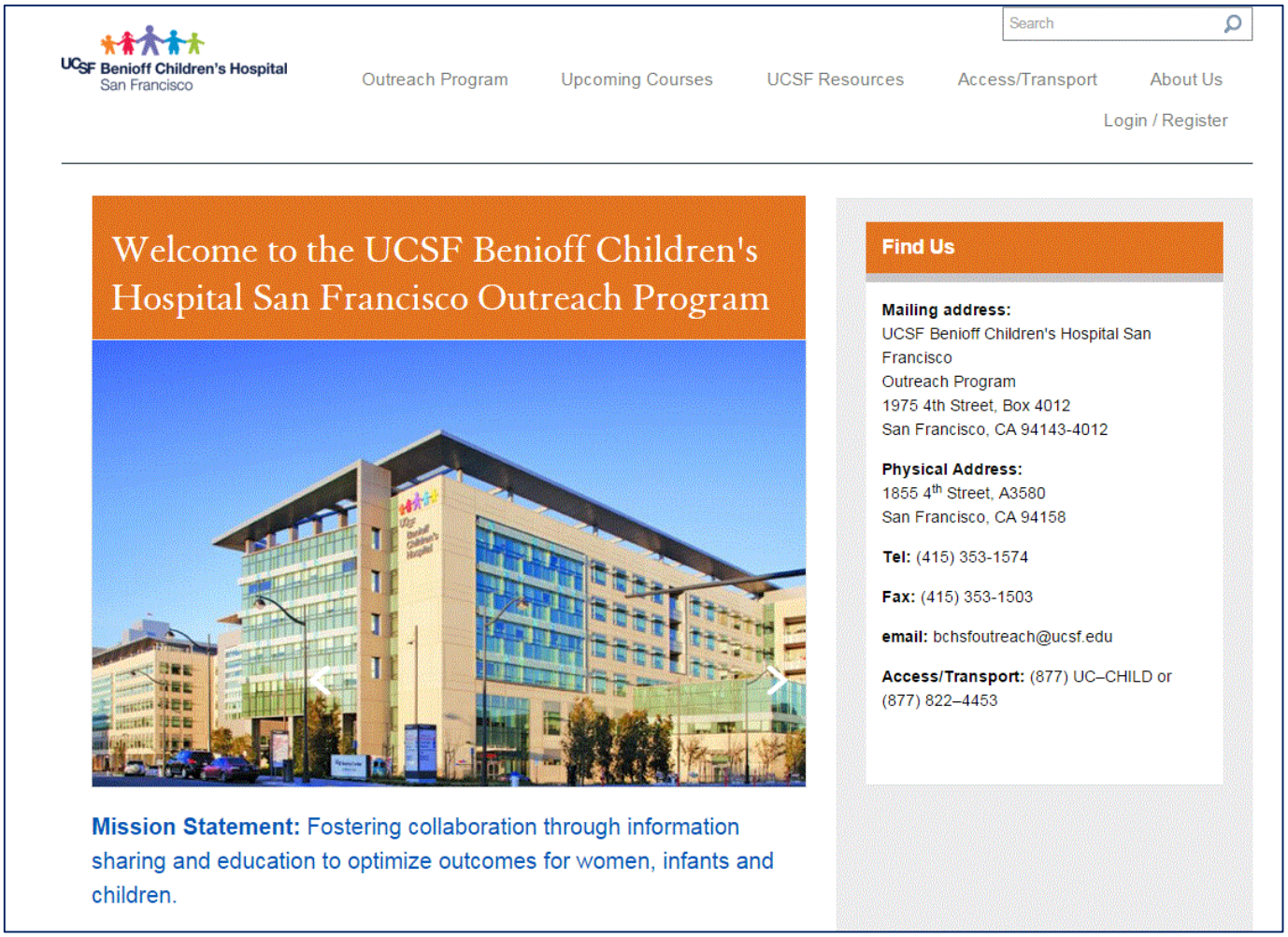
http://bchsfoutreach.ucsf.edu/



UCSF Benioff Children's Hospitals

UCSF Benioff Children's Hospitals

Substance Use and the Mother-Infant Dyad

Valerie Huwe RNC-OB, CNS, MS
Perinatal Outreach Educator

Tanya Hatfield, MSN, RNC-NIC
Neonatal Outreach Educator

Disclosures

We have no financial or ethical conflicts of interest to disclose.

We have purchased and have permission to use the film: *On Life's Terms* as an educational adjunct for this presentation

Objectives

- Explore how the history of addiction, patient perspectives, and life experience impact childbearing women
- Review maternal-fetal effects of substance use in pregnancy
- Identify the characteristics, withdrawal issues, and treatment recommendations for mothers and infant affected by addiction including Neonatal Abstinence Syndrome

Question

- Drug use in America became a social problem that sparked legislation

A. In the 1880”s

B. After World War I

C. During the Great Depression

D. After World War II

The Harrison Act to Dole & Nyswander

- The Harrison Narcotic Act passed in 1914 and required registration, taxation, and regulation of all pharmacists and doctors who prescribed opiates
- Further restrictions from the Supreme Court decisions and the Drug Enforcement Agency
- First studies on methadone and social rehabilitation via Vincent Dole & Marie Nyswander in the 1960s
- In 1971, President Nixon rolls out methadone clinics in inner-city, predominantly minority communities

Campbell & Shaw 2008; Frontline 1998; Kuehn 2005

History of Drug Use and Abuse

- 2012 U.S. Providers wrote > 260 million perscriptions
  - 2 X's more than 1998
- Substance Use Disorder (SUD) treatment programs for misuse quadrupled
- From 2000 → 2014 Rates of death associated with prescription opioid analgesia
  - ↑ 400%
- Overdose deaths from Heroin ↑500% in 7 years
  - 2010 (3,000)
  - 2014 (10,500)
  - 2017 (15,000+)

Overview of Drug Use and Abuse

- Worldwide problem, affected all levels of society since ancient times
  - Rural epidemic
- Many don't know they are pregnant
- Don't realize harm to fetus
- Effects of some drugs have only been studied for 30 years
  - Cigarette use since the 1960s
  - Alcohol and opiate use since 1970s
  - Other drugs since 1980s

Understanding Drug Use

- Viewed as a social problem
- Drug abusers should be able to just “stop taking drugs” if they are willing to change
- Drug use addiction is a complex issue
  - Disease impacts the brain
  - Stopping is not just a matter of willpower
- How do we define addiction?

