



Impacts from Prenatal Substance Exposure – An Overview

Excerpts from: <http://pediatrics.aappublications.org/content/pediatrics/131/3/e1009.full.pdf>

NB= newborn

Nicotine

- NB Impaired orientation and autonomic regulation and abnormal muscle tone
- Long term Impulsivity, attention problems, hyperactivity, negative & externalizing behaviors which continue into adolescence and increase risk for delinquency, criminal behavior, & substance abuse; learning & memory problems, slightly lower IQ; poor language & reading abilities; literature re: academic achievement limited but Dutch have seen poorer arithmetic and spelling performance
- Predisposition to Drug Use? Suggest that prenatal nicotine increases risk for early experimentation (but this could be due to environmental, socioeconomic factors); another study found higher rates of hospitalization for substance abuse in adult offspring

Alcohol

- NB Poor habituation and low levels of arousal, motor abnormalities
- Long term Attention problems, adaptive behavior problems spanning into adulthood (disrupted school experiences, delinquent & criminal behavior & substance abuse, social difficulties); most common preventable cause of non-genetic intellectual disability (but quite variable IQs are common), poor memory & executive function skills; interferes with development & use of language which can negatively impact social interactions; poor math and reading skills throughout school years
- Predisposition to Drug Use? Mounting clinical data support increased risk of ethanol abuse later in life after prenatal exposure

Marijuana

NB Increased startle response, tremors in newborn

Long term Inattention and impulsivity; no effect on IQ but associated with deficits in problem solving skills that require sustained attention & visual memory, analysis & integration, subtle effects on learning & memory; no language impact seen in studies done on children up to age 12; associated with academic underachievement in reading & spelling

Predisposition to Drug Use? Associated with increased risk for MJ & tobacco use in offspring

Opiates

NB Withdrawal symptoms/NAS

Long term Hyperactivity, short attention span in toddlers, older kids have memory & perceptual problems; long term studies of prenatal opiate exposure have not produced consistent findings re: developmental effects (scores tend to be lower in exposed infants but the differences no longer exist when appropriate medical & environmental controls included in the analysis); no data are available relating to language development; school achievement has not been studied adequately

Predisposition to Drug Use? Insufficient data to draw any conclusions re: use in later life

Cocaine

NB irritability and lability of state, decreased behavioral & ANS regulation, poor alertness & orientation

Long term negative effect and inconsistent findings re: behavioral findings; and *has not* predicted overall development, IQ, or school readiness, there have been some executive functioning issues including visual-motor ability, attention and working memory challenges; subtle language delays seen; mixed achievement information- 79% increased odds of needing an Individualized Education Plan & 2.8x increased risk of learning disabilities BUT other studies do not support significant cocaine effects on school achievement

Predisposition to Drug Use? Insufficient data to draw any conclusions re: use in later life

Methamphetamine

NB poor movement quality, decreased arousal, increased stress

Long term possible association with externalizing behaviors and peer problems; limited data are revealing an association with IQ; no data are available relating to language development; no data available on academic achievement (but In Sweden for children prenatally exposed to amphetamines by age 14-15 they had significantly lower math scores & higher rates of grade retention)

Predisposition to Drug Use? Insufficient data to draw any conclusions re: use in later life

SUMMARY of EFFECTS OF PRENATAL DRUG EXPOSURE

	Nicotine	Alcohol	MJ	Opiates	Cocaine	Meth
Short term effects:						
Fetal growth	Effect	Strong effect	No effect	Effect	Effect	Effect
Anomalies	No consensus on effect	Strong effect	No effect	No effect	No effect	No effect
Withdrawal	No effect	No effect	No effect	Strong effect	No effect	*
Neurobehavior	Effect	Effect	Effect	Effect	Effect	Effect
Long term effects:						
Growth	No consensus on effect	Strong effect	No effect	No effect	No consensus on effect	*
Behavior	Effect	Strong effect	Effect	Effect	Effect	*
Cognition	Effect	Strong effect	Effect	No consensus on effect	Effect	*
Language	Effect	Effect	No effect	*	Effect	*
Achievement	Effect	Strong effect	Effect	*	No consensus on effect	*
*Limited or no data available						