



Decreased Alcohol Use in Pregnant Substance Users Receiving Motivational Enhancement Therapy

Robin Osterman, PhD, RNC-OB, CNS¹

Daniel Lewis, BA ²

Theresa Winhusen, PhD²

¹ University of Cincinnati College of Nursing

² Addiction Sciences Division, Department of Psychiatry and Behavioral Neuroscience, University of Cincinnati

college of nursing

College of Medicine

UNIVERSITY OF
Cincinnati

Funding and Disclosures

Supported by the National Drug Abuse
Treatment Clinical Trials Network (NIDA CTN)
grants (U10-DA013732, U10-DA013711,
U10-
DA015833)

The speaker has no conflicts of interest to
disclose

Learning Objectives

1. Discuss the importance of decreasing alcohol use in high risk pregnant substance users in the prevention of FASD.
2. Identify effective motivational interventions, such as motivational enhancement therapy (MET), that assist high risk pregnant women in decreasing alcohol use.
3. Discuss the rationale for psychiatric mental-health nurses implementing MET in the care of pregnant substance users.

3

Background and Significance

- **Fetal Alcohol Spectrum Disorders (FASD)**
 - **Caused by in utero alcohol exposure** (Floyd et al., 2005; Hoyme et al., 2005; Manning and Hoyme, 2007; Stratton et al., 1996)
 - **Leading cause of birth defects, neurodevelopmental disorders, and mental retardation** (Jacobs et al., 2000; Manning and Hoyme, 2007; Stratton et al., 1996)
- **Fetal Alcohol Syndrome (FAS) – occurs in 2-7 of 1000 births**
 - **Growth retardation**
 - **CNS abnormalities**
 - **Facial dysmorphism**

4

Background and Significance

- **Fetal Alcohol Spectrum Disorders (FASD)**
 - **Affects 2-5% of all US live births (May et al., 2009)**
 - **Alcohol-related neurodevelopmental disorders (ARND)**
 - **Alcohol-related birth defects (ARBD)**
- **FASD is 100% preventable**

5

Prevalence of Prenatal Alcohol Use

- **National prevalence rates of prenatal alcohol use in pregnant women in last 30 days (Marchetta et al., 2012)**
 - **7.6% report any alcohol use**
 - **1.4% binge drinking**
- **Prevalence of alcohol abuse in pregnant women seeking treatment for substance use – 34.8%**
 - **Alcohol abuse with drug use (27.8%) or without (7.0%) (SAMSHA, 2013)**

6

Interventions

- **Motivational interviewing (MI)** (Miller & Rollnick, 2002)
 - **Client-centered directive approach to promote behavior change**
 - **4 MI principles**
 - **Establishing empathy**
 - **Developing discrepancy**
 - **Rolling with resistance**
 - **Supporting self-efficacy**
 - **Useful in decreasing alcohol-exposed pregnancies** (Floyd et al., 2007; Handmaker et al., 1999; Project CHOICES Intervention Research Group, 2003)
- **Motivational enhancement therapy (MET; Miller, 1999; Miller and Rollnick, 1991) – 4 MI principles + feedback**

7

Randomized Trials of MET

Ball et al., 2007 - For non-pregnant substance users (N=461) found more sustained reductions in substance use in primary alcohol users, but not in primary drug users (Ball et al., 2007)

Winhusen et al., 2008 - For pregnant substance users (MET-PS) found no improvement in substance use outcomes (Winhusen et al., 2008)

8

Current Study

To evaluate the efficacy of MET-PS, relative to TAU, in decreasing alcohol and illicit-drug use in the subset of pregnant substance users who reported alcohol use in the 28 days prior to randomization.

9

Study Design

Secondary analysis of the NIDA-CTN MET-PS trial dataset (Winhusen et al., 2008) – **included only women reporting previous 28 day alcohol use at baseline**

Recruited 200 women from intakes to the pregnant women treatment programs of four participating agencies (in North Carolina, New Mexico, Indiana, and Kentucky)

Randomized to MET or treatment as usual (TAU)

- 4 week active phase – included at least 3 individual sessions
- Follow-ups at 1 and 3 months post-active phase

10

Study Participants

➤ Inclusion criteria:

1. At least 18 years old
2. Pregnant
3. Not planning to terminate pregnancy
4. Identified as needing substance abuse treatment

➤ Exclusion criteria

1. Require inpatient or residential treatment (other than detox)
2. More than 32 weeks pregnant
3. Relocating within 4 months
4. Pending legal charges
5. Suicidal/homicidal risk

