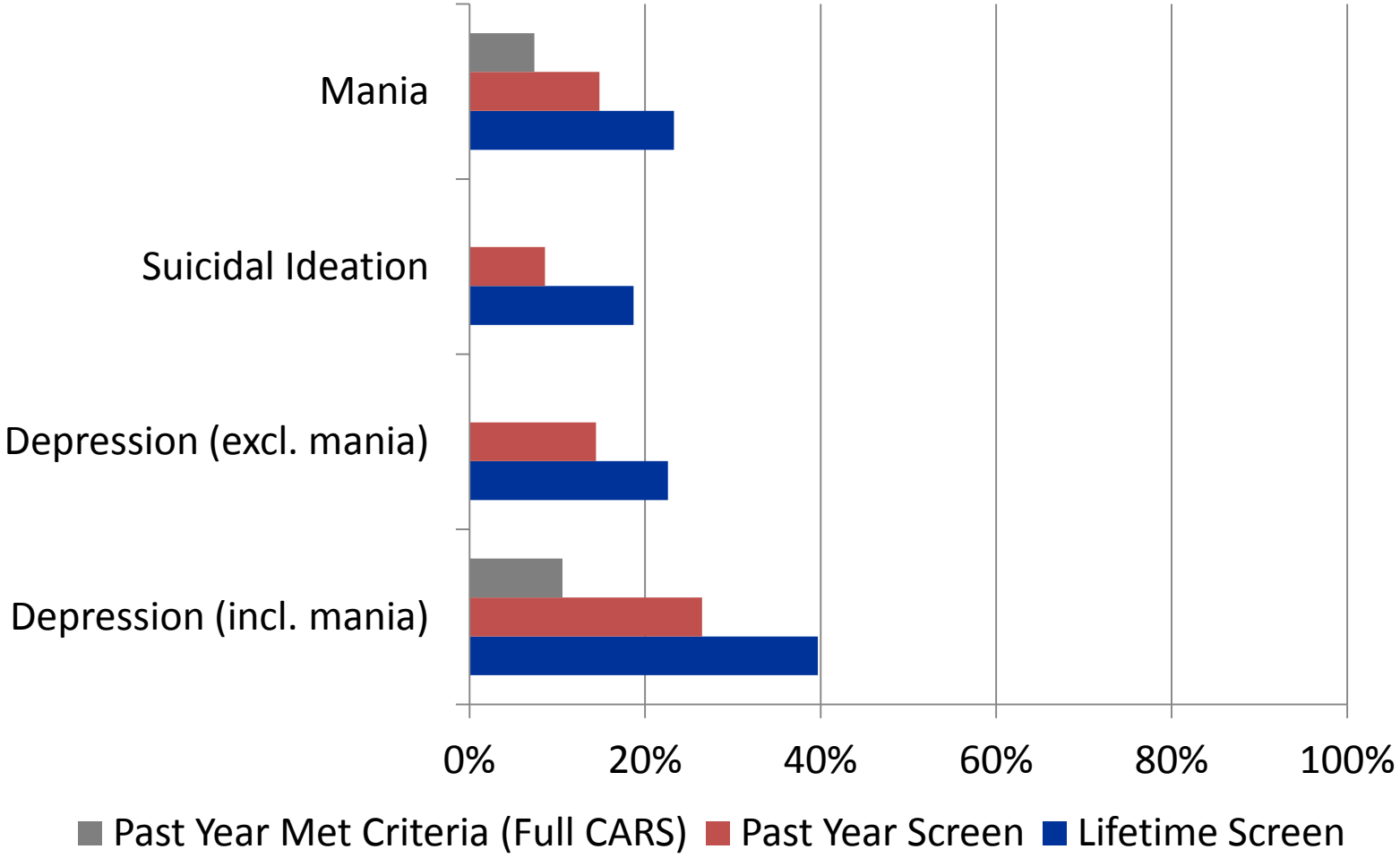
Implementation Trial:
Repeat Offender Screener & Full CARS Findings



