

# THE DRUG-ENDANGERED CHILD FROM A MEDICAL PERSPECTIVE

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# Objectives

- Define and discuss the epidemiology of drug-endangered children
- Discuss the impact of intrauterine drug exposure
- Review methods of drug detection
- Identify the risks for children exposed to a clandestine laboratory
- Discuss the prognosis for drug-endangered children
- Review cases of drug endangered children

# Epidemiology

- In 2015, CPS received 4 million referrals involving 7.2 million children
  - ~20% were substantiated
- Types of abuse:
  - 75.3% neglect
  - 17.2% physical abuse
  - 8.4% sexual abuse
  - 6.9% “other”
    - Threatened abuse, safe relinquishment of a newborn, parent’s drug/alcohol abuse

# Epidemiology – Child Fatalities

- In 2015, an estimated 1,670 children died from abuse and neglect
  - ▣ 2.25 per 100,000 children
- 6.9% associated with caregiver alcohol abuse
- 18.1% associated with caregiver drug abuse
- 14.4% were exposed to domestic violence

# Epidemiology

- Children with parents abusing substances are
  - ▣ 2.7 times more likely to be abused
  - ▣ 4.2 times more likely to be neglected
  
- At least one parent had a documented problem with either alcohol or drugs in 43% of cases of serious child abuse or neglect
  - ▣ More likely to have been previously charged with child maltreatment and labeled as high risk to their children

# Drug Endangered Children (DEC)

- The National Alliance for Drug Endangered Children defines drug endangered children as **“children who are at risk of suffering physical or emotional harm as a result of illegal drug use, possession, manufacturing, cultivation, or distribution”**.
- They may also be children whose caretaker’s substance misuse interferes with the caretaker’s ability to parent and provide a safe and nurturing environment.

# Drug Endangered Children (DEC)

- Children under age 18 found in homes:
  - With caregivers who are manufacturing controlled substances in/around the home
    - “meth labs”
  - Where caregivers are dealing/using controlled substances and the children are exposed to the drug or drug residue
    - “meth homes” or “drug homes”

# Children at Risk



Children of parents with substance use disorders have a higher likelihood of developing substance use problems themselves.



# Children at Risk



Child abuse and neglect increase a person's risk of later substance use, and individuals with substance use disorders are more likely to abuse or neglect their children.

# Children at Risk

- Risk (n.): exposure to the chance of injury or loss
- All drug-endangered children are at risk
- How much risk and risk for what varies

# Children at Risk

- Prenatal risks
- Postnatal risks



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# PRENATAL RISKS

# Prenatal Risks

- The effects of prenatal drug exposure:
  - ▣ Are difficult to isolate, owing to other variables such as poor prenatal care, poor nutrition, prematurity, and adverse postnatal environment
  - ▣ Depend on the substance being used, frequency of use, duration of use, and quantity



# Impact of in utero exposure of illicit substances on the fetus and newborn infant

## □ Pregnancy/Delivery:

- Placental abruption
- Intrauterine death
- Abortion
- Stillbirth
- Preterm birth
- Fetal distress

## □ After birth:

- Neonatal abstinence syndrome
- Hyperbilirubinemia
- Hypoglycemia
- Intracranial hemorrhage
- Pneumonia
- Infections
- Increased risk of death from SIDS
- Poor suck/feeding difficulties after birth

## □ Long term effects:

- Immune deficiency
- Arrhythmias
- Microcephaly
- Birth defects
- Craniofacial abnormalities
- Mental retardation
- Behavioral abnormalities
- Growth deficiency

# Prenatal Risks - Cocaine

- Issues that may result from prenatal exposure to cocaine:
  - ▣ Language difficulties
  - ▣ Behavioral concerns
  - ▣ Attention Deficit Hyperactivity Disorder (ADHD)
  - ▣ Oppositional Defiant Disorder
- Risk of birth defect appear greater with more frequent use