Definitions

- **Use** – Sporadic consumption of alcohol or drugs with no adverse consequences of that consumption
- **Abuse** – Although the frequency of consumption of alcohol or drugs may vary, some adverse consequences of that use are experienced by the user
- **Physical dependence** – A state of adaptation that is manifested by a substance class-specific withdrawal syndrome that can be produced by abrupt cessation or rapid dose reduction of a substance, or by administration of an antagonist
- **Psychological dependence** – A subjective sense of a need for a specific psychoactive substance, either for its positive effects or to avoid negative effects associated with its abstinence

Uptodate.com,. (2015). Overview of substance misuse in pregnant women. Retrieved 7 December 2015, from http://www.uptodate.com/contents/overview-of-substance-misuse-in-pregnant-women?source=search_result&search=prenatal+drug+use&selectedTitle=1~150

Definition of Addiction
(American Society of Addiction Medicine):

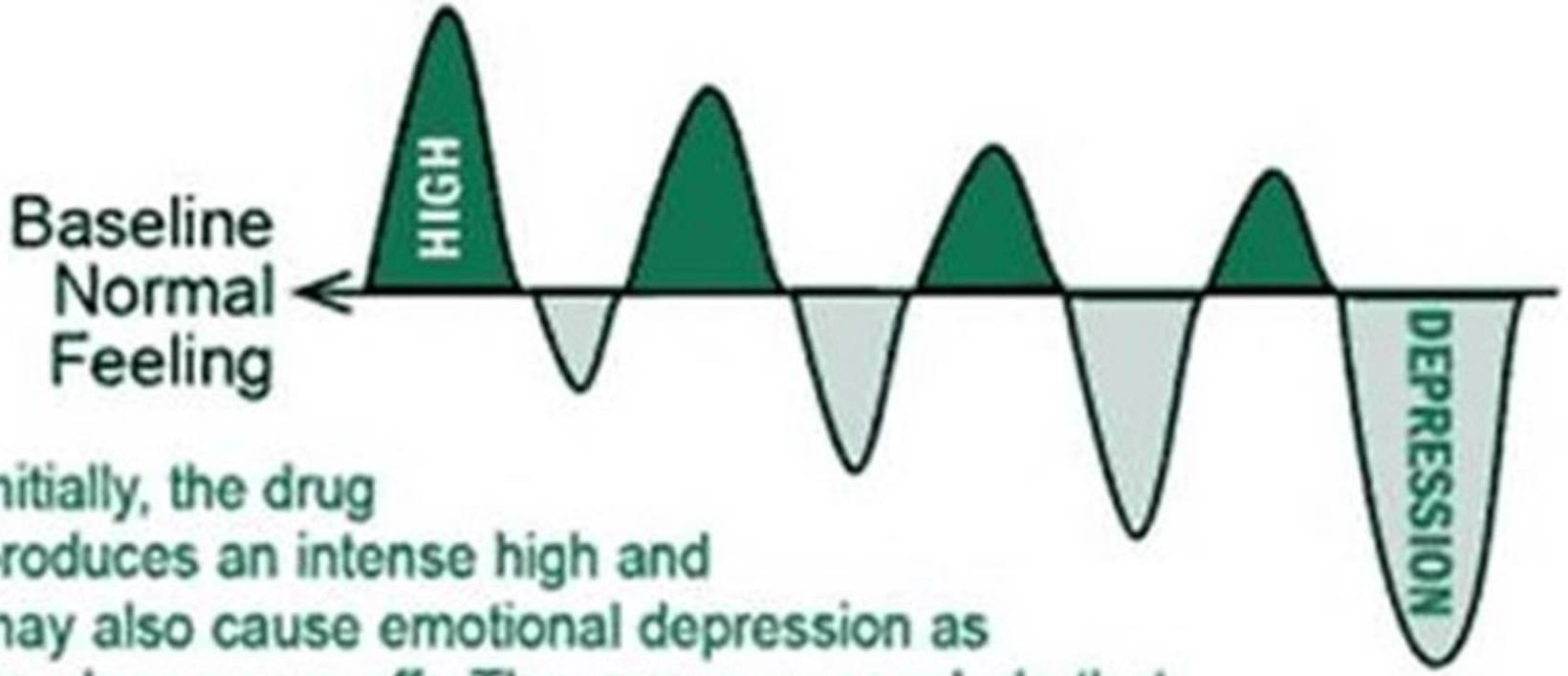
- **Addiction** – A primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads the individual to pathologically pursue reward and/or relief by substance use and other behaviors. It is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response. **It often involves cycles of relapse and remission**.

- **http://www.asam.org/education/live-online-cme/fundamentals-of-addiction-medicine**

Drug addiction

- **Chronic relapsing brain disease**
- **Causes compulsive drug seeking**
- **Abuse leads to changes in brain structure and function**
- **Initial decision is voluntary, however…**
  - Changes in the brain affect self-control and ability to make sound decisions
  - Intense impulses to take drugs
  - Difficult to change behavior due to brain changes

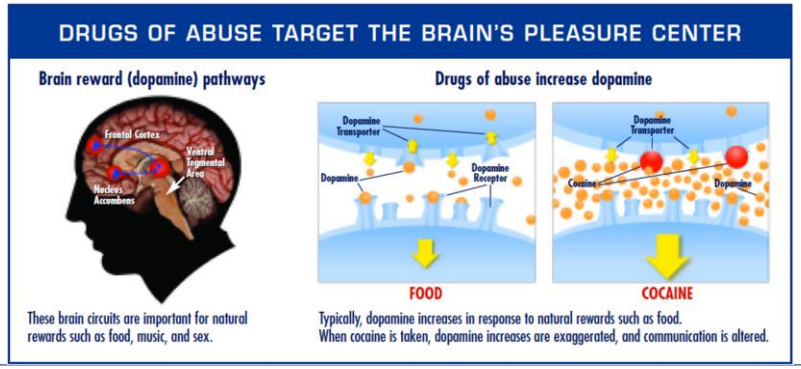
PROGRESSIVE DRUG TOLERANCE



Initially, the drug produces an intense high and may also cause emotional depression as the drug wears off. The user may conclude that the drug is harmless. With repeated use, a craving and a tolerance develop simultaneously. Over time, the addict ends up chasing a high by taking increased amounts of the drug more frequently to compensate for increased depression. When the supply is gone, the addict has an intense craving along with severe depression that may reach suicidal level.