Implementation Trial:
Repeat Offender Screener & Full CARS Findings

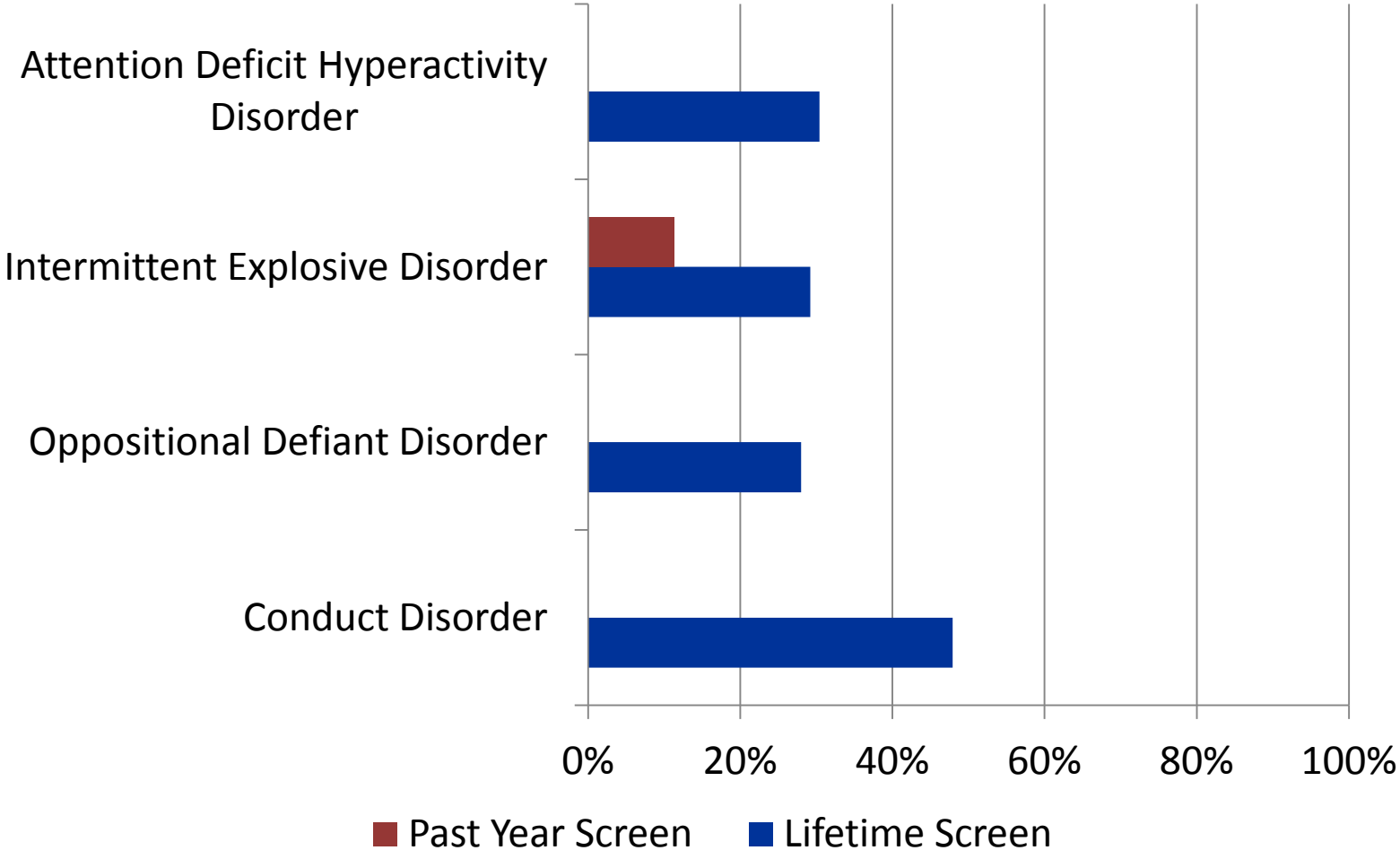


Implementation Trial:
Repeat Offender Screener & Full CARS Findings



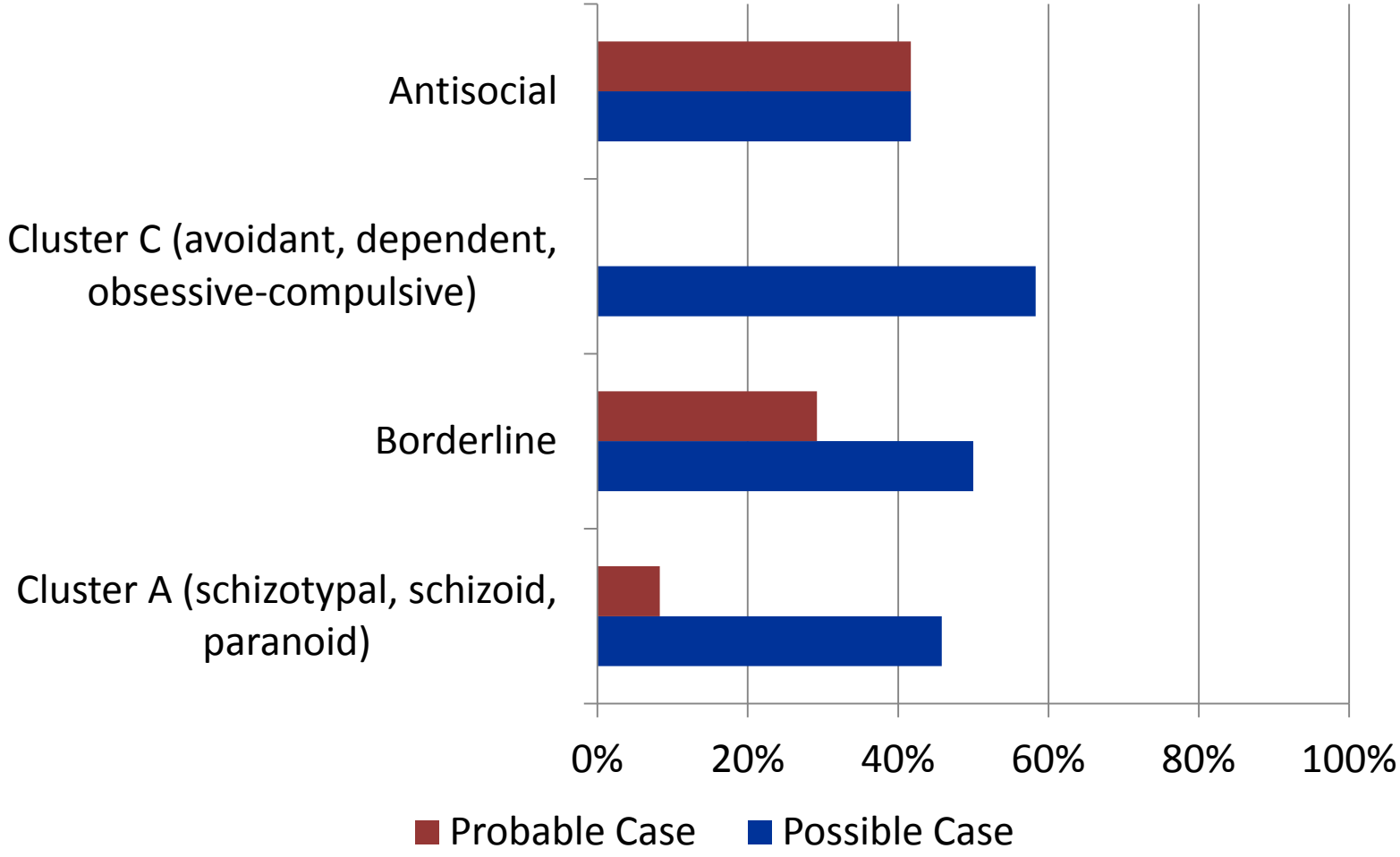
Implementation Trial:

Repeat Offender Screener Findings (NOT definitive diagnoses)



Implementation Trial:

Repeat Offender Screener Findings (NOT definitive diagnoses)



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

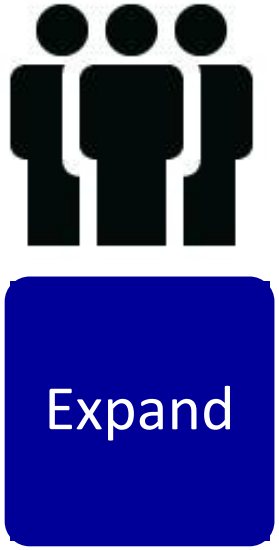
Next Steps:
Finalize CARS for Distribution