# Prenatal Risks - Methamphetamine

- Issues that may result from prenatal exposure to methamphetamine:
  - ▣ 3.5-fold increased risk of an infant being small for gestational age
  - ▣ Postnatal effects may be subtle
    - Lethargy, feeding difficulties, poor state regulation, low threshold for stimulation, irritability
  - ▣ Cognitive deficits
  - ▣ Long-term delays in development



# Prenatal Risks - Marijuana


- Issues that may result from prenatal exposure to marijuana:
  - Fetal growth retardation
  - Increased risk of miscarriage
  - Prematurity
  - Developmental delay
  - Behavioral and learning disorders

# Prenatal Risks

- Effects of specific substances can be difficult to elicit due to multiple other factors present
- Higher maternal risk for infections, sexually transmitted diseases, nutritional deficiencies, anemia, toxin-induced organ damage
- Poor prenatal care



# POSTNATAL RISKS



*“Substance abuse has deleterious effects on **virtually every aspect** of one’s life and **gravely interferes** with the ability to parent adequately.”*

# Postnatal Risks

- Risk of Physical Abuse
  - ▣ Erratic discipline
  - ▣ Increased irritability
  - ▣ Irrational rage
  
- Risk of Neglect
  - ▣ Lack of supervision
  - ▣ Lack of necessities
  - ▣ Lack of safe and nurturing environment



# Postnatal Risks

- Risk of Exposure to Illegal Activities
  - ▣ Property crimes
  - ▣ Drug dealing
  - ▣ Drug transporting
  - ▣ Kidnapping
  - ▣ Home invasions



# Postnatal Risks

## □ Other Risks

- Exposure to violence
  - Domestic violence
  - Crime-related violence
- Overlay deaths
- Used needles
- Exposure and ingestion
  - Breastfeeding
- Sexual abuse
- Emotional abuse

## □ Loss

- Parents
- Death
- School
- Sibling separation
- Pets (loss or death)
- Home
- Multiple foster placements

# Evidence of Harm: Illicit Drug Activities

- Use
- Distribution
- Manufacturing & Cultivation





# CHILDREN EXPOSED TO THE CLANDESTINE LAB

# Hazards in a Clandestine Lab

- Potential toxicities from the chemicals and gases produced
  - ▣ Solvents
  - ▣ Acids/bases
  - ▣ Iodine
  - ▣ Phosphorus
  - ▣ Phosphine
  - ▣ Anhydrous ammonia
- Fires, explosions, chemical and thermal burns
- Heightened risk
  - ▣ Physical abuse
  - ▣ Sexual abuse
  - ▣ Psychological abuse
  - ▣ Neglect
- Possible exposure to:
  - ▣ Methamphetamine or dangerous chemicals
  - ▣ Booby traps
  - ▣ Violence
  - ▣ Weapons
  - ▣ Pornography

# Potential Toxicities

- Depends on:
  - ▣ Specific agent
  - ▣ Route of exposure
  - ▣ Concentration of toxin
  - ▣ Duration of the exposure
  
- No single, well-defined expected presentation

# Potential Toxicities

- Recent exposure to meth:
  - ▣ Tachycardia
  - ▣ Hypertension
  - ▣ Hyperthermia
  - ▣ Irritability/agitation
- More distant serious exposure to meth
  - ▣ CNS depression
  - ▣ Neurological deficit
  - ▣ Coma
- Other potentially harmful chemicals in a lab
  - ▣ Irritation of eyes, skin
  - ▣ Rhabdomyolysis
  - ▣ GI irritation (nausea, vomiting)
  - ▣ Headache
  - ▣ Wheezing/pneumonitis
  - ▣ Respiratory arrest
    - Phosphine or cyanide

