

# **Three-year substance use and mental health outcomes among adolescents entering chemical dependency treatment: the role of continuing care.**

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# Overview

- What factors are related to 3-Year outcomes?
  - The impact of CD and Psychiatric services – index and ongoing treatment – on *both* substance use (SU) and mental health (MH) outcomes at 3 years.
  - The relationship of individual characteristics – gender, age, SU and MH severity – to 3-year SU and MH outcomes.
  - How important are short-term (12-month) outcomes? Are good outcomes sustained over time?
- Discussion and Clinical Implications

# Continuing Care

- What constitutes effective continuing care models of treatment for adolescents with SU problems?
  - Types of treatment – CD and Psychiatric (PC in future studies)
  - Duration of index treatment and readmissions
  - How do individual needs and risk factors influence such a model?

# Background

Many studies have examined long-term SU outcomes among adolescent general population samples, or short-term treatment outcomes – few studies have examined long-term treatment outcomes (*Brown, 2001; Chung, 2003*).

Treatment retention is related to better SU outcomes (*Latimer, 2000, Hser, 2001*); it is unclear however, how index treatment length of stay of affects outcomes over time.

CD readmissions may contribute to better outcomes among adults (*Mertens, 2005*), but have not been examined in adolescents. Studies have found that receiving aftercare can improve short-term outcomes for adolescents (*Latimer, 2000, Godley, 2007*), but they did not examined readmissions or long-term outcomes.

## Background cont.

Co-occurring SU and MH conditions are highly prevalent in adolescent treatment populations, however most treatment studies examine MH outcomes only secondarily.

Most studies have found that the presence of MH disorders, particularly Externalizing disorders, predicts worse SU outcomes (*Anderson, 2007; Chung, 2003; Rose, 2004*).

Receiving psychiatric services during the course of CD treatment has been found to predict better short-term SU outcomes (*Sterling, 2005*).

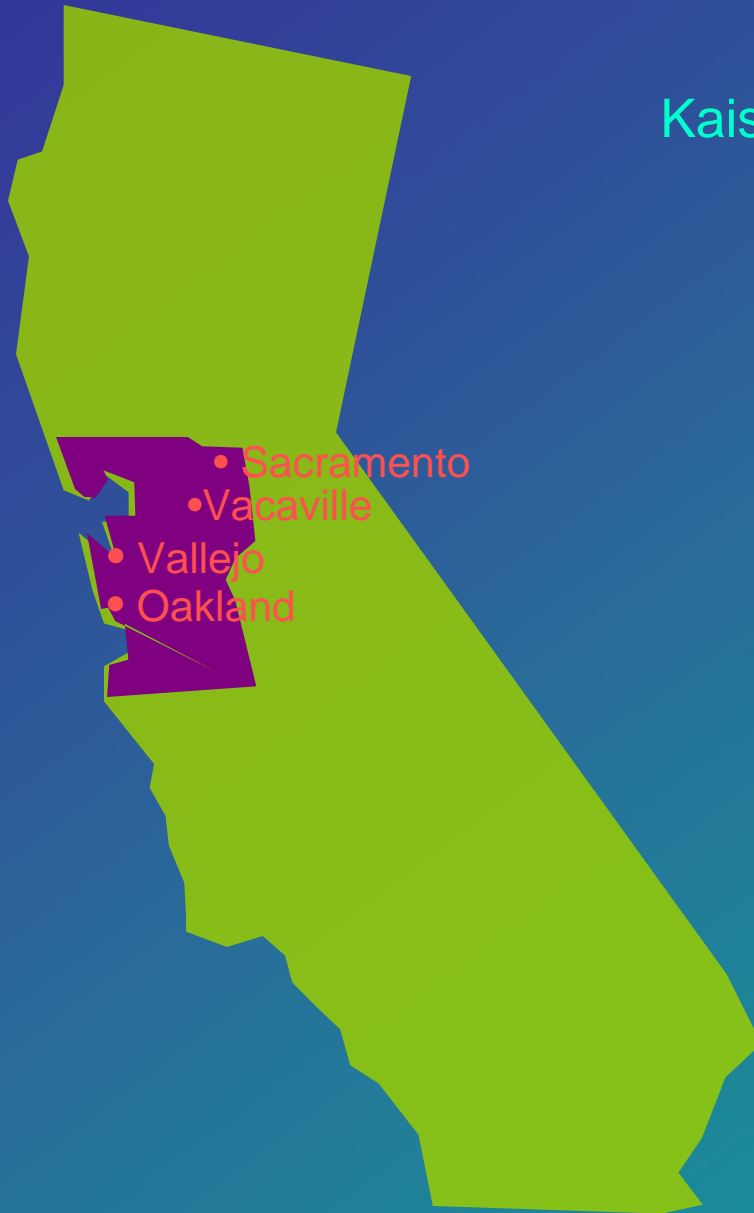
## Background cont.

