

# Developmental Outcome of Infants and Young Children

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- Public concern and medical research is based on the premise that licit and illicit substances may alter the fetal development of the physical and/or nervous system of the child
- Type, duration and severity of harm are dependent upon multiple factors

# Overview

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- Licit Drugs of Concern:
- Alcohol
- Nicotine
- Benzodiazepines
- Prescription opioids
- Inhalants
- Marijuana (To date, legal in 29 states and DC)  
(7 states +DC also legal for recreational use)

# Overview

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- n Illicit Drugs of Concern:
  - n Heroin
  - n Cocaine
  - n Methamphetamines
  - n Hallucinogens
  - n Marijuana
  - n Prescription opioids when misused

# Substance Use in Pregnancy

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- n Although we usually focus on a singular drug, multiple drug use is the norm
- n Multiple substances may have additive or synergistic effects on the health and well being of the mother, fetus and child

# Heroin

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- n Very limited data on effects of heroin exposure
- n Natural cohort of 29 untreated heroin-dependent pregnant women receiving prenatal care at Houston's city-county hospital compared to 39 pregnant women who enrolled in methadone maintenance program

Wilson et al, 1981

# Heroin

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- n 5/25 children had impaired cognitive functioning ( $\leq 2$  SD below the mean) at 3-6 years of age.
- n The authors suggest that limited prenatal care, maternal drug withdrawal and/or overdose and untreated obstetrical complications compromised the fetus and a poor environment during childhood compounded prenatal influences

# Prescription Opioids: Methadone

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- n No consistent evidence of adverse outcomes with positive findings usually confounded by the environment
- n Several longitudinal studies conducted in the 1980's-1990's of prenatal methadone exposure. Studied children from birth through 5 years of age
- ❖ Quasi experimental in design; most are 15-30 years old with small sample sizes; majority of infants across all studies were exposed to multiple illicit drugs in addition to methadone

# Prescription Opioids

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- n To date, there are no studies on the developmental outcome of children prenatally exposed to prescription opioids such as oxycodone and hydrocodone
- n Very little data for infants prenatally exposed to buprenorphine



# NAS and Development

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- n Data are limited
- n Does not support an association of severity of NAS (i.e. NAS requiring pharmacological treatment vs. moderate to mild NAS) with developmental outcome

*(Kaltenbach and Finnegan, Neurobehavioral Toxicology and Teratology, 1986), Kaltenbach et al., Manuscript in preparation)*

# Prescription Opioids

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- n Data on developmental outcomes of infants and children prenatally exposed to **buprenorphine** is beginning to emerge
- n The MOTHER study has completed a supplemental study examining the developmental outcome of children born in the MOTHER study

# MOTHER Study data

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- n First developmental data obtained from participants in a **randomized controlled trial**

# The MOTHER Study

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- n The MOTHER study affords us with an extraordinarily unique opportunity to both expand and obtain new knowledge regarding the developmental outcome of children born to methadone or buprenorphine maintained mothers, including outcomes of infants requiring treatment for NAS and those who did not require treatment
- n The MOTHER study exclusion criteria of current alcohol or benzodiazepine abuse or dependence and the use of a contingency management voucher incentive program to reduce/eliminate illicit drug use defines this **cohort of infants as singularly unique**, a cohort that can provide significant information regarding the effects of prenatal methadone exposure and prenatal buprenorphine exposure

# Comprehensive Treatment

- Vouchers contingent upon drug negative biological samples (resulted in **extremely low concomitant drug use, benzodiazepines 3%; cocaine 7%; opiates 8%**)
- Vouchers contingent upon compliance with treatment
  - Counseling
  - Medical Care
  - Obstetric services
  - Non-Obstetrical medical care (e.g., psychiatric)

# Measures: MOTHER Developmental Study

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## n Infant Measures

Bayley Scale

Infant Behavior Questionnaire

Reel Language Test

Infant Toddler Sensory Profile

Anthropometric measures

## Maternal Measures

Peabody Picture Vocabulary Test

Hollingshead Index

Parenting Stress Index

Home Observation of the Environment

ASI Follow up

Urine Drug Screen

Assessments conducted at 3, 6, 12, 24, and 36 months of age

# MOTHER Developmental Study

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- MOTHER study
  - 131 mother/infant dyads
  - 114 potential participants for follow-up study

96 participants enrolled in follow-up

(Unpublished data, manuscript in preparation)

# Summary of MOTHER Developmental Findings

- n Children prenatally exposed opioid medications follow a pattern of normal development during the first 3 years of life
- n No pattern of differences to support medication superiority
- n No pattern of differences for infants treated for NAS v infants who did not receive treatment for NAS
- n Mothers caregiving skills less than optimal but able to provide an enriched home environment over time



# Summary

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- n Alcohol and tobacco have the most conclusive evidence of a negative impact on the infant and child
- n Drug use/abuse rarely is with a single drug. Multiple substances may have additive or synergistic effects on the outcome of the infant

# Summary

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- n A range of social, environmental, and biological factors moderate developmental outcomes
- n The impact of maternal/environmental factors on developmental outcome emphasize the **importance of the provision of comprehensive treatment services** for women with substance use disorders

# Comprehensive Treatment for Pregnant and Parenting Women

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- The well being of the infant is improved with the well being of the mother

# Treatment for Pregnant and Parenting Women with Substance Use Disorders

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- The complex bio-psycho-social problems associated with maternal substance use disorders present special challenges
- Comprehensive, women centered services offering a continuum of care is essential

# Bio-Psycho-Social Issues

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- History of Violence and Trauma
  - ❖ Pervasive history of violence and trauma among women with substance use disorders (SUD)  
Rates of physical and/or sexual abuse range from 55%-99%\*
  - ❖ Women with PTSD have been found to be 5 times more likely to have a SUD than women without PTSD rates have been reported to range between 14% and 60%^.