- 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

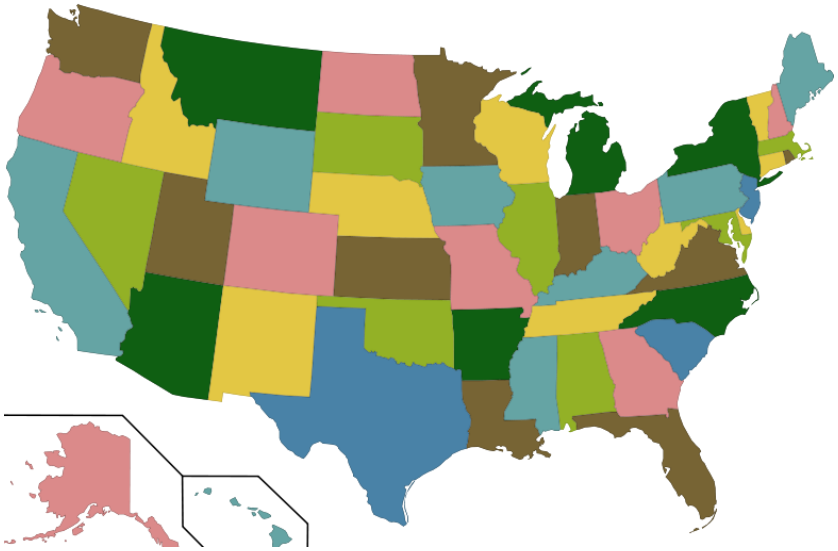
Next Steps: Moving Beyond



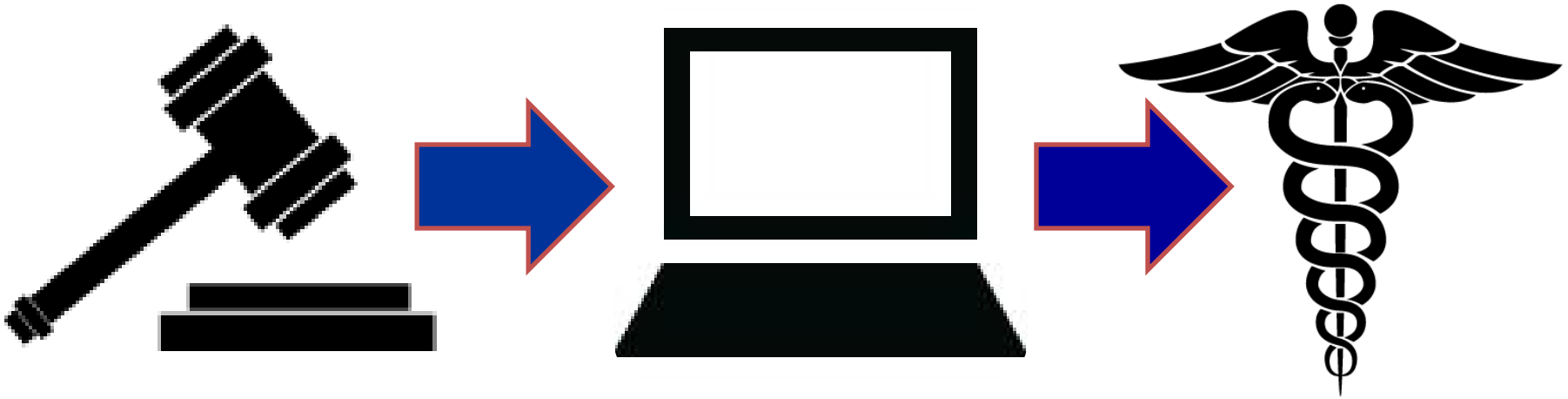
- Move beyond Massachusetts
  - 5 pilot sites throughout US
- Move beyond 1st offender and 2nd offender programs
  - Pre-sentencing
  - Initial sentencing
  - Probation
  - Aftercare
  - DWI Courts

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

Diagnosis and Treatment

Karl Menninger

"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?

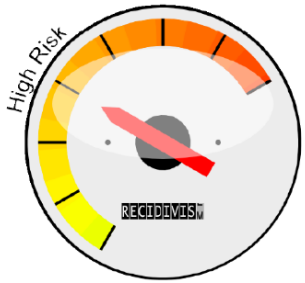
- Which version you use depends on your resources and goals
- We are currently testing how well the screener identifies mental health risk areas compared to full CARS.
- Possible to use the screener and then follow-up at a later time or with select clients with further CARS modules.

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.

Special Thanks

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- Dr. Heather Gray
- John Kleschinsky
- Dr. Ron Kessler
- Nancy Sampson
- Mark McKnight
- 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
  - Division on Addiction's main website
  - Current projects and publications
- 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
  - The Division's facebook page
- @Div_Addiction
  - The Division's twitter account
- snelson@hms.harvard.edu & howard_shaffer@hms.harvard.edu
  - Email us with any additional questions

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