Boys tend to do worse in treatment than girls (*Rounds-Bryant, 2001; Grella, 2003; Chung, 2005*).

The role of age at treatment is unclear; some have found younger age to be related to better outcomes (*Anderson, 2007*), while others have found the opposite (*Dobkin, 1998*).

# Setting

## Kaiser Permanente Medical Care Program of Northern California



- Private, non-profit, group-model managed care health plan
- Serves 3.2 million members (about 40% of commercially insured population in the region)
  - ~300,000 members aged 12-18
  - 16 hospitals, 23 outpatient clinics
  - ~430 pediatricians
- Integrated health care system (medical, psychiatry, chemical dependency services)
- 17 adolescent Chemical Dependency (CD) programs, and 29 Department of Psychiatry across the region

# Data Sources

- Baseline interviews with adolescents (and their parents) entering Chemical Dependency treatment at Kaiser
- Intent-to-treat study – Follow-up interviews with adolescents and parents at 12 months and 3 years (*Response rates = 92% and 86%, respectively*)
- Outpatient Summary Clinical Record (**OSCR**) – all primary and multiple secondary diagnoses
- Health plan's administrative utilization and cost databases – CD and Psychiatric services
- Matched cohort - age, gender, length of enrollment & catchment area

# Measures

- **Substance Use** measured as abstinence from alcohol and drugs (excluding tobacco) in past 30 days at Baseline, 12-month and 3-year follow-ups.

Mental health severity was measured at Baseline and 12 months using the **Youth Self-Report (YSR)**, and at 3 years the **Adult Self-Report (ASR)** (Achenbach, 1991). Both are structured questionnaires measuring competencies and problems, and can be administered verbally; there is high correlation between the child-adolescent and adult versions. The various symptom scale scores were highly correlated with clinical diagnoses from OSCR, i.e., Anxious/Depressed scale with Diagnosis of Depression

- **Internalizing** disorder severity measured by **YSR** and **ASR** Internalizing scale scores – a composite of the **Anxious/Depressed**, **Withdrawn** and **Somatic Complaints** scales.
- **Externalizing** disorder severity measured by **YSR** and **ASR** Externalizing scale score – a composite of the **Aggressive Behavior** and **Delinquent/ Rule-Breaking Behavior** scales.

# Teen Treatment Study Sample

- 419 adolescents (143 girls, 276 boys) and parents
- Age ranged from 13 to 17 years (mean = 16.15)
- Ethnicity:
  - 6% Native American
  - 16% African-American
  - 20% Hispanic
  - 49% White
- Mean age of initiation of use = 11.5
- The sample reported very high levels of substance use in the 6 months preceding their intake, and girls had significantly higher use than boys of alcohol, stimulant, sedative, cocaine, heroin and party drugs.

Sterling S, Kohn C, Lu Y, Weisner C. Pathways to substance abuse treatment for adolescents in an HMO. *Journal of Psychoactive Drugs*. Dec 2004;36(4):439-453.

- High prevalence of medical conditions compared to matched cohort

Mertens JR, Flisher AJ, Fleming MF, Weisner CM. Medical conditions of adolescents in alcohol and drug treatment: comparison with matched controls. *Journal of Adolescent Health* Feb 2007;40(2):173-9.

- High prevalence of HIV risk behaviors.

Ammon L, Sterling S, Mertens J, Weisner C. Adolescents in private chemical dependency programs: who are most at risk for HIV? *J Subst Abuse Treat*. Jul 2005;29(1):39-45.