# Evidence of Methamphetamine Exposure in Children Removed from Clandestine Methamphetamine Laboratories

- 104 children removed from clandestine meth labs in Tulsa, OK and Sacramento, CA
- Urine toxicology screen with GCMS (gas chromatography-mass spectroscopy) confirmation
- 48 subjects (46%) tested positive for meth
  - 85% that tested positive for meth were 8 yrs old or younger
  - Methamphetamine, pseudoephedrine, ephedrine, or their end products
- Positive results in urine obtained up to 6.5 hours from removal

# Evidence of Methamphetamine Exposure in Children Removed from Clandestine Methamphetamine Laboratories

- Possible routes of exposure:
  - ▣ Skin absorption from surface contamination
  - ▣ Accidental or nonaccidental ingestion
  - ▣ Airborne contamination
  - ▣ Other routes of exposure, such as food
- Studies have revealed findings consistent with aerosolization of methamphetamine during a cook
  - ▣ Also found in refrigerators, microwaves, kitchen appliances
- In vitro studies have demonstrated D-methamphetamine chloride permeated into human cadaver skin quickly when exposed to contaminated materials



# DRUG SCREENING



# Drug Use During Pregnancy

- US Dept of Health and Human Services, 2009
  - ▣ 4.4% of pregnant women, ages 15 to 44, admitted to substance use in the last month
    - Non-pregnant women (10.9%)
    - Decreased with age of respondent
  - ▣ Alcohol use (10.8%)
- Biological specimen testing
  - ▣ Illicit drug use in pregnant women (20%)
    - Maternal urine, maternal hair, newborn urine, meconium



# Maternal and Newborn Screening

- Maternal history
  - ▣ History of drug abuse
  - ▣ Prenatal care starting >16 wks or <4 total visits
  - ▣ History of child abuse, neglect, children placed outside of home
  - ▣ History of domestic violence
  - ▣ History of hepatitis, HIV, syphilis, or prostitution
  - ▣ Unexplained placental abruption
- Acute maternal EtOH intoxication around time of delivery
- Infant history
  - ▣ Unexplained IUGR
  - ▣ Infants with evidence of drug withdrawal

# Newborn Screening

- Seeks to establish a picture of prenatal drug exposure during pregnancy
- Specimen collection and sample extraction can influence accuracy
  - ▣ Dilute urine
  - ▣ Low sample volume

# Legal Implications

- Most clinical laboratories do not routinely perform chain of custody
  - ▣ Not required for legal action or CPS involvement
- 12 states incorporate a positive urine drug screen for a newborn in their definition of child abuse

# Routes of Exposure

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- Environmental (passive)
- Accidental ingestion
- Intentional drug administration