Drugs, Brains, and Behavior…

- Drugs interfere with the brains communication system and how neurons send, receive, and process information
  - Marijuana & heroin's chemical structure mimics a natural neurotransmitter
    - Similarity in structure "fools" receptors
  - Amphetamine & cocaine cause neurons to release large amounts of natural neurotransmitters or prevent recycling



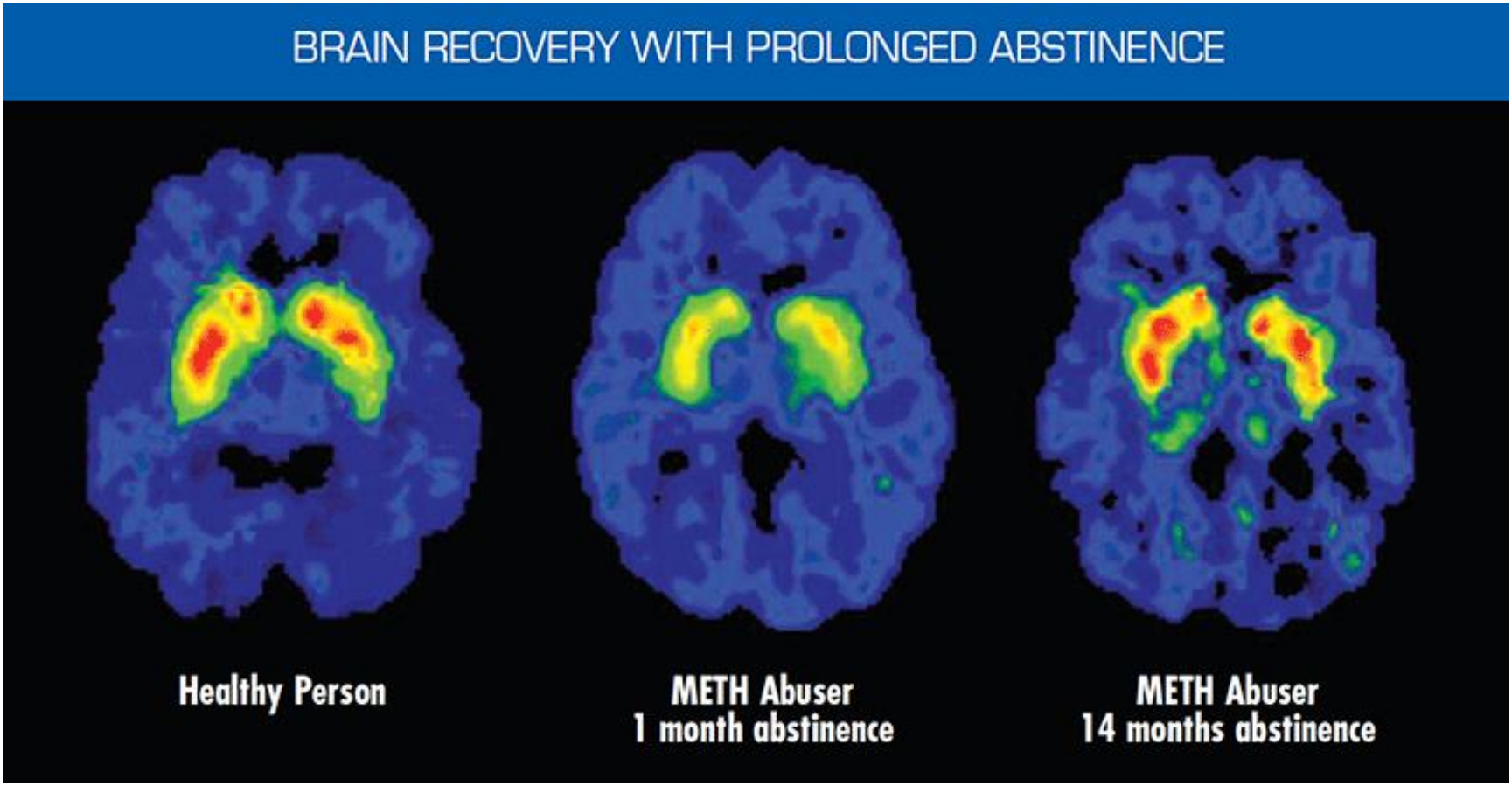
Drugabuse.gov,. (2015). Drugs and the Brain. Retrieved 1 December 2015, from http://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain

Reward pathway

- Reaction sets in motion a reinforcing pattern that “teaches” people to repeat the rewarding behavior of using drugs
- Decreased dopamine compels the addicted person to keep using drugs to bring the dopamine level back to normal function
- Larger amounts of the drug are required to achieve the same dopamine high- an effect known as tolerance

Drugs, Brains, and Behavior…

- Dopamine's impact on the brain



Drugabuse.gov,. (2015). Drugs and the Brain. Retrieved 1 December 2015, from http://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain

Key factors of addiction

- Genetics
- Psychosocial
- Environmental

4 Domains of Patient Safety Bundles

- **Readiness**
- **Recognition**
- **Response**
- **Reporting/ Systems Learning**

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

UCSF Benioff Children's Hospitals

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman

PATIENT SAFETY BUNDLE

Obstetric Care for Women with Opioid Use Disorder

READINESS

Every patient/family

- Provide education to promote understanding of opioid use disorder (OUD) as a chronic disease.
  - Emphasize that substance use disorders (SUDs) are chronic medical conditions, treatment is available, family and peer support is necessary and recovery is possible.
  - Emphasize that opioid pharmacotherapy (i.e. methadone, buprenorphine) and behavioral therapy are effective treatments for OUD.
- Provide education regarding neonatal abstinence syndrome (NAS) and newborn care.
  - Awareness of the signs and symptoms of NAS
  - Interventions to decrease NAS severity (e.g. breastfeeding, smoking cessation)
- Engage appropriate partners (i.e. social workers, case managers) to assist patients and families in the development of a "plan of safe care" for mom and baby.