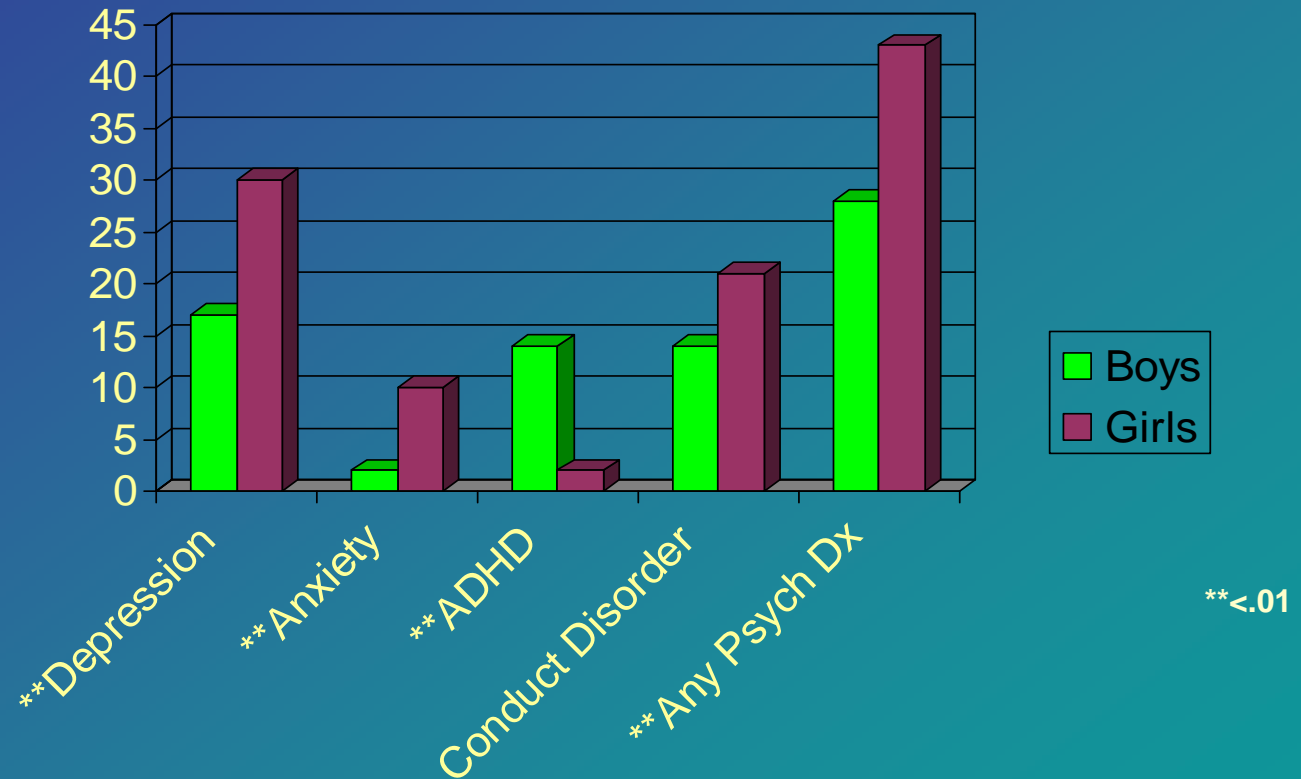
# Psychiatric Conditions (%s)

## 2 years prior through 6 months following CD intake

	Tx Intakes	Controls	p-value
Depression		4.2	
Anxiety Disorder		2.3	
Eating Disorders		0.43	
ADHD		3.0	
Conduct Disorder		1.2	
Conduct Disorder (w/ODD)		2.3	
Any Psychiatric DX		9.0	

\*p<.0001 \*\*p<.10

# Gender Differences in Psychiatric Comorbidities



Girls have higher levels of substance use and psychiatric comorbidities across ethnic groups

What predicts 3-year Substance Use Outcomes?