# Types of Specimens

## □ Maternal:

- Hair
- Blood
- Oral fluid
- Sweat
- Urine
- Breast milk

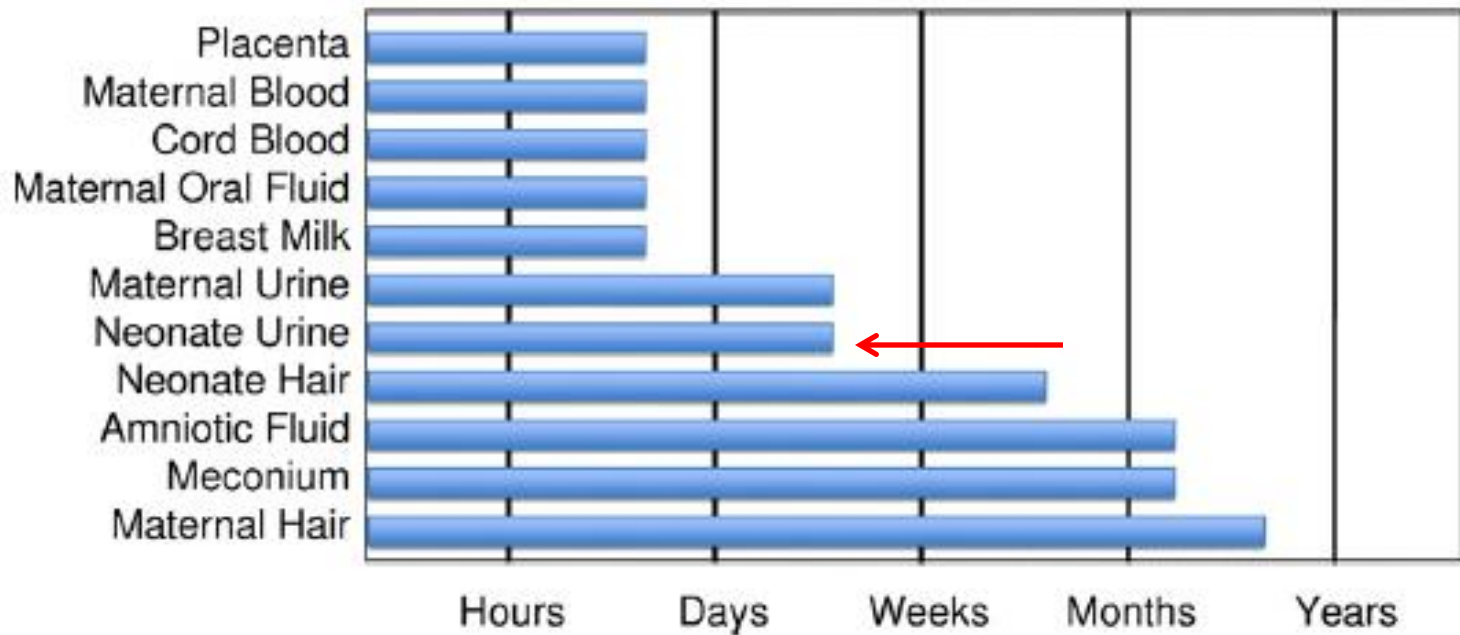