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman

PATIENT SAFETY BUNDLE

Obstetric Care for Women with Opioid Use Disorder

READINESS

Every clinical setting/health system

- Provide staff-wide (clinical and non-clinical staff) education on SUDs.
  - Emphasize that SUDs are chronic medical conditions that can be treated.
  - Emphasize that stigma, bias and discrimination negatively impact pregnant women with OUD and their ability to receive high quality care.
  - Provide training regarding trauma-informed care.
- Establish specific prenatal, intrapartum and postpartum clinical pathways for women with OUD that incorporate care coordination among multiple providers.
- Develop pain control protocols that account for increased pain sensitivity and avoidance of mixed agonist-antagonist opioid analgesics.
- Know state reporting guidelines regarding the use of opioid pharmacotherapy and identification of illicit substance use during pregnancy.
- Know federal (Child Abuse Prevention Treatment Act - CAPTA), state and county reporting guidelines for substance-exposed infants.
  - Understand "Plan of Safe Care" requirements.
- Know state, legal and regulatory requirements for SUD care.
- Identify local SUD treatment facilities that provide women-centered care.
  - Ensure that OUD treatment programs meet patient and family resource needs (i.e. wrap-around services such as housing, child care, transportation and home visitation).
  - Ensure that drug and alcohol counseling and/or behavioral health services are provided.
- Investigate partnerships with other providers (i.e. social work, addiction treatment, behavioral health) and state public health agencies to assist in bundle implementation.

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman

PATIENT SAFETY BUNDLE

Obstetric Care for Women with Opioid Use Disorder

RECOGNITION & PREVENTION

Every provider/clinical setting

- Assess all pregnant women for SUDs.
  - Utilize validated screening tools to identify drug and alcohol use.
  - Incorporate a screening, brief intervention and referral to treatment (SBIRT) approach in the maternity care setting.
  - Ensure screening for polysubstance use among women with OUD.
- Screen and evaluate all pregnant women with OUD for commonly occurring co-morbidities.
  - Ensure the ability to screen for infectious disease (e.g. HIV, Hepatitis and sexually transmitted infections (STIs)).
  - Ensure the ability to screen for psychiatric disorders, physical and sexual violence.
  - Provide resources and interventions for smoking cessation.
- Match treatment response to each woman's stage of recovery and/or readiness to change.

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman

RESPONSE

Every provider/clinical setting/health system

- Ensure that all patients with OUD are enrolled in a woman-centered OUD treatment program.
  - Establish communication with OUD treatment providers and obtain consents for sharing patient information.
  - Assist in linking to local resources (e.g. peer navigator programs, narcotics anonymous (NA), support groups) that support recovery.
- Incorporate family planning, breastfeeding, pain management and infant care counseling, education and resources into prenatal, intrapartum and postpartum clinical pathways.
  - Provide breastfeeding and lactation support for all postpartum women on pharmacotherapy.
  - Provide immediate postpartum contraceptive options (e.g. long acting reversible contraception (LARC)) prior to hospital discharge.
- Ensure coordination among providers during pregnancy, postpartum and the inter-conception period.
  - Provide referrals to providers (e.g. social workers, psychiatry, and infectious disease) for identified co-morbid conditions.
  - Identify a lead provider responsible for care coordination, specify the duration of coordination and assure a "warm handoff" with any change in the lead provider.
  - Develop a communication strategy to facilitate coordination among the obstetric provider, OUD treatment provider, health system clinical staff (i.e. inpatient maternity staff, social services) and child welfare services.
- Engage child welfare services in developing safe care protocols tailored to the patient and family's OUD treatment and resource needs.
  - Ensure priority access to quality home visiting services for families affected by SUDs.

PATIENT SAFETY BUNDLE

Obstetric Care for Women with Opioid Use Disorder

COUNCIL ON PATIENT SAFETY
IN WOMEN'S HEALTH CARE
safe health care for every woman

PATIENT SAFETY BUNDLE

Obstetric Care for Women with Opioid Use Disorder

REPORTING & SYSTEMS LEARNING

Every clinical setting/health system

- Develop mechanisms to collect data and monitor process and outcome metrics to ensure high quality healthcare delivery for women with SUDs.
  - Develop a data dashboard to monitor process and outcome measures (i.e. number of pregnant women in OUD treatment at specified intervals).
- Create multidisciplinary case review teams to evaluate patient, provider and system-level issues.
- Develop continuing education and learning opportunities for providers and staff regarding SUDs.
- Identify ways to connect non-medical local and community stakeholders with clinical providers and health systems to share outcomes and identify ways to improve systems of care.
  - Engage child welfare services, public health agencies, court systems and law enforcement to assist with data collection, identify existing problems and help drive initiatives.

Reporting & Systems Learning: Every clinical setting/health system

- ***Develop mechanisms to collect data and monitor process and outcome metrics to ensure high quality healthcare delivery for women with SUDs.***
  - ***Develop a data dashboard to monitor process and outcome measures (i.e. number of pregnant women in OUD treatment at specified intervals).***

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

UCSF Benioff Children's Hospitals

Reporting & Systems Learning: Every clinical setting/health system

- ***Identify ways to connect non-medical local and community stakeholders with clinical providers and health systems to share outcomes and identify ways to improve systems of care.***
  - ***Engage child welfare services, public health agencies, court systems and law enforcement to assist with data collection, identify existing problems and help drive initiatives.***

COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

UCSF Benioff Children's Hospitals

Film: On Life's Terms
by Shiela Ganz

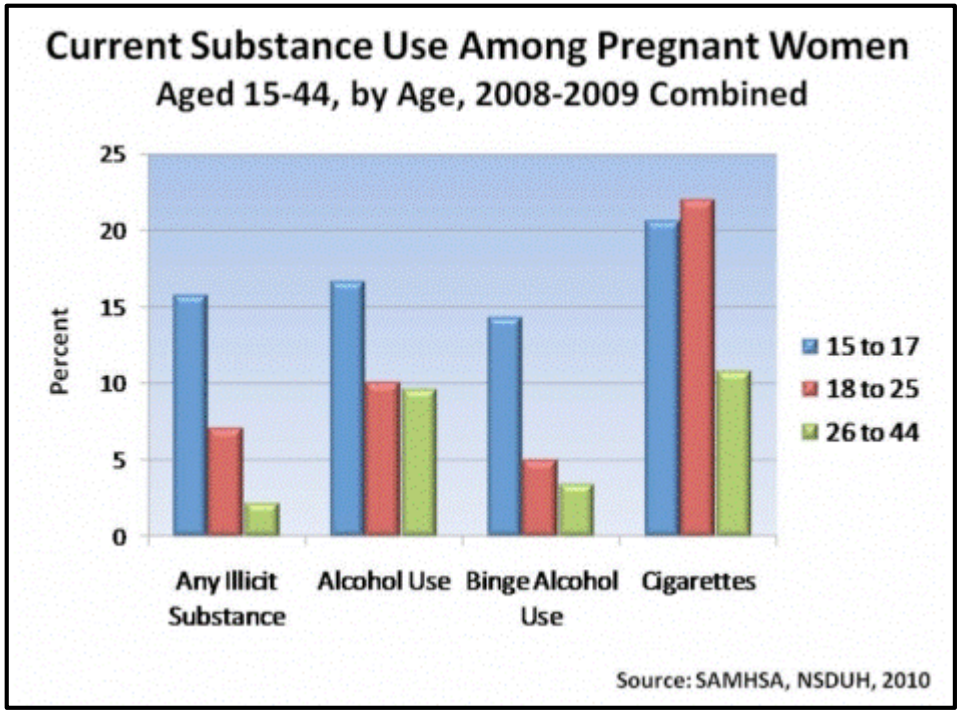
What are the issues?

