Drug Early Warning Signals (DEWS): Juvenile Assessment Center (JAC) Program

Tampa, Florida

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Juvenile Assessment Center (JAC) Program

Asha Terminello
Jennifer Cristiano
Keith Curry

Agency for Community Treatment Services, Inc. (ACTS) Laboratory

Sue Brown

Department of Criminology, University of South Florida

Dr. Richard Dembo, Professor

Armed Forces Medical Examiner System, Division of Forensic Toxicology

Dr. Jeff Walterscheid
Lt. Commander Pedro Ortiz
Major Lynn Wagner
CTR Anastasia Berrier
CTR Kimberley Heine
CTR David Barajas
CTR Naveen Datta

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Notice

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Abstract

The Drug Early Warning Signals (DEWS) project uses the same methods developed as part of the earlier Community Drug Early Warning System (CDEWS) project. DEWS provides timely information about emerging drug use in criminal justice and treatment populations in local communities by sampling and re-testing urine specimens already obtained and tested for a limited panel of drugs. The CDEWS methodology samples specimens that are ready to be discarded and sends the de-identified specimens to a collaborating laboratory for testing for an expanded panel of drugs. By using already collected urine specimens, DEWS provides a relatively quick and inexpensive snapshot of the types of drugs recently used by participating populations and can help the local program to identify important drugs that their testing program may be missing. A major innovation of the current study is the expansion of the CDEWS testing panel from 169 to more than 240 licit and illicit substances, including opioids, benzodiazepines, antidepressants, and new psychoactive substances (NPS). The CDEWS methodology has been implemented in fifteen unique sites and the results are contained in eleven reports already released by the Office of National Drug Control Policy (NDEWS, 2018).

This report presents findings from a replication of the CDEWS study of the Juvenile Assessment Center (JAC) program in Tampa, FL conducted in 2014. The data collection was completed in collaboration with the Agency for Community Treatment Services (ACTS) drug testing laboratory. The offsite ACTS laboratory tests all client specimens for the JAC program. The JAC program collected 165 urine specimens from consecutive juvenile arrestees at intake that had not violated their probation by the time they were taken into custody in Hillsborough County, Florida.

Few drugs were detected in the juvenile arrestees tested, with the exception of marijuana which was found in almost all specimens tested (96%). No opioids were detected in this population and few synthetic cannabinoids (SCs) (2-3% across groups) were found. Most of the drugs detected would have been detected by the JAC program's smaller test panel. It may therefore not be worthwhile for this program to expand their panels, as they already are aware of these youths' use of other drugs.

We also found few differences when comparing the results for these juveniles across the studies in 2014 and 2018/19. There was a significant decrease in SCs (10% to 2%, $p<.05$), with the SC metabolite, UR-144 no longer detected (10% to 0%, $p<.001$) in the current study. This may be due to the recent inclusion of synthetic cannabinoids in the testing panel used by the Tampa JAC program, as well as changes in juvenile arrestee drug use patterns over time.

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Introduction

The Drug Early Warning Signals (DEWS) project uses the methodology developed as part of the earlier Community Drug Early Warning System (CDEWS) project. DEWS provides information about emerging drug use in criminal justice and treatment populations in local communities by sampling and re-testing urine specimens already obtained and tested for a limited panel of drugs by local testing programs. CESAR or local staff sample the specimens that are ready to be discarded and send them de-identified to a collaborating laboratory for testing for an expanded panel of drugs. By using already collected urine specimens, DEWS can provide a relatively quick and inexpensive snapshot of the types of drugs recently used by participating populations. The CDEWS methodology is designed to achieve two primary objectives: 1) to identify and describe the use of emerging drugs in populations at high risk for recent drug use; and 2) to specify any important drugs that the current local testing program may be missing. A major innovation of the CDEWS methodology used in the current study is the expansion of the CDEWS testing panel to include testing for more than 240 licit and illicit substances, including opioids, benzodiazepines, antidepressants, and new psychoactive substances (NPS), using more sensitive testing technology than is typically available to local testing programs.

The CDEWS methodology has now been piloted in fifteen unique sites and the results are provided in eleven reports already released by the Office of National Drug Control Policy (NDEWS, 2018). This report presents findings from a replication study at the Juvenile Assessment Center (JAC) program in Tampa, FL. The data collection was completed in collaboration with the Agency for Community Treatment Services (ACTS) drug testing laboratory. The offsite ACTS laboratory tests all client specimens for the JAC program. The JAC program collected a sample of 165 urine specimens from consecutive juvenile arrestees at intake that had not violated their probation by the time they were taken into custody in Hillsborough County, Florida. The current study replicates our study conducted in 2014 (Wish et al., 2015).