11

Outcome Measures

Self-report of alcohol use and illicit drug use

➤ Substance Use Calendar

Urine toxicology samples

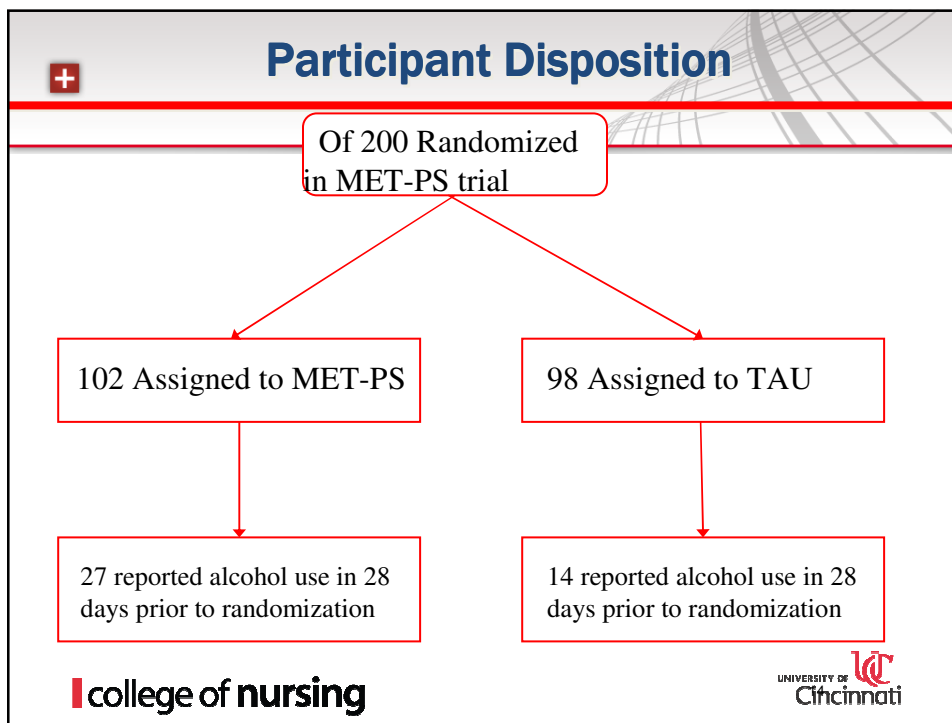
12

Data Analysis

Logistic generalized mixed model regressions

- Determined treatment effect and/or treatment-by-time interaction effect for longitudinal binary outcome measures (daily alcohol use, daily illicit drug use, urine drug screens)

13



Participant Demographics

	MET-PS (N=27)	TAU (N=14)
Age	29.4	24.1
Race/Ethnicity (%)		
African-American	33.3	46.2
Caucasian	44.4	30.8
Other	0.0	15.4
Hispanic	22.2	7.7
Weeks pregnant	20.6	18.7

15

Drug Use

Primary drug used (%)	MET-PS (N=27)	TAU (N=14)
Alcohol	18.5	35.7
Cocaine	33.3	21.4
Marijuana	11.1	35.7
Opiates	7.4	0.0
Methamphetamine	3.7	0.0
Other	25.9	7.1
Days of Alcohol Use (past 28) *	5.7	1.7
Days of Substance Use (past 28)	12.1	8.7

* p<0.05

Results: Self-report of Alcohol Use

Active phase:

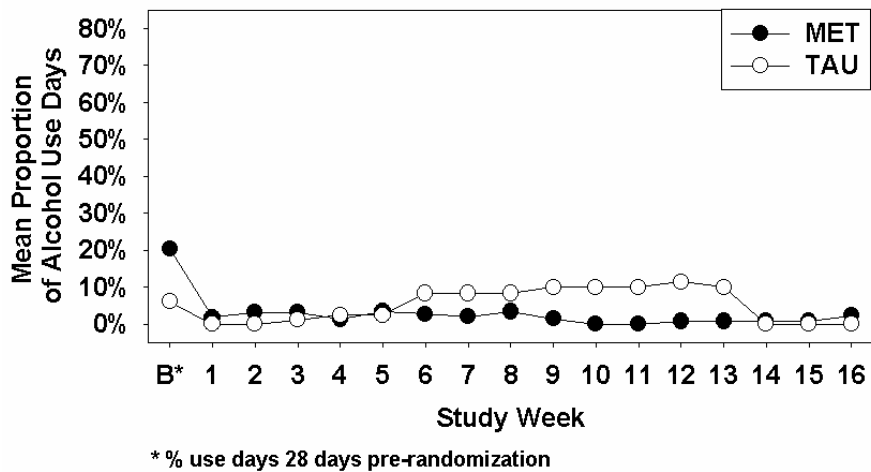
- Non-significant Treatment ($X^2 = 1.49$, $df = 1$, $p > .05$), Time ($X^2 = 2.63$, $df = 1$, $p > .05$), and Treatment X Time ($X^2 = 2.64$, $df = 1$, $p > .05$) effects

