



# Prescription Drug Misuse Among Adolescents Court-Referred to Residential Treatment

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## Background

### Rise in Prescription Drug Misuse (PDM): Adolescents ages 12 to 17

- Between 1992 and 2003, PDM increased 212%<sup>1</sup>
- 2012 National Survey on Drug Use and Health PDM rates<sup>2</sup>: 10% lifetime, 6.6% past year, 2.8% past month

### Limited Understanding of PDM User Profile

- PDM associated with other illicit drug use, impulsivity, rural residence<sup>3</sup>
- PDM rates higher in institutionalized youth (43% lifetime) and risk increases with older age, white race, small town residence, impulsivity<sup>4</sup>
- This study replicates prior work limited by few adolescent girls<sup>4</sup>

### Study Aims

- To explore the prevalence and correlates of PDM in a large sample of girls (N=102) vs. boys (N=93) court-referred to residential treatment

## Methods

### Subjects

- 195 adolescents (102 girls, 93 boys) enrolled Feb. 2007- Aug. 2009
- Inclusion criteria: age 14-18 years, stable address, SUD diagnosis, stable medical condition, not currently suicidal/homicidal

### Procedures

- 90-minute assessments: intake, discharge
- Semi-structured interviews, chart review, parent/youth reports
- Subjects were paid \$25 for completed assessments
- UHCMC IRB Approval, NIAAA Certificate of Confidentiality

### Measures

- Demographic: age, race, gender, grade, prior treatment, residence (zip code), parental marital status and education
- Clinical<sup>5-9</sup>: suicide attempt history<sup>5</sup>, violent/property crimes (past year)<sup>6</sup>, lifetime traumatic experiences<sup>6</sup>, global functioning<sup>7</sup>, impulsive symptoms (past year)<sup>5</sup>, exploitative behaviors<sup>8</sup>, prosocial behaviors (past year)<sup>9</sup>
- AOD use<sup>10</sup>: lifetime uses of alcohol (binge drinking episodes), cocaine, inhalants, ecstasy, heroin, methamphetamine, marijuana, longest abstinence (days)

### Statistical Analysis

- SAS Version 9.2
- Fisher's exact test (binary), Kruskal-Wallis  $\chi^2$  test (continuous)
- Logistic regression with correction for over-dispersion
- Covariates: race, gender, grade, residence, treatment history
- 3 gender interactions: gender X exploitative behaviors, gender X lifetime trauma, gender X impulsivity

## Results

**Table 1. Demographic characteristics of prescription drug misuse (PDM)**

Characteristic	Total N=189 (100%)	No PDM Use N=99 (52%)	PDM Use N=90 (48%)
Age	16.2 (1.1)	16.2 (1.1)	16.1 (1.0)
<b>Race</b>			
White	121 (64%)	45 (45%)	76 (84%)*
Hispanic	10 (5%)	5 (5%)	5 (5%)
Black	58 (31%)	49 (50%)	9 (10%)
<b>Male</b>	89 (47%)	54 (55%)	35 (39%)*
Grade			
9 <sup>th</sup> -10 <sup>th</sup>	114 (60%)	64 (65%)	50 (56%)
11 <sup>th</sup> -12 <sup>th</sup>	75 (40%)	35 (35%)	40 (44%)
Gender/grade			
M, 9 <sup>th</sup> -10 <sup>th</sup>	54 (29%)	31 (31%)	23 (26%)
M, 11 <sup>th</sup> -12 <sup>th</sup>	35 (19%)	23 (23%)	12 (13%)*
F, 9 <sup>th</sup> -10 <sup>th</sup>	40 (21%)	12 (12%)	28 (31%)
F, 11 <sup>th</sup> -12 <sup>th</sup>	60 (32%)	33 (33%)	27 (30%)
Prior treatment	17 (9%)	12 (12%)	9 (10%)
Residence			
Small town	73 (39%)	26 (26%)	47 (52%)*
Rural	26 (14%)	9 (9%)	17 (19%)
Suburban	68 (36%)	48 (48%)	20 (22%)
Urban	22 (12%)	16 (16%)	6 (7%)
Single parent	94 (50%)	55 (56%)	39 (43%)
Parental education			
Some HS	28 (15%)	17 (17%)	11 (12%)
HS diploma	108 (57%)	59 (60%)	49 (55%)
BA+	53 (28%)	23 (23%)	30 (33%)

**NOTES:** \* $p<0.05$ , \*\* $p<0.01$ , \*\*\* $p<0.001$ ; AOD=alcohol and other drug

**Demographic factors associated with PDM (Table 1)**

- Lifetime PDM: 52% no PDM history, 48% 10+ lifetime occasions of PDM
- Past month PDM: 9% benzodiazepines, 14% prescription opioids, 23% stimulants
- PDM associated with female gender, white race, and residence in small town
- PDM rate declined with age for boys ( $p<.01$ ) but not girls

**Table 3. Factors associated with prescription drug misusers (PDM)**

Factor	Wald $\chi^2$	P
Demographic		
Race	14.89	0.001
Male	8.22	0.004
Grade	1.74	0.187
Residence	7.37	0.049
Prior treatment	0.21	0.651
Clinical		
Attempted suicide	6.77	0.009
Violent crimes	34.24	0.000
Property crimes	5.75	0.050
Traumatic experiences	1.79	0.050
Global functioning	5.43	0.019
Impulsive symptoms	0.04	0.838
Exploitative behaviors	24.83	0.000
Prosocial behaviors	23.48	0.000
AOD (lifetime)		
Most time sober	0.03	0.859
Binge drinking	5.41	0.020
Cocaine use	0.29	0.588
Inhalant use	27.87	0.000
Ecstasy use	2.84	0.042
Heroin use	12.48	0.000
Methamphetamine use	16.31	0.000
Gender		
Gender X Exploitative behaviors	6.67	0.010
Gender X Traumatic experiences	5.07	0.024
Interactions		
Gender X Impulsive symptoms	3.89	0.049