\* *Greenfield et al., Psychiatric Clinics in North America, 2010*

^ *Najavits et al., American Journal of Addiction, 1997*

# Bio-Psycho-Social Issues

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- Difficulty with transportation to treatment sites
- Inadequate health insurance
- Relationship with a partner with substance use disorder
- Less likely to have someone actively supporting them in treatment
- Often have sole responsibility for children
- Treatment entry often results from a social work referral

# Bio-Psycho-Social Issues

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- Last but not least- STIGMA
- Significant stigmatization of substance use disorder in general, but more so for women, especially women who are pregnant

# Model of Care for Women and Children





# Treatment Models of Care

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Scientific foundation of clinical practice: Opiate use in pregnant women (Finnegan, Hagan, Kaltenbach, 1991)

Pregnancy and addiction: a comprehensive care model (Jansson, Svikis, et al, 1996)

Comprehensive treatment for pregnant substance abusing women (Kaltenbach & Comfort, 1996)

Gender specific substance treatment (Finkelstein, Kennedy, Thomas, & Kearns, 1997)

Substance Abuse Treatment: Addressing the specific Needs of Women TIP 51 (SAMHSA, 2009)

Treating women with substance use disorders during pregnancy: a comprehensive approach to caring for mother and child (Jones & Kaltenbach, 2013)

# Framework for Treatment

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- Woman-centered
  - Responsive to the specific needs of women
- Trauma-informed
  - Recognizes the role of trauma and violence
- Strength based
  - Focus on strengths rather than deficits
- Culturally competent
  - Acknowledges the role of culture, ethnicity, race, racism, and sexual orientation

# Framework for Treatment

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## Woman- centered

- Childcare assistance
- Pregnancy
- Parenting
- Domestic violence
- Sexual trauma and victimization
- Psychiatric co-morbidity

# Framework for Treatment

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## Woman-centered

- Housing
- Income support
- Education
- Social Services

# Framework for Treatment

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## Trauma –Informed

- Recognizes signs and symptoms of trauma in patients, families, and staff
- Responds by fully integrating knowledge about trauma into policies, procedures, and practices
- Provides trauma-informed training to **all** staff, including medical staff, administrative staff, and support staff
- Seeks to actively resist re-traumatization

# Framework for Treatment

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## Trauma-Informed

### Understands trauma

Trauma results from an event, or series of events, that is experienced by the individual as physically or emotionally harmful and that has lasting effects on the individual's functioning.

# Framework for Treatment

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## Trauma-Informed

### Understands effects of trauma

- Inability to cope with normal stress of daily living
- Inability to trust
- Inability to manage cognitive processes such as memory and attention
- Inability to regulate behavior or to control the expression of emotion
- Hyper-vigilance or constant state of arousal
- Emotional numbing or avoidance

# Framework for Treatment

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## Key Principles of Trauma-informed Approach

- Safety
- Trustworthiness
- Peer support
- Collaboration and mutuality
- Empowerment, voice, and choice
- Cultural, historical, and gender respect



# Framework for Treatment: Key Principles of Trauma-Informed Approach

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## Safety

- All staff and patients feel physically and psychologically safe.
- The physical setting is safe.
- Interpersonal interactions promote a sense of safety.

# Framework for Treatment: Key Principles of Trauma-Informed Approach

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## Trustworthiness and Transparency

- Operations and decisions are conducted with transparency with the goal of maintaining trust.



# Framework for Treatment: Key Principles of Trauma-Informed Approach

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## Peer Support

- Peer support and mutual self help important for establishing safety and hope, building trust, enhancing collaboration, and utilizing lived experiences to promote recovery and healing.

# Framework for Treatment: Key Principles of Trauma-Informed Approach

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## Collaboration and mutuality

- True partnership between staff and clients
- Between all staff from direct care staff to administration

# Framework for Treatment: Key Principles of Trauma-Informed Approach

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## Empowerment, Voice, and Choice

- Individual strengths and experiences are recognized and support is provided for shared decision making, choice, and goal setting.

# Framework for Treatment: Key Principles of Trauma-Informed Approach

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## Cultural, Historical, and Gender Respect

- Incorporate policies, protocols, and processes that are responsive to the racial, ethnic, and cultural needs of served individuals served and recognize and address historical trauma.

# Framework for Treatment

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## Strength Based

- Identifies and builds on the woman's strengths.
- Uses available resources to develop and enhance resiliency and enhance recovery skills, deepen a sense of competency and improve the quality of her life.

# Framework for Treatment

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## Culturally competent

- Understands the world views and experiences of women from different racial, ethnic, and cultural backgrounds.
- Understands the interaction among gender, culture and substance use.



# Comprehensive Services

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Treatment needs to include

- ❑ Medication assisted treatment
- ❑ Medical, obstetrical, and psychiatric services
- ❑ Prenatal education and women's health
- ❑ Individual and group psychotherapy
- ❑ Family therapy
- ❑ Trauma counseling
- ❑ GED training
- ❑ Case management
- ❑ DHS liason
- ❑ Parent child services including developmental child care, individual parenting counseling, parent education groups and parenting activities

# Keep a mother in mind in order for her to keep her child in mind

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- Meeting the needs of pregnant and parenting women with opioid use disorder includes not only medication treatment and care of the opioid exposed newborn but requires a comprehensive model of care that addresses the complex array of bio-psycho-social problems associated with maternal addiction