During 12 week follow-up:

- Significant Time ($X^2 = 16.76$, $df = 1$, $p < .0001$) and Treatment x Time interaction effects ($X^2 = 13.07$, $df = 1$, $p < .001$)
- MET-PS participants reported lower levels of alcohol use relative to TAU

17

Mean Proportion of Alcohol Use Days



18

Results: Self-report of Drug Use Days

Active phase:

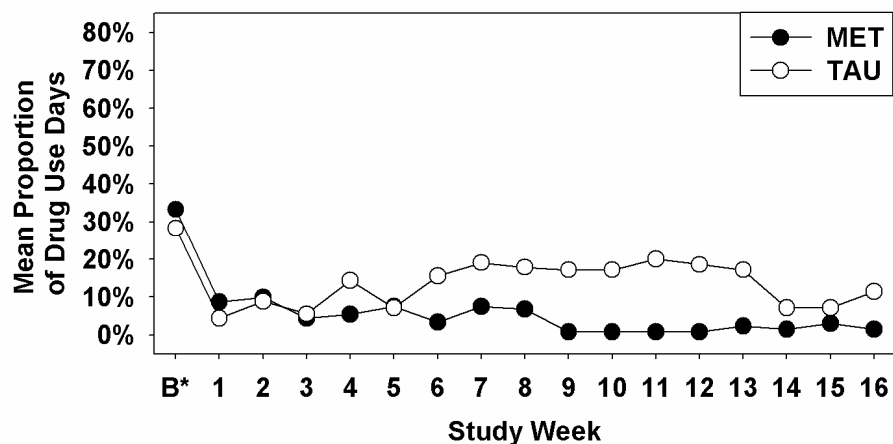
- Significant Treatment x Time interaction effects ($X^2 = 6.89$, $df = 1$, $p < .01$)

During the 12 week follow-up:

- Significant Treatment x Time interaction effects ($X^2 = 8.26$, $df = 1$, $p < .01$).
- Both groups had similar decreases in drug use by wk 1
- But this decrease was sustained by the MET-PS group, not the TAU, over the next 15 weeks

19

Mean Proportion of Drug Use Days



* % use days 28 days pre-randomization

20

Urine Drug Toxicology

Active phase:

- Non-significant Treatment ($X^2 = 0.56$, $df = 1$, $p > .05$), Time ($X^2 = 2.11$, $df = 1$, $p > .05$), and Treatment x Time ($X^2 = 0.40$, $df = 1$, $p > .05$) effects

During 12 week follow-up:

- Non-significant Treatment ($X^2 = 0.09$, $df = 1$, $p > .05$), Time ($X^2 = 0.50$, $df = 1$, $p > .05$), and Treatment x Time ($X^2 = 0.36$, $df = 1$, $p > .05$) effects

21

Discussion

This study found MET-PS, relative to TAU, to decrease alcohol and illicit-drug use over time in pregnant substance users reporting previous 28 day alcohol use at baseline

➤ Alcohol Use:

- MET participants significantly decreased alcohol use days during the 12 week follow-up
- TAU participants increased alcohol use days

➤ Illicit Drug Use:

- MET participants had sustained decreases in drug use
- TAU participants rebounded toward baseline use

22

Discussion

Results consistent with findings of significant decreases in substance use when MET provided to substance users whose primary drug is alcohol (Ball et al., 2007)

In the prevention of FASD, these findings support the potential usefulness of MET to decrease prenatal alcohol use in a high risk population of pregnant substance users.

Implications for psychiatric mental-health nurses

23

Limitations

Secondary analysis of data collected in a NIDA CTN MET-PS clinical trial (Winhusen et al., 2008)

Although randomized to treatment in the main study (MET-PS = 102, TAU = 98), almost twice as many women in the secondary analysis received MET-PS (n = 27) compared to TAU (n = 14)

Significant baseline difference in alcohol use between the groups (baseline use was accounted for in the analyses)

24

Conclusions

With FASD occurring in 2-5% of all US live births (May et al., 2009), it is imperative that women who drink at levels risky to the developing fetus receive effective interventions to assist with decreased prenatal alcohol use.