### Factors associated with PDM from logistic regression (Table 3)

- Demographic: white, female, small town residence
- Clinical: attempted suicide, higher exploitative behaviors, violent crimes, higher trauma (girls only), impulsivity (boys only)
- AOD: 10+ lifetime occasions of binge drinking, inhalant, ecstasy, heroin, meth use

**Table 2. Clinical characteristics of prescription drug misuse (PDM)**

Characteristic	Total 189 (100%)	No PDM Use 99 (52%)	PDM Use 90 (48%)
Clinical			
Attempted suicide	45 (24%)	16 (16%)	24 (37%)*
Violent crimes	1.8 (1.6)	1.2 (1.3)	2.3 (1.7)**
Property crimes	2.2 (1.4)	1.7 (1.2)	2.6 (1.3)**
Traumatic experiences	1.8 (1.5)	1.5 (1.4)	2.0 (1.5)*
Global functioning	49.5 (2.7)	49.7 (2.6)	49.2 (2.8)
Impulsive symptoms	4.9 (2.8)	4.0 (2.8)	5.9 (2.5)**
Exploitative behaviors	2.3 (1.5)	2.1 (1.5)	2.5 (1.5)*
Prosocial behaviors	28.0 (5.8)	25.9 (6.5)	30.2 (3.7)**
AOD (lifetime)			
Longest sober (days)	61.4 (36.9)	67.4 (36.2)	54.8 (36.9)*
Binge drinking (10+ uses)	78 (41%)	27 (27%)	51 (57%)*
Cocaine (10+ uses)	81 (43%)	21 (21%)	60 (67%)*
Inhalants (10+ uses)	59 (31%)	6 (6%)	53 (59%)*
Ecstasy (10+ uses)	99 (52%)	28 (28%)	71 (79%)*
Heroin (10+ uses)	102 (54%)	23 (23%)	79 (88%)*
Methamphetamine (10+ uses)	81 (43%)	17 (17%)	64 (71%)*
Marijuana (20+ times)	182 (96%)	96 (97%)	86 (96%)

**NOTES:** \* $p<0.05$ , \*\* $p<0.01$ , \*\*\* $p<0.001$

### Clinical factors associated with PDM (Table 2)

- Attempted suicide; violent and property crimes; traumatic experience; impulsivity; lower volunteerism
- 10+ lifetime occasions of binge drinking
- 10+ lifetime uses of cocaine, inhalants, ecstasy, heroin, methamphetamine

## Discussion

### Key Findings

- PDM found in 48% of high-risk youth with SUD, with 23% using stimulants
- Higher PDM risk among youth subgroups: white, female, small town
- PDM linked to heroin use
- PDM associated with suicide attempts, violent crimes, trauma, and exploitative behavior

### Clinical Implications

- Dangers of PDM: high overlap with SUD, heroin use
- Careful management of prescribed controlled substances
- Screening for ADHD and anxiety
- Addressing issues of trauma and exploitative behaviors
- Education of parents and other providers about PDM prevalence and correlates
- Future research: motivations for PDM; impact of prosocial behaviors on decreasing PDM

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### REFERENCES

- Under the Counter: The Diversion and Abuse of Controlled Prescription Drugs in the U.S. (2005) The National Center on Addiction and Substance Abuse at Columbia University.
- National Survey on Drug Use and Health (2012). [www.samhsa.gov/data/NSDUH.aspx](http://www.samhsa.gov/data/NSDUH.aspx)
- Havens JR, Young AM, Havens CE. (2011) Nonmedical Prescription Drug Use in a Nationally Representative Sample of Adolescents: Evidence of Greater Use Among Rural Adolescents. Arch Pediatr Adolesc Med 165(3):250-255.
- Hall MT, Howard MO, McCabe SE. (2010) Prescription Drug Misuse Among Antisocial Youths. Journal of Studies on Alcohol and Drugs, Nov 2010, 917-924.
- Mini-International Neuropsychiatric Interview. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, et al. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. JCP, 59 (S2), 22-33.
- Massachusetts Youth Screening Instrument-second version; Grisso T, & Barnum R. (2000). Massachusetts Youth Screening Instrument-second version. User's manual and technical reports. Boston, MA: University of Massachusetts Medical School.
- Children's Global Assessment Scale; Bird HR, Canino G, Rubio-Stipec M, & Ribera JC. (1987). Further measures of the psychometric properties of the Children's Global Assessment Scale. AGP, 44, 821-824.
- Narcissistic Personality Inventory; Raskin R. & Terry H. (1988). A principal-components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. JSP, 54, 890-902.
- General Social Survey; Smith TW (November 2005). Alltrusm and Empathy in America: Trends and Correlates. Retrieved 2.11.14 from <http://www.norc.uchicago.edu/NR/rdonlyres/7FEF80C6-FD3A-46F7-AF22-AC6E59E34E14/0/AlltrusmandEmpathyinAmerica.pdf>
- Youth Risk Behavior Survey, Ohio Center for Health Promotion Research (OCHPR). (2009). Cleveland Metropolitan School District Youth Risk Behavior Survey High School Report. Cleveland, OH: OCHPR.