Transdermal Alcohol Monitoring in Compliance with Abstinence

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BACKGROUND

DWI Process in the U.S.

An impaired driver is:
- Detected
- Arrested
- Prosecuted
- Sentenced

What happens after that?
Effective Sanctions for DWI Offenders

- Licensing sanctions
- Vehicle actions
- Assessment and treatment/rehabilitation
- Sentencing options and alternatives to jail
REDUCING DWI RECIDIVISM

- Assess offender’s alcohol problem
- Select appropriate sanctions
- Provide treatment
- Monitor compliance
- Correct noncompliance
- Impose vehicle actions (where appropriate)
- Impose alcohol monitoring (where appropriate)
HIGH RISK DRIVERS

- Offenders convicted of a second or subsequent DWI offense within five years – a “traditional” repeat offender
- Offenders convicted of a DWI with a BAC of .15 g/dL or higher
- Offenders convicted of a driving-while-suspended offense, when the suspension was a result of a prior DWI
HIGH RISK DRIVERS

- **Problem** Drinkers or Hardcore Drinking Drivers
- **Binge** Drinkers (5+ drinks per session)
- **Persistent** Drinking Drivers
- **Repeat** Offenders not identified as such (e.g. diversion programs)
REPEAT DWI OFFENDERS

- Account for about 1/3 of all drivers arrested each year for driving while intoxicated (DWI) in the U.S.

- Are over represented as drinking drivers in fatal crashes and account for 10%-20% of all drinking drivers in fatal crashes.

- Are defined as drivers convicted of DWI more than once in a 5 year period.
REPEAT DWI OFFENDERS

- Continue to drink and drive at illegal blood alcohol concentrations (BACs) over and over again
- Are obviously not affected by sanctions for their first DWI conviction
- Often have a history of other behavior problems
- Often have an alcohol and/or other substance abuse problem or have a heavy episodic (binge) drinking problem
- Rarely feel too impaired to drive and to most, DWI is not a serious issue
HIGH BAC (.15+)
OFFENDER

- Account for half or more of all drivers arrested each year for driving while intoxicated (DWI).
- Are overrepresented as drinking drivers in fatal crashes and account for over half of all drinking drivers in fatal crashes.
Controlling DWI Offenders

- Preventing All Driving
  - Driver’s license suspensions
  - However, 36-88% of suspended DWI offenders drive anyway

- Preventing Impaired Driving
  - Alcohol ignition interlocks
  - Effective while on the vehicle
  - However, some offenders drive other vehicles

- Preventing All Drinking (Requiring Abstinence)
  - Administer Antabuse or equivalent
  - House arrest/electronic monitoring
  - **Difficult to monitor abstinence----better methods needed**
Alcohol Monitoring Programs

- Frequent contact by probation officers and judge or other officials (observation)
- **Surprise visits** in the home and BAC testing (and sometimes drug testing via urine sample)
- Daily call-in with **random testing**
- **Electronic monitoring** and home confinement with remote BAC testing
- Using alcohol ignition **interlock records**
- **Regularly scheduled testing** (twice daily)
Secure Continuous Remote Alcohol Monitoring (SCRAM™)

Product of Alcohol Monitoring Systems Inc. (AMS)
Transdermal Alcohol Measurement

SCRAMx measures ethanol vapor as it is given off by the skin.

Approximately 1% of ingested alcohol is eliminated through the skin via insensible perspiration.

Alcohol present in this sweat was not metabolized in the liver.
- Leaves the body unchanged.

Sources: Century Council, National Highway Traffic Safety Administration (NHSTA), Traffic Injury Research Foundation (TIRF)
Transdermal Alcohol Concentration vs. Breath Alcohol Concentration

Typical BrAC Curve

Corresponding TAC Curve

2.5 Hour Delay from BrAC Peak to TAC Peak

5.75 Hour Delay from BrAC 0.0 to TAC 0.0

BrAC Elimination Rate = 0.019% / hr

TAC Elimination Rate = 0.008% / hr
One Week-One Person (heavy drinker) Continuous SCRAM (ankle) Monitoring

ZL SCRAM scale is mg% (e.g., 0.10 = 100)

Source: Marques & McKnight (2007). Evaluating… NHTSA
SCRAM FEATURES

- Detects drinking any significant amount of alcohol
- Detects any attempts to tamper or circumvent the device
- Monitors on a continuous 24/7 basis (sample every 30 minutes)
- Reports to court officials or probation officials any confirmed drinking or tampering events
SCRAM USAGE

- Currently assigned by courts and used mainly on addicted, repeat DWI offenders.
- Anywhere from 30% – 50% of drivers arrested for DWI are either repeat offenders or could be diagnosed as a problem drinker or addicted to alcohol.
- Therefore, SCRAM could be installed on 300,000 – 600,000 DWI offenders in the U.S.
- Fairly reliable at detecting drinking episodes on a 24/7 basis (~80% effective).
CURRENT SCRAM USAGE

- Introduced by AMS in 2002
- Currently, 200 SCRAM Service Providers in 1800 courts in the U.S.
- 34 States have had 1000+ offenders on SCRAM
- 8 States have had 10,000+ offenders on SCRAM
Growth in Number of SCRAM Offenders in each Year from 2002 to 2011
Number of SCRAM Monitoring Devices in the United States
METHODS

- AMS has allowed PIRE access to their database containing information on over 250,000 offenders
- PIRE is conducting preliminary analyses of the database to learn more about these SCRAM offenders
SCRAM DATABASE

- Name, DOB, Gender, Race/Ethnicity
- Offense
- Date placed on SCRAM and date SCRAM was removed
- Number and Date of confirmed drinking and tampering events
- Highest TAC reading
RESULTS

PRELIMINARY ANALYSES
(N=157,584 Offenders)

- 79% of offenders are males
- 87% are between 21 and 54 years old
- 78% are DWI or other driving offenses
RESULTS

PRELIMINARY ANALYSES
(N=157,584 Offenders)

Rates of Drinking and Tampering Violations:

- Males: 25%
- Ages 35-54: 27%
- African Americans: 31%
- All Offenders: 24%
RESULTS

PRELIMINARY ANALYSES
(N=157,584 Offenders)
Days Assigned to SCRAM:

- Males: 89 days
- Females: 77 days
- Caucasians: 87 days
- Hispanics: 93 days
- African Americans: 81 days
- All Offenders: 86 days
SCRAM: Research Needs

- Does the SCRAM ensure alcohol abstinence while it is on the offender?
- Does the SCRAM reduce DWI recidivism? During use? After use?
- Could SCRAM be used as an alternative to alcohol ignition interlocks?
- Does the use of SCRAM enhance the effectiveness of various alcohol treatment strategies?
- Do offenders use drugs other than alcohol while on the SCRAM?
SCRAM DATABASE: Research Analyses

- Rate of positive drinking episodes or attempts to circumvent per 30 days on SCRAM
  - Regression analyses exploring relationships of offender types & characteristics to the abstinence level achieved by SCRAM

- Time to first positive drinking event or attempt to circumvent
  - Survival analyses comparing different types of offenses and offenders
POTENTIAL BENEFITS OF ALCOHOL MONITORING

- Help judges, court officials and probation officers in monitoring abstinence requirement and imposing swift sanctions for non-compliance
- Help offenders with alcohol abuse and addiction issues to remain abstinent while receiving treatment
- Reduce DWI recidivism
- Provide cost effective alternative to incarceration
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