Site Specific Methodology

The Juvenile Assessment Center (JAC) processes approximately 300-400 arrestees per month. This includes juveniles under the age of 18 arrested in Hillsborough County, FL within the jurisdiction of Judicial Circuit 13. Urine specimens were collected at intake from consecutive juveniles that had been arrested and had not violated their probation. Violators of probation were not included in this study due to their small number. Specimens collected by JAC are tested by an offsite laboratory, ACTS, for a panel of 12 drugs, including 6-MAM, AB-PINACA, amphetamines, barbiturates, benzodiazepines, cocaine, fentanyl, marijuana, opiates, oxycodone, PCP, and UR-144. A full description of the study methodology is contained in a separate report (Billing et al, 2019).

Specimens were collected between August 2018 and February 2019. We targeted for collection a total of 150 unduplicated specimens obtained from juvenile arrestees that had not violated their probation. We aimed to collect 100 specimens from persons testing positive for any drug on the JAC screen and 50 specimens testing negative for all drugs on the JAC screen. Unfortunately, the specimens we received omitted information about the program's test results. Using the DEWS laboratory results, we reclassified all specimens as likely positive (CJS+) or negative (CJS-) by the JAC program's test screen. We received 103 specimens from juveniles that would have likely tested positive for any drug on the JAC testing panel, and 62 specimens that likely would have tested negative.

Results

CDEWS test result refers to the expanded drug test used by the CDEWS collaborating laboratory, which includes all of the drugs tested for by the smaller program test panel.

A. Drugs Detected by the CDEWS Laboratory

Table 1 displays the percentage of specimens testing positive for individual drugs/drug categories based on the likely results from JAC's in-house testing panel. We reclassified all specimens as CJS positive or negative by approximating the JAC program's limited screen result using the CDEWS lab results.

Likely CJS+ Specimens: The most common individual drug detected was marijuana, found in almost all specimens (96%). A smaller percentage of specimens contained a benzodiazepine (7%), amphetamine (6%) and/or dextromethorphan (4%). Very few specimens tested positive for synthetic cannabinoids (2%) and 5F-ADB (metab 7) was the only metabolite detected. No specimens were found to contain opioids.

Likely CJS- Specimens: Few drugs were detected in this group. Antidepressants were found in 7% of specimens and 5% contained diphenhydramine, an antihistamine. Again, few synthetic cannabinoids were detected (3%), and only metabolites 5F-ADB (metab 7) and 5F-AMB (metab 7) were found. No specimens were found to contain opioids.

B. Comparison of Findings for Tampa JAC Juveniles from the 2014 and 2018/19 Studies

Likely CJS+ Specimens: The percentage of specimens that tested positive for most drugs were stable over the two time periods. In both studies, the primary drug detected was marijuana, found in 95% and 96% of specimens. We did detect a significant decrease in synthetic cannabinoids (SCs) (10% to 2%, $p<.05$), with the SC metabolite, UR-144, decreasing significantly (10% to 0%, $p<.001$).

Likely CJS- Specimens: No significant changes in drug positives were detected over the two time periods.

Table 1: CDEWS Collaborating Laboratory Test Results, by CJS Drug Screen Result
(N=165 specimens)

% Positive (drugs likely detected by the local screen are bolded)	Likely CJS Screen Positive (for any drug) (N=103) %	Likely CJS Screen Negative (for any drug) (N=62) %
Marijuana	96	0
Cocaine	2	0
Any Benzodiazepine	7	0
Alprazolam/α-Hydroxyalprazolam	6	0
Clonazepam/7-Aminoclonazepam	1	0
Any Amphetamine	6	2
Amphetamine	6	0
MDMA	0	2
Any Antidepressant	2	7
Bupropion	1	3
Citalopram	0	2
Sertraline	0	2
Any Trazodone/mCPP†	1	0
Any Synthetic Cannabinoid (SC)	2	3
5F-ADB (metab 7)	2	3
5F-AMB (metab 7)	0	2
Other Drugs		
Diphenhydramine	2	5
Dextromethorphan	4	0
Cetirizine	1	2
Methylphenidate	1	2
Hydroxyzine	0	2

†Trazodone is an antidepressant whose major active metabolite is mCPP. It is not possible to definitively determine whether the presence of mCPP was due to Trazodone use or whether mCPP was taken on its own. Only one specimen positive for trazodone was also positive for mCPP.

Note: The classification of "Likely CJS Screen Positive" and "Likely CJS Screen Negative" was approximated using the DEWS lab results for the same drugs typically screened for the local Tampa JAC program

Table 2: CDEWS Collaborating Laboratory Test Results, by CJS Drug Screen Result and Study Timeframe