Predictors of Abstinence at 3 years  
among those with 22+ months HP membership (n=308)  
Model I

	OR (95% CI)
Boys vs. Girls	0.50 (0.27, 0.92)
Age	0.78 (0.62, 0.99)
Index Treatment Length of Stay	1.00 (1.00, 1.01)
CD visit(s) in Year 2	0.32 (0.12, 0.83)
CD visit(s) in Year 3	2.81 (1.14, 6.95)
Psych visit(s) in Year 1	1.77 (0.90, 3.46)
Psych visit(s) in Year 3	1.96 (0.95, 2.65)

From Logistic Regression models controlling for baseline SU problem internalizing and externalizing severity, Year 2 Psych visits

# Predictors of Abstinence at 3 years among those with 22+ months HP membership (n=308) Model II

	OR (95% CI)
CD visit(s) in Year 2	0.29 (0.10, 0.83)
CD visit(s) in Year 3	4.16 (1.50, 11.48)
Psych visit(s) in Year 1	1.77 (0.90, 3.46)
Psych visit(s) in Year 3	1.95 (0.89, 4.26)
<b>Abstinent at 12 months</b>	<b>3.46 (1.79, 6.68)</b>

From Logistic Regression models controlling for age, internalizing and externalizing severity at baseline and 12-months, baseline SU problem severity, index Tx length of stay, Psych visits in Year 2

What predicts 3-year Mental Health Outcomes?

# Predictors of ASR **Internalizing Severity** at 3 years among those with 22+ months HP membership (n=308)

		LS Means
<b>Baseline Internalizing Severity:</b>	Q<=25%	10.554 ‡
	Q<=50%	11.769
	Q<=75%	12.198
	Q>75%	19.576
<b>12-Month Internalizing Severity:</b>	Q<=25%	9.268 ‡
	Q<=50%	10.850
	Q<=75%	12.841
	Q>75%	21.136
<b>Abstinent at 12 months:</b>	yes	11.546 †
	no	15.502
<b>Any Psych visits in Years 2 or 3:</b>	yes	14.763 †
	no	12.285

From GLM models controlling for gender, age, externalizing severity at baseline and 12-months, baseline SU problem severity, index Tx length of stay, CD visits in Years 2 and 3, and Psych visits in Year 1

\* p<0.10; \*\* p<0.05.; † p<0.01; ‡ p<0.001.

# Predictors of ASR **Externalizing Severity** at 3 years among those with 22+ months HP membership (n=308)

		GLM
<b>Boys</b>		18.078 †
<b>Girls</b>		14.230
<b>Baseline Externalizing Severity:</b>	Q<=25%	12.828 **
	Q<=50%	16.382
	Q<=75%	18.514
	Q>75%	16.893
<b>12-Month Externalizing Severity:</b>	Q<=25%	13.927 **
	Q<=50%	14.864
	Q<=75%	16.213
	Q>75%	19.613
<b>12-Month Internalizing Severity:</b>	Q<=25%	14.256 †
	Q<=50%	13.608
	Q<=75%	16.198
	Q>75%	20.556
<b>Abstinent at 12 months:</b>	yes	14.744 **
	no	17.565
<b>Any CD visit(s) in Year 2:</b>	>=1	17.705 *
	0	14.604
<b>Any Psych visit(s) in Years 2 or 3:</b>	yes	17.416 *
	no	14.893

From GLM models controlling for gender, age, internalizing severity at baseline, baseline SU problem severity, index Tx length of stay, CD visits in Year 3, and Psych visits in Year 1

\* p<0.10; \*\* p<0.05.; † p<0.01; ‡ p<0.001.

# Summary of Findings

**CD readmissions and ongoing Psychiatric treatment both predicted abstinence at 3 years.**

**12-Month abstinence predicted better SU and MH outcomes (both Internalizing and Externalizing) at 3 years.**

**Baseline and 12-month MH severity predicted continued MH problems at 3 years.**

**Those with higher MH severity at 3 years continued to receive more psychiatric services during the three years, with those with higher Externalizing severity at 3 years also receiving more CD services.**

**Gender predicted both substance use and mental health outcomes at 3 years:**

- Girls were twice as likely to be abstinent from both drugs and alcohol as boys ( $p=.01$ ).
- Boys had significantly higher Externalizing problem severity at 3 years ( $p<.01$ ).

# Discussion and Clinical Implications

## Continuing Care

The importance of CD readmissions and ongoing Psychiatric services in determining 3-year outcomes support further research on and development of “Continuing Care” models of CD treatment for adolescents.

## Psychiatric Services

The right people (those with highest MH severity) are getting the most psychiatric services, but are they getting as many as they really need to help lessen their MH problems? Probably not!

## The importance of successful treatment

The role of 12-month abstinence status in predicting 3-year SU and MH outcomes suggests the index treatment episode is important in determining long-term outcomes.

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