## □ Newborn:

- Meconium\*
- Hair\*
- Cord blood
- Urine\*

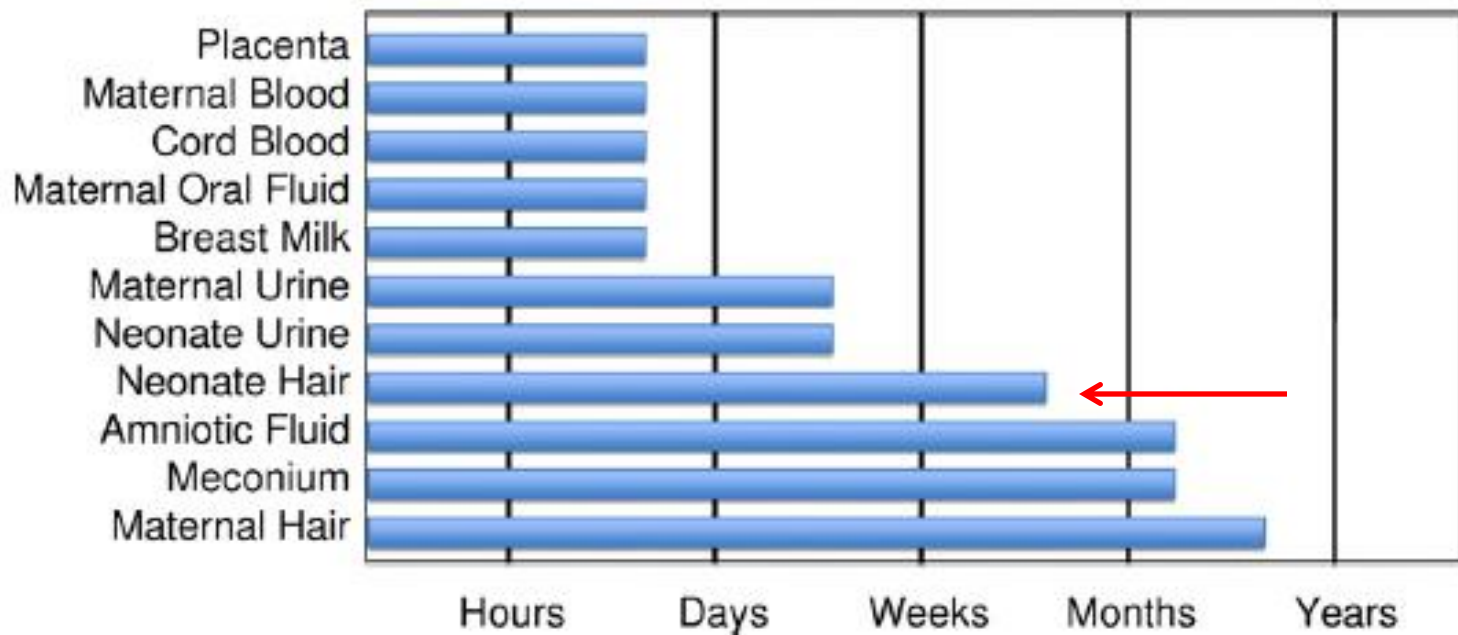
## □ Both:

- Placenta
- Amniotic fluid

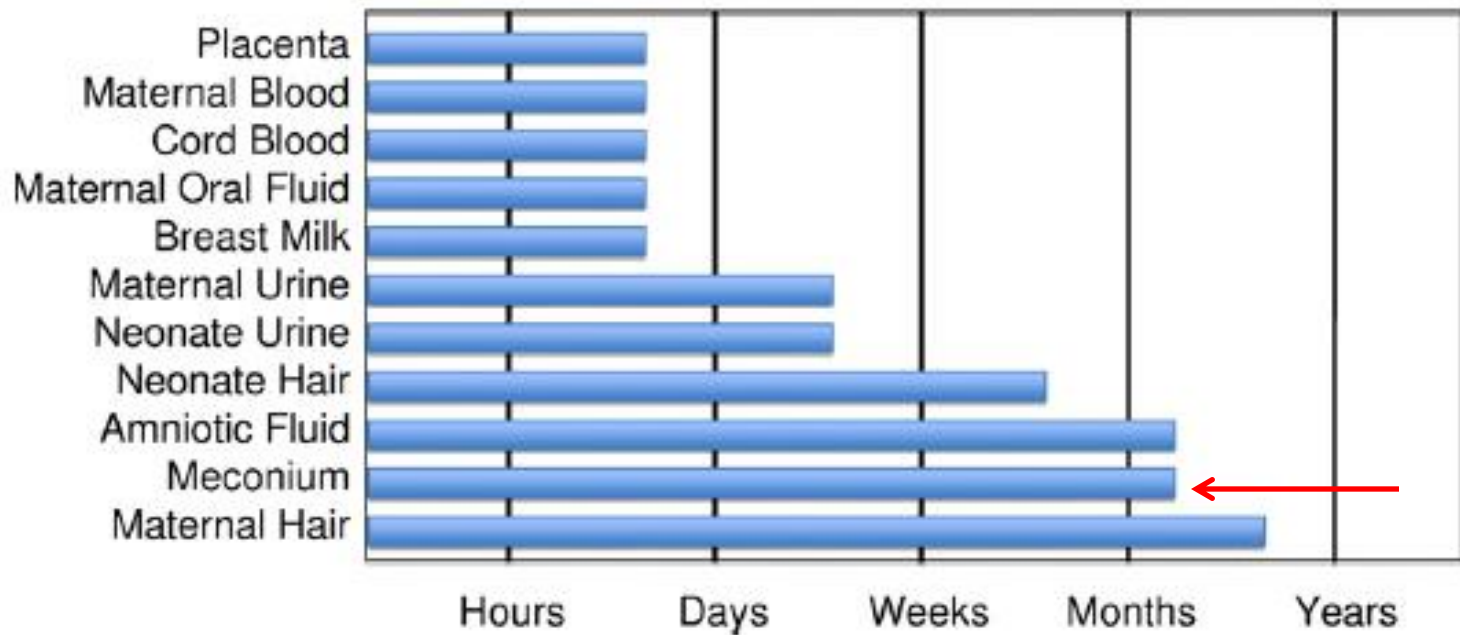
# Window of Detection for Biological Specimens