	Likely CJS Screen Positive (for any drug) %		Likely CJS Screen Negative (for any drug) %	
Dates of Collection	2014 Study (N=77)	Current Study (N=103)	2014 Study (N=97)	Current Study (N=62)
% Positive				
Marijuana‡Δ	95%	96%	0%	0%
Cocaine‡Δ	5	2	0	0
Any Benzodiazepine Δ	5	7	0	0
Alprazolam/α-Hydroxyalprazolam	Not in CDEWS Panel	6	Not in CDEWS Panel	0
Diazepam	1	0	0	0
7-Aminoclonazepam	Not in CDEWS Panel	1	Not in CDEWS Panel	0
Any Amphetamine‡Δ	5	6	0	2
Amphetamine	5	6	0	0
MDMA	0	0	0	2
Any Antidepressant	Not in CDEWS Panel	2	Not in CDEWS Panel	7
Bupropion	Not in CDEWS Panel	1	Not in CDEWS Panel	3
Citalopram	Not in CDEWS Panel	0	Not in CDEWS Panel	2
Sertraline	Not in CDEWS Panel	0	Not in CDEWS Panel	2
Any Trazodone/mCPP†	Not in CDEWS Panel	1	Not in CDEWS Panel	0
Any Synthetic Cannabinoid	10*	2*	0	3
UR-144Δ	10***	0***	0	0
5F-ADB (metab 7)	Not in CDEWS Panel	2	Not in CDEWS Panel	3
5F-AMB (metab 7)	Not in CDEWS Panel	0	Not in CDEWS Panel	2
Any Opiate^Δ	1	0	0	0
Morphine	1	0	0	0
OxycodoneΔ	1	0	0	0
Oxymorphone	1	0	0	0
Other Drugs				
Diphenhydramine	Not in CDEWS Panel	2	Not in CDEWS Panel	5
Dextromethorphan	Not in CDEWS Panel	4	Not in CDEWS Panel	0
Cetirizine	Not in CDEWS Panel	1	Not in CDEWS Panel	2
Methylphenidate	Not in CDEWS Panel	1	Not in CDEWS Panel	2
Hydroxyzine	0	0	0	2

*p<.05 by Fisher's exact test; ***p<.001 by Fisher's exact test.

‡Drugs included on the local screen during the 2014 study period.

ΔDrugs included on the local screen during the 2018-2019 study period.

†Trazodone is an antidepressant whose major active metabolite is mCPP. It is not possible to definitively determine whether the presence of mCPP was due to Trazodone use or whether mCPP was taken on its own. The specimen positive for trazodone was also positive for mCPP.

Note: The classification of "Likely CJS Screen Positive" and "Likely CJS Screen Negative" was approximated using our laboratory's results for the same drugs typically screened for by the local Tampa JAC program

Study Limitations

The CDEWS methodology relies on re-testing a small number of specimens that have already been collected and tested by a local testing program. We do not know whether the individuals enrolled in this study are representative of all juvenile arrestees coming to this program during the period of this study. This CDEWS study was designed to learn more about the types of drugs recently used by clients entering drug treatment and cannot provide precise prevalence estimates.

Every effort was made to include most of the currently available drugs likely to be misused in the CDEWS Laboratory test panel. However, given the rapidly changing nature of new psychoactive substances, it is possible that some drugs may have been missed by the CDEWS testing panel. The continuously changing nature of the substances available make it difficult to develop urine tests that detect novel drug forms soon after they are discovered.

In addition, while we found that some specimens contained multiple drugs/metabolites, this does not necessarily mean that the user sought all of these drugs or was aware of the composition of the substance(s) ingested. Multiple drugs in a specimen may also simply reflect the byproducts produced from formulating, transporting, or taking the drug.

We reclassified all specimens as likely CJS positive or negative by approximating the JAC program's limited screen result using the CDEWS lab results. This correction was done given that the program drug test results were not provided for the specimens. It is therefore possible that some specimens may have been misclassified.

The CDEWS test results can only provide an indication of the recent use of prescription and illicit drugs by the individuals who provided the specimens. A more complete understanding of the results would require additional study. Our test results are also unable to determine why or how often persons used a drug or where they obtained the substance.

Summary and Conclusions

Few drugs were detected in the juvenile arrestees tested, with the exception of marijuana which was found in almost all specimens tested (96%). A smaller percentage of the CJS+ specimens contained a benzodiazepine (7%), amphetamine (6%) and/or dextromethorphan (4%). No opioids were detected in this population and few synthetic cannabinoids (2-3% across groups) were found. Only two synthetic cannabinoid metabolites were detected, including 5F-ADB (metab 7) and 5F-AMB (metab 7). Most of the drugs detected would have been detected by the program's smaller test panel, with the exception of antidepressants and diphenhydramine (an antihistamine), detected in 7% and 5% of specimens, respectively. It may therefore not be worthwhile for the program to expand their panels, as they already are aware of these youths' use of other drugs.

We also found few differences when comparing the results for these juveniles across the two studies in 2014 and 2018/19. The only significant change detected was a significant decrease in SCs (10% to 2%, $p<.05$), with the SC metabolite, UR-144 no longer detected (10% to 0%, $p<.001$). It is important to note that the Tampa JAC program began testing for SC, including UR-144, following their receipt of the test results from the 2014 CDEWS study. As such, the decrease in the detection of UR-144 among these youth could be due to their awareness of the JAC program's initiation of testing for this drug. It is also possible that these youth have reduced their use of SC, as traditional marijuana has risen in popularity in the United States, and with their greater knowledge of adverse events related to SC use. The shift in the SC metabolites detected between the two studies is not surprising given the rapidly changing nature of the composition of SC found in all CDEWS studies.

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