- Identifying drug use
  - Interviews
  - Lab testing
  - Who is using?
- Identifying the effects of drugs
- Recognizing the effects on mother and baby
- Intervening in a meaningful way

So who is using?

Substance Use in Pregnancy

- 5.9% of pregnant women 15-44 reported recent use of illicit drugs
  - Ages 15-17
    - 20.9%
  - Ages 18-25
    - 8.2%
  - Ages 26-44
    - 2.2%



National Survey in Drug Use and Health, 2012

What does the research say?

- Prevalence estimates for prenatal substance use vary widely
- Hard to differentiate drug use from abuse
- Testing can be inconclusive and not reflective of use
- Difficult to follow up cases
- Unable to divide drug use from other social factors

The problem with the research is…

- **Study designs**
  - Improved controls
  - Longer study period
- **Quantifying exposure**
  - Poly pharmacy- ? Independent exposure
  - High-dose vs low-dose effects
  - Confounding environmental exposures
- **Effect sizes**
  - Studies are small and require larger numbers
  - Need to relate exposure to outcome
- **Must analyze specific effects**
- **Postnatal environment**
  - Impaired maternal-infant interaction
  - Altered social supports/abuse
  - Poverty, depression, chaotic lifestyle
- **Genetic predisposition**
  - Novelty seeking, risk taking
  - Inattention, hyperactivity
  - Personality, psychiatric diagnosis

Risk factors

Antepartum

- Limited or no prenatal care
- Inappropriate behavior
- Smell of alcohol/chemicals
- Recent hx of substance use/treatment
- Hx of physical abuse/neglect
- Intimate partner violence
- Mental illness
- Previous child with FAE/S or alcohol related birth defects

Ante/Intrapartum

- Physical signs of substance use/withdrawal
- Abnormal fetal heart rate
- Abruptio placenta
- Preterm labor
- Intrauterine growth restriction
- Previous unexplained IUFD
- Hypertensive episodes
- Stroke or heart attack
- Severe mood swings
- Hx of repeated SAB

Identifying drug use

Pregnant and postpartum women who consume alcohol or other drugs are more stigmatized than other women who are not pregnant…

They may…

- Deny their use
- Not acknowledge its potential harmful effects
- Not seek help
- Fear the medical/social welfare system
- Be unaware of the system's resources
- Have had negative experiences with the system

Identifying drug use - Interviewing

Questioning should be:

- Respectful
  - Create a respectful environment
    - Supportive inquiry can open the door to referral and treatment
- Non-judgmental-
  - Be empathetic, neutral voice, body language
  - Do not assume that all women know when they conceived or if they welcome the current pregnancy
- Specific
  - Ask about each drug starting with least innocuous to the most
  - Ask every question in a health context along with other standard screening inquiries- general medical conditions, diet

States and substance abuse

- One state allows assault charges to be filed against pregnant women
- 18 consider substance abuse during pregnancy child abuse
- 15 states require reporting of suspected drug use
  - 4 require testing for suspected drug use
- 18 states have created/funded drug treatment programs for pregnant women

STATE POLICIES ON SUBSTANCE ABUSE DURING PREGNANCY

STATE	SUBSTANCE ABUSE DURING PREGNANCY CONSIDERED:			WHEN ABUSE SUSPECTED, STATE REQUIRES:		DRUG TREATMENT FOR PREGNANT WOMEN		
	Criminal Act	Child Abuse	Grounds for Civil Commitment	Reporting	Testing	Targeted Program Created	Pregnant Women Given Priority Access in General Programs	Pregnant Women Protected from Discrimination in Publicly Funded Programs
Alabama		X*						
Alaska				X				
Arizona				X			X	
Arkansas		X				X		
California						X		
Colorado		X				X		
Connecticut						X		
Florida		X				X		
Georgia							X	
Illinois		X		X		X		
Indiana		X						
Iowa		X		X	X			X
Kansas							X	X
Kentucky					X	X	X	
Louisiana		X		X		X		
Maine				X				
Maryland				X		X	X	
Massachusetts				X				
Michigan				X				
Minnesota		X	X	X	X	X		
Missouri							XΩ	X
Montana				X				
Nebraska						X†		
Nevada		X		X				
New York						X		
North Carolina						X		
North Dakota				X	X			
Ohio						X		
Oklahoma		X		X			X	X
Oregon						X‡		
Pennsylvania				X		X		
Rhode Island		X		X		X	X	
South Carolina		X*						
South Dakota		X	X					
Tennessee	X	X					X	
Texas		X					X	
Utah				X			X	
Virginia		X		X		X		
Washington						X		
Wisconsin		X	X				X	
TOTAL	1	18	3	18	4	19	12	4

* The Alabama Supreme Court held that drug use while pregnant is considered chemical endangerment of a child. The South Carolina Supreme Court held that a viable fetus is a "person" under the state's criminal child-endangerment statute and that "maternal acts endangering or likely to endanger the life, comfort, or health of a viable fetus" constitute criminal child abuse.

† Applies only to women and newborns eligible for Medicaid.

‡ Establishes requirements for health care providers to encourage and facilitate drug counseling.

Ω Priority applies to pregnant women referred for treatment.

Substance Exposed Infants: Noteworthy Policies & Practices. (2015). Retrieved from http://Substance Exposed Infants: Noteworthy Policies & Practices

SBIRT: Screening, Brief Intervention, and Referral to Treatment

- Model created from the IOM recommendations that called for community based screening for health risk behaviors including substance use
  - **S**creening
    - Assess for risky substance use using a standardized screening tools
  - **B**rief **I**ntervention
    - Engage in short conversation, provide feedback, and advice
  - **R**eferral to **T**reatment
    - Provide referral to brief or additional treatment as needed

Data from SAMHSA-HRSA Center for Integrated Health Solutions. SBIRT: Screening, Brief Intervention, and Referral to Treatment. Available at http://www.integration.samhsa.gov/clinical-practice/SBIRT. Retrieved April 15, 2018.