# Window of Detection for Biological Specimens



# Window of Detection for Biological Specimens





# Types of Specimens

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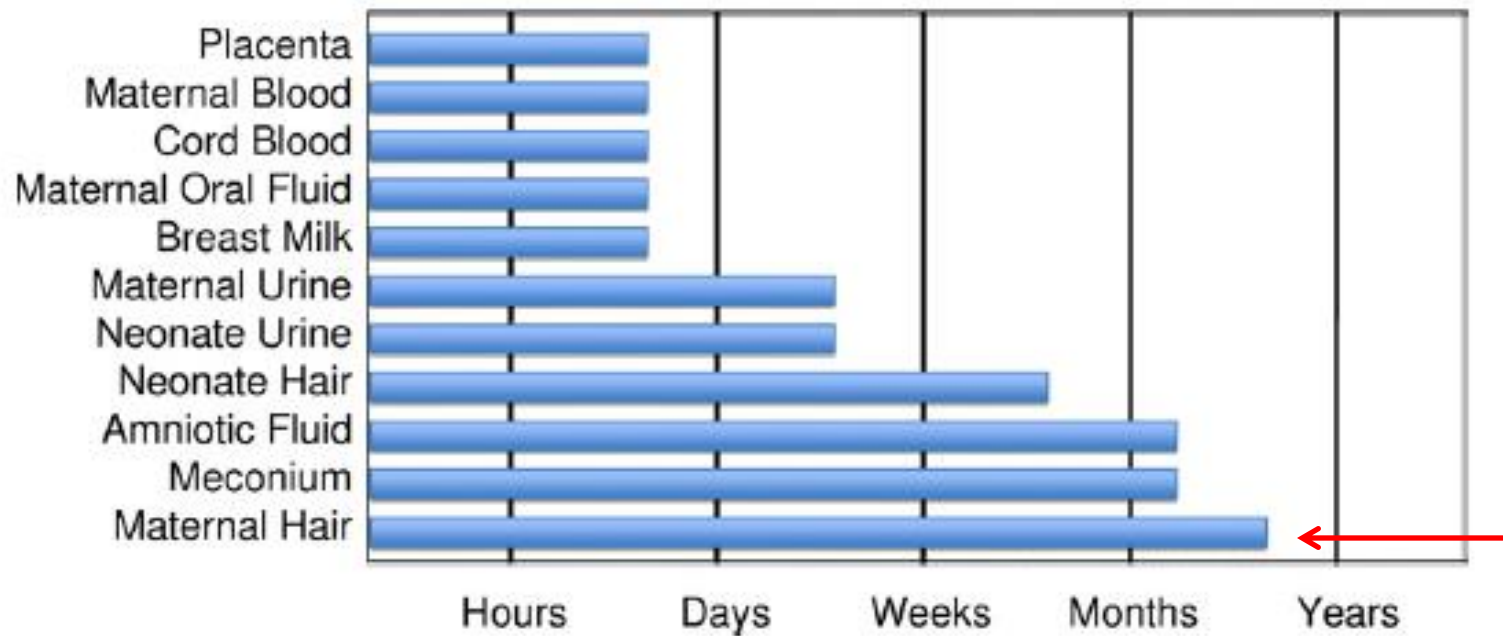
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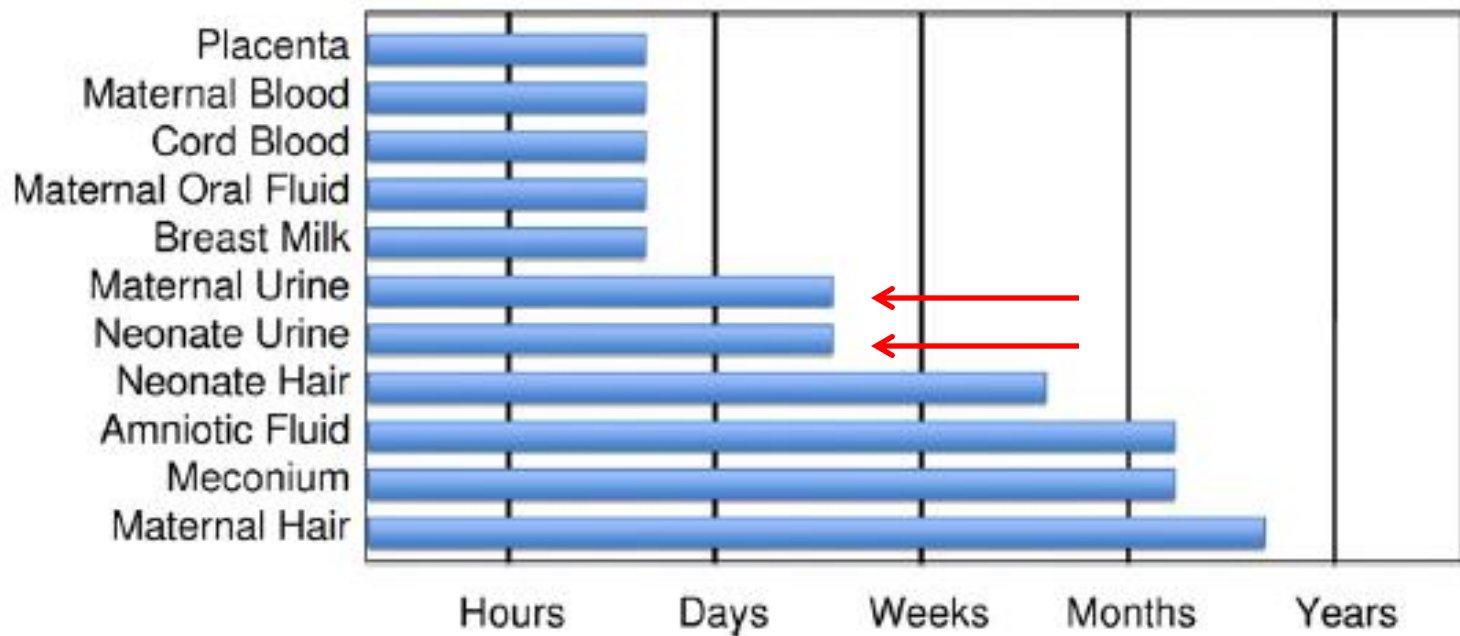
## □ Both:

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# Window of Detection for Biological Specimens



# Window of Detection for Biological Specimens



# Time intervals before drug elimination in urine

Drug	Detectable in urine
Alcohol	< 24 hours
Amphetamines	< 48 hours
Barbiturates	
Short-acting	< 48 hours
Long-acting	< 7 days
Benzodiazepines	< 72 hours
Cocaine	< 72 hours
Marijuana	
Single use	< 72 hours
Chronic use	< 30 days
Opiates	
Morphine, heroin	< 48 hours
Methadone	< 96 hours

# Methods of Drug Testing

## Immunoassay

- Uses antibodies to detect presence of drugs or metabolites
- Advantage: large-scale screening, automation, rapid detection
- Disadvantage: results are always considered presumptive until confirmed

## Gas chromatography-mass spectrometry (GC-MS)

- Gold standard
- Advantage: confirmatory, can detect small quantities of specific drug
- Disadvantage: time-consuming, high level of expertise required, costly

## Immunoassay

- Amphetamines
- Barbiturates
- Benzodiazepines
- Cocaine metabolites
- Methylenedioxymethamphetamine
- Opiate screen
- PCP screen
- Cannabinoid screen

## Gas chromatography-mass spectrometry (GC-MS)

- Analgesics
- Antiarrhythmics
- Anticonvulsants
- Antidepressants
- Antihistamines
- Antipsychotics
- Barbiturates
- Benzodiazepine metabolites
- Cannabinoids
- Cocaine metabolites
- Opiates/Narcotics
- Muscle relaxants
- Phencyclidine
- Sedates/Hypnotics
- Stimulants
- Volatiles

# Hair Toxicology Testing

- Can detect both passive and systemic drug exposure
  - ▣ Passive exposure = unsafe environment
- Majority of drug incorporation into hair shaft takes place during anagen phase of hair growth
  - ▣ 85% of scalp hair
  - ▣ Transfer from blood to follicle, diffusion from sweat and sebum, external contamination
- Traditional hair testing (washing specimens) may potentially miss at-risk children



# TREATMENT/PROGNOSIS



# Acute Treatment

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- Supportive care
- Medical/pharmacologic intervention when necessary

# Infants

- Physical abnormalities
  - ▣ Birth defects
  - ▣ Craniofacial abnormalities
- Are at higher risk for abuse/neglect
  - ▣ More difficult to parent
    - “difficult”, “demanding”, “slow”
    - Easily overstimulated, resistant to consolation
  - ▣ Parents lack parenting skills, may not respond appropriately to infant’s needs, may be impulsive
- Insecure infant attachment

# Older Children

- Cognitive deficits/poor academic functioning
  - ▣ Hyperactivity, lack of organization, distractibility, unpredictability, difficulty with transitions, irritability
- Behavioral/emotional problems
  - ▣ Less trusting, have difficulties regulating their emotions or understanding those of others, lack of confidence, depression, anxiety
  - ▣ Increase in substance abuse in older children
- Accidental or intentional intoxication
- Violence
- Prostitution

# Older Children

- Multiple foster care placements
  - ▣ Increased risk for maladjustment
  - ▣ Greater levels of anger and hostility
    - Delinquency while in foster care
    - Poorer adaptation to care
    - Poorer condition at discharge

# Interventions

- Interventions aimed at breaking the cycle are most successful when family-centered
  - ▣ Increase in substance-abuse treatment focused on women

# Management Strategies - Infants

- Establish a professional team of medical and developmental personnel
  - ▣ Pediatrician, developmental specialist, therapists
- Establish and maintain routines
- Provide calm environment
- Provide gentle physical stimulation and interaction
- Frequent medical exams
- Repeated developmental assessments

# Management – Toddlers/Preschoolers

- Provide structure and routine
- Be predictable – react consistently
- Use repetition in teaching
- Use multiple communication means
- Limit stimuli when teaching a new skill
- Give positive feedback
- Expect learning to take longer
- Use consistent language

# Management – School-Age Children

- Continue to provide structure and routine
- Give positive feedback on small accomplishments
- Slow and supervised introduction to other children
- Partner with teachers and other school personnel
- Advocate for appropriate education plan
- Provide reminders
- Avoid sarcasm
- Focus on strengths
- Seek physical and developmental re-evaluations and assessments



# Management - Adolescents

- Focus education appropriate to development
- Increase level of responsibility and foster independence
- Provide clear guidance and rules for acceptable behavior
- Monitor peer interactions
- Provide direct and clear information about sexual development, birth control, and protection from STDs
- Seek physical and developmental re-evaluations and assessments

# Sources



[www.nationaldec.org](http://www.nationaldec.org)



[www.texasdec.org](http://www.texasdec.org)

# Sources

- Texas Alliance for Drug Endangered Children
  - [www.texasdec.org](http://www.texasdec.org)
- National Alliance for Drug Endangered Children
  - [www.nationaldec.org](http://www.nationaldec.org)
  - FAQs