With approximately 35% of pregnant substance users in treatment reporting alcohol abuse (SAMSHA, 2013), this study provides preliminary support for the use of MET to decrease prenatal alcohol use in substance using women.

25

References

- Ball, S.A., Martino, S., Nich, C., Frankforter, T.L., Van Horn, D., Crits-Christoph, P., ... Carroll, K.M.; National Institute on Drug Abuse Clinical Trials Network (2007). Site matters: Multisite randomized trial of motivational enhancement therapy in community drug abuse clinics. *J. Consult. Clin. Psychol.* 75, 556-567.
- Floyd, R. L., O'Connor, M. J., Sokol, R. J., Bertrand, J., Cordero, J. F. (2005). Recognition and prevention of fetal alcohol syndrome. *Obstet. Gynecol.* 106, 1059-1064.
- Floyd, R.L., Sobell, M., Velasquez, M.M., Ingersoll, K., Nettleman, M., Sobell, L.,... Nagaraja, J.; Project CHOICES Efficacy Study Group (2007). Preventing alcohol-exposed pregnancies: A randomized control trial. *Am. J. Prev. Med.* 32, 1-10.
- Handmaker, N.S., Miller, W.R., Manicke, M. (1999). Findings of a pilot study of motivational interviewing with pregnant drinkers. *J. Stud. Alcohol* 60, 285-287.
- Jacobs, E. A., Copperman, S. M., Jeffe, A., & Kulig, J. (2000). Fetal alcohol syndrome and alcohol related neurodevelopmental disorders. *Pediatrics*, 106, 358-361.
- Hoyme, H.E., May, P.A., Kalberg, W.O., Kodituwakku, P., Gossage, J.P., Trujillo, P.M., ...Robinson, L.K. (2005). A practical clinical approach to diagnosis of fetal alcohol spectrum disorders: Clarification of the 1996 Institute of Medicine Criteria. *Pediatrics* 115, 39-47.

26

References

- Manning, M. A., & Hoyme, H. E. (2007). Fetal alcohol spectrum disorders: A practical clinical approach to diagnosis. *Neuroscience & Biobehavioral Reviews*, 31, 230-238.
- Marchetta, C.M., Denny, C.H., Floyd, R.L., Cheal, N.E., Sniezek, J.E., McKnight-Eily, L.R. (2012). Alcohol use and binge drinking among women of childbearing age – United States, 2006 – 2010. *MMWR Morb. Mortal. Wkly. Rep.*, 61, 534-538.
- May, P.A., Gossage, J.P., Kalberg, W.O., Robinson, L.K., Buckley, D., Manning, M., Hoyme, H.E. (2009). Prevalence and epidemiologic characteristics of FASD from various research methods with an emphasis on recent in-school studies. *Dev. Disabil. Res. Rev.* 15, 176-192.
- Miller, W. R. (1999). Enhancing Motivation for Change in Substance Abuse Treatment. SAMHSA Treatment Improvement Protocol Series Volume 35, DHHS Publication No. (SMA) 99-3354. Substance Abuse and Mental Health Services Administration Center for Substance Abuse Treatment, Rockville, MD.
- Miller, W. R., Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. Guilford Press, New York.
- Miller, W., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change*. New York, NY: Guilford.

27

References

- Project CHOICES Intervention Research Group. (2003). Reducing the risk of alcohol-exposed pregnancies: A study of a motivational intervention in community settings. *Pediatrics*, 111, 1131-1135.
- Stratton, K. R., Howe, C. J., & Battaglia, F. C. (Eds.). (1996). *Fetal alcohol syndrome: Diagnosis epidemiology, prevention, and treatment*. Washington, DC: National Academy Press.
- Substance Abuse and Mental Health Services Administration. (July 25, 2013). Trends in substances of abuse among pregnant women and women of childbearing age in treatment. The TEDS Report. Accessed May 22, 2014 from <http://www.samhsa.gov/data/spotlight/spot110-trends-pregnant-women-2013.pdf>
- Winhusen, T., Kropp, F., Babcock, D., Hague, D., Erickson, S.J., Renz, C., Rau, L., Lewis, D., Leimberger, J., Somoza, E. (2008). Motivational enhancement therapy to improve treatment utilization and outcome in pregnant substance users. *J. Subst. Abuse Treat.* 35, 161-173.

28