UCSF Benioff Children's Hospitals

OUD & Pregnancy Screening Tools—4Ps

- 4 P's/4 P's Plus **P**arents—did either of your parents ever have a **p**roblem with alcohol or drugs?
  - **P**artner—Does your partner have a problem with alcohol or drugs?

Any "YES" should trigger further questioning

many cigarettes did you smoke?

2. In the month before you knew you were pregnant, how many beers/how much wine/how much liquor did you drink?
3. In the month before you knew you were pregnant, how many times did you use opioids non-medically?

(Ewing 1990; Morse 1997)

Identifying drug use-

Toxicology Screening:

- Done in conjunction with questioning
- Done with informed consent for pregnant women who:
  - Self-reporting substance use
  - Multiple characteristics suggestive of substance use to facilitate referral to a care program
  - To meet compliance requirements with treatment recommendations

Random testing of all women raises legality issues

Rayburn, 2007

Laboratory Testing Benefits

- Confirms the presence of drug
- Determines use of multiple drugs
- Determines potential for newborn withdrawal

Laboratory Testing Limitations

- Negative results don't rule out use
- Cannot quantify use
- Alcohol has a short half-life
- Women may delay care for fear of repercussions
- False positive can be devastating for non-users
- Urine tox has no value identifying early pregnancy teratogenic effects
- Blood tests may only identify long term users
- May avoid detection by abstaining for 1-3 days

Child Abuse Prevention and Treatment Act

- Most recently amended and reauthorized on December 20, 2010,by the CAPTA Reauthorization Act of 2010
- States to develop a plan of safe care when newborns exposed to illicit substances during pregnancy are reported by healthcare providers
- The Act leaves the decision on who should be tested to the healthcare provider.

Newborn Toxicology

- Detailed history is more helpful than a toxicology screening
- Correlation between maternal and newborn test results is poor
  - Dependent on time of maternal use, properties of placental transfer, time of birth, specimen collection
- Specimen collection:
  - Meconium
  - Urine
  - Umbilical cord
  - Hair

No biological specimen, when obtained randomly, identifies prenatal drug use with 100% accuracy (AAP, 2013)

Newborn Toxicology Screening

	Reflects drug use	Pros	Cons	Turn around time	Other facts
Meconium	2nd half gestation	Sensitive for opiates and cocaine	Not useful for preterm infants	2-5 days	Send frozen or refrigerated
Urine	Recent (1-3 days before delivery)	-Ease -Quick	-Correlation poor -ETOH not easily detected -MJ present for weeks	2-5 days	-First urine best sample -May need confirmatory testing
Umbilical cord	2nd half gestation	-Detects ETOH -cost similar to meconium	-need 6 inches cord	2-8 days	Drain blood, put in specimen cup with saline
Hair		-High sensitivity for cocaine, opiates	-High false positive rate -higher cost		-difficult to obtain

Effects of substance use

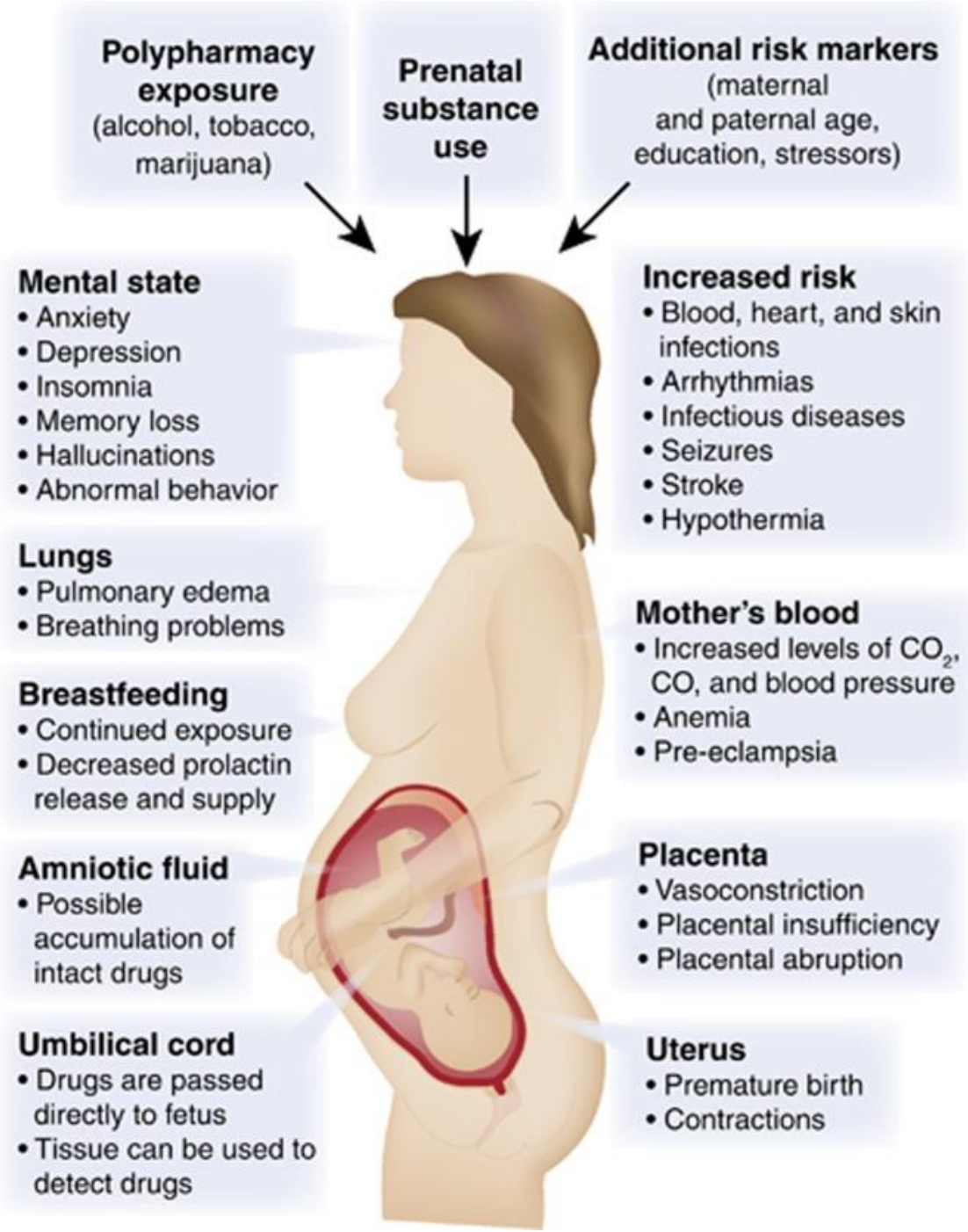
- Most drugs freely cross the placenta
  - Molecular/cellular changes
  - Changes in cell migration, cell structure, neurotransmitter dynamics & overall brain formation
  - Can act directly on the fetus

Effects of substance use

- Drugs can act directly on uterus and/or placenta
  - Altering placental secretory activity or uteroplacental blood flow
- Produce effects on mother's physiology that secondarily impact fetus
  - Increased secretion of stress hormones
  - Decreased food/nutrient intake (EJ Ross, 2015)
- Role of paternal exposure (Killinger et al, 2012)

Effects of Substance Use

- Physical damage
  - Fetal brain development
  - Maternal mental state
- Breastfeeding
- Amniotic fluid
- Placenta
- Uterus
- Umbilical Cord



Ross, E., Graham, D., Money, K., & Stanwood, G. (2014). Developmental Consequences of Fetal Exposure to Drugs: What We Know and What We Still Must Learn. Neuropsychopharmacology, 40(1), 61-87. http://dx.doi.org/10.1038/npp.2014.147

Intervening in a meaningful way

- Motivational Interviewing
- Algorithm

Harm Reduction

When abstinence is not possible

- How can she cut down
  - Enroll in outpatient treatment
  - Attend recovery meetings
  - Explore options to reduce use
- Though drug and alcohol abstinence is the goal, any steps toward reducing is also important

Drug Effects on the Mother and Fetus

Substance	Maternal Effects	Fetal Effects
Opiates	Constipation Vasodilation Premature UC's Protracted delivery	SGA, Prematurity, IUGR, IUFD, Withdrawal symptoms, Impaired Intellectual development
Cocaine	Los of hunger/sleep Anxiety reduction ↑ Sympathetic activity ↓ Placental perfusion ↓ Premature placental abruption	SGA, IUGR, Prematurity, IUFD, Malformations: Cardiac, Skeletal, Renal, Microcephalus, Perinatal cerebral infarction
Meth-amphetamine	↑sympathetic activity Mental hyperactivity Compulsive chewing Dysfunctional thermoregulation	Similar to cocaine (placental abruption) IUGR Malformations: Cardiac and Skeletal More male births

Drug Effects on the Mother and Child

Substance	Maternal Effects	Fetal Effects
Cannabis/THC	↑ Sympathetic activity ↑ Premature placental abruption	SGA, IUGR, Prematurity Impaired postnatal intellectual development
Alcohol	Gastric acidity Sedation Tocolytic effect	FASD (FAS): facial dysmorphogenesis, Cardiac septal defects, joint abnormalities, growth restriction
Tobacco	Vasoconstriction ↓ Placental perfusion/Insufficiency Premature UC's Abortion Infertility	SGA, IUGR, Prematurity, Impaired postnatal development, ↑ addictive potential Malformations: Cardiac and Skeletal Respiratory disease, ADD

Tobacco & Nicotine

- 12.3% of women continue to smoke during pregnancy
- Nicotine readily passes through the placenta
  - Fetal concentration
- In utero exposure
  - More irritable
  - Poorer attention
  - Increased tremor/startle
  - Deficient speech processing
  - Poor self-regulation

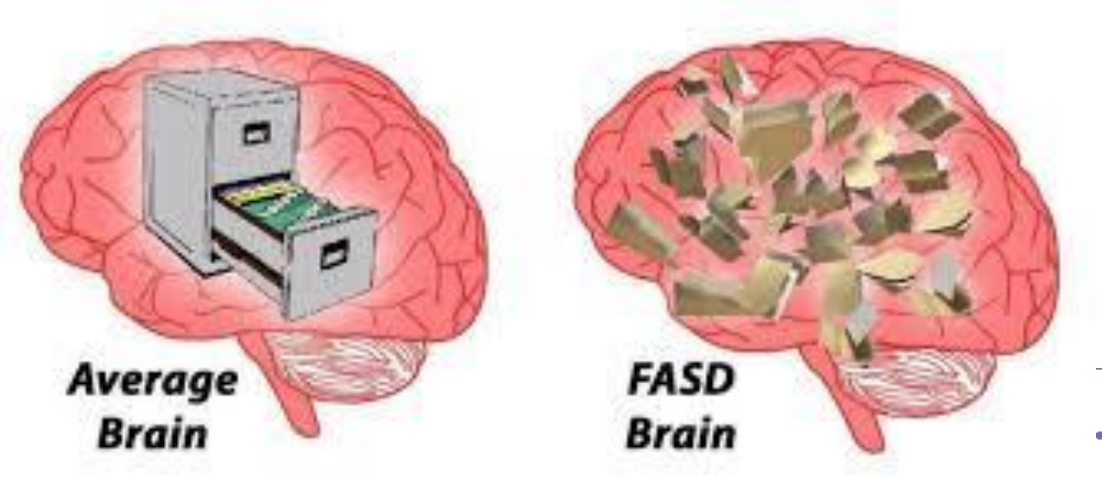
Kollins et al, 2005

Fetal Alcohol Spectrum Disorder (FASD)

Estimated 1 in 100 births affected by FASD

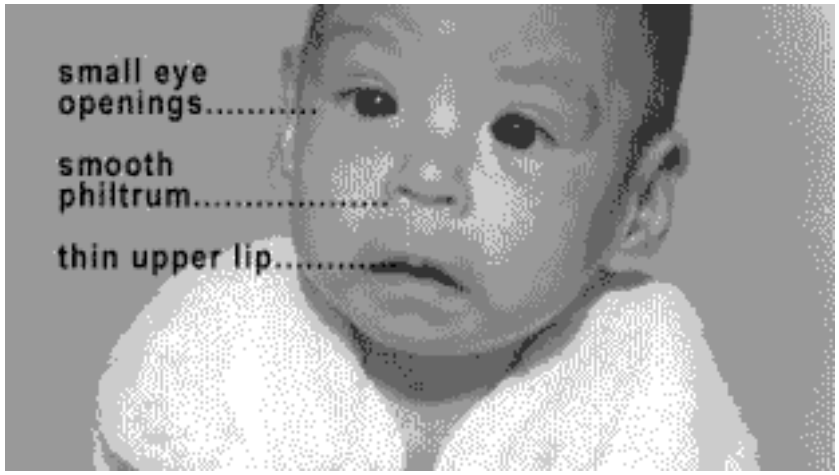
Three main disorders relating to alcohol consumption:

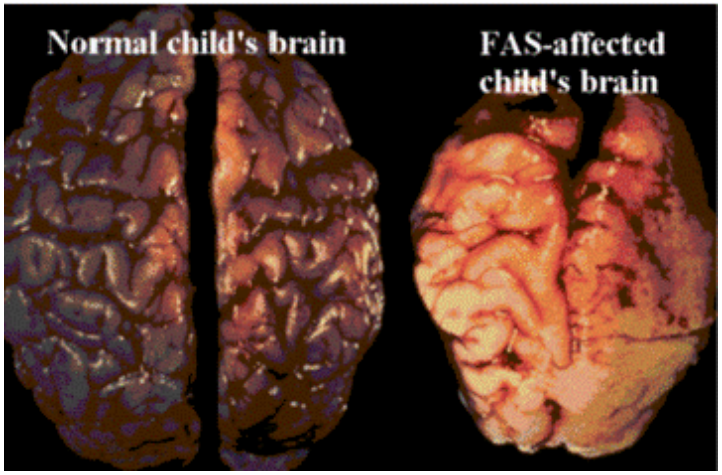
- Fetal Alcohol Syndrome (FAS)
- Alcohol-Related Neurodevelopmental Disorder (ARND)
- Alcohol-Related Birth Defects (ARBD)



Fetal Alcohol Syndrome (FAS)

- Morphogenic effects on limbs and facies
- Reduced brain and birth weight
- Cognitive delays and impairments
- Most severe manifestation of maternal consumption





Alcohol-Related Neurodevelopmental Disorder (ARND)

- Characterizes the full range of damage from prenatal alcohol exposure,
- Varies from mild to severe
- Encompasses a broad array of physical defects, cognitive, behavioral, emotional, and adaptive functioning deficits

Cdc.gov,. "Diagnosis | FASD | NCBDDD | CDC". N.p., 2016. Web. 28 Jan. 2016.

Question

Marijuana use during pregnancy

A. is considered safe after the 1st trimester because organogenesis is complete

B. should be limited to occasional use not to exceed once a week

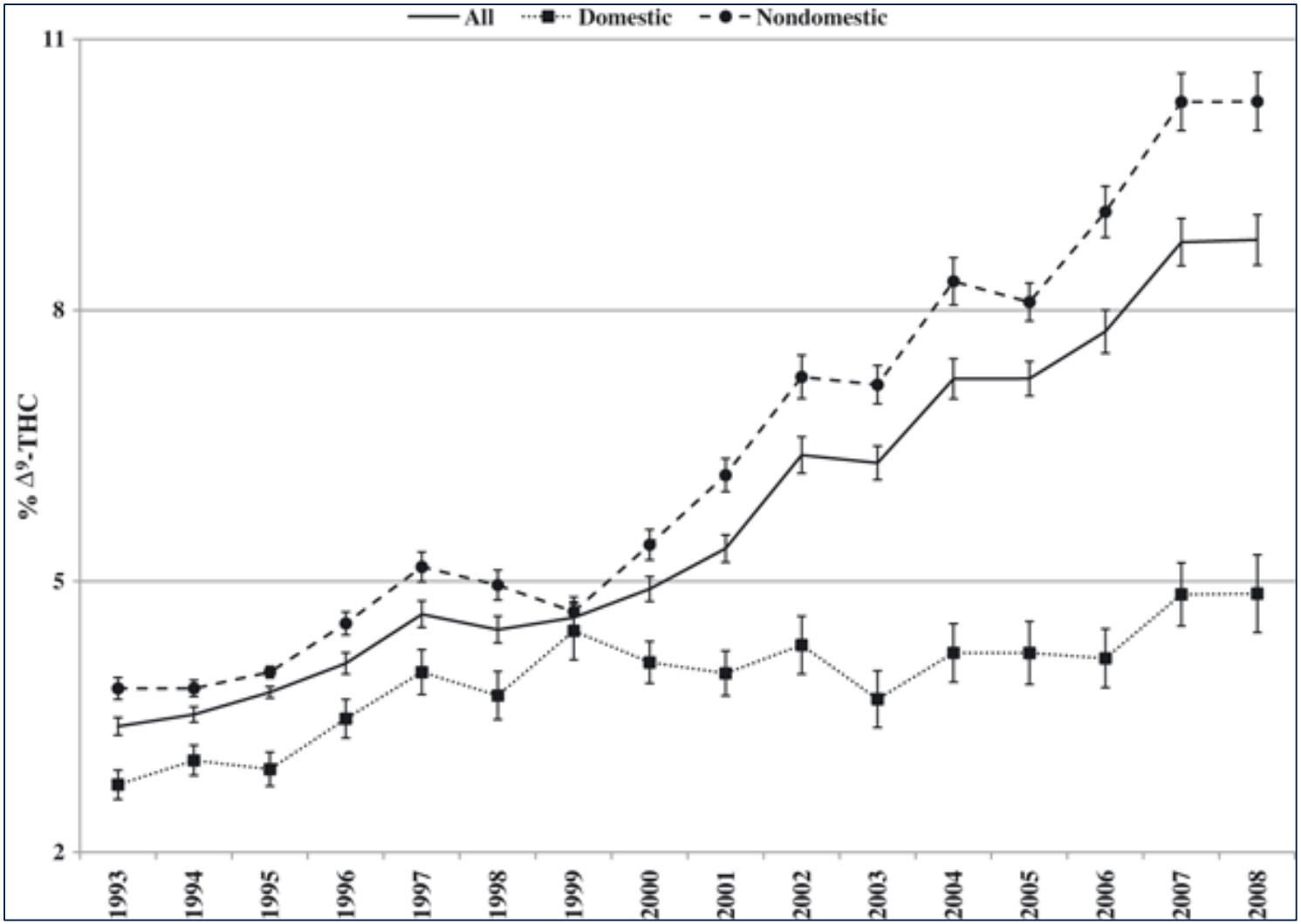
C. may have harmful fetal, neonatal, and pediatric effects and should be avoided before and during pregnancy

D. reduces anxiety, improves quality and duration of sleep and may be beneficial on a case by case basis

Cannabis (marijuana/cannabinoids/delta-9-tetrahydrocannabinol/THC)

- Most commonly used illicit drug in pregnancy (ACOG, 2015)
- First trimester use reported at 5% (SAMHSA, 2009)
- Highly lipophilic
- THC can cross placenta*
- Studies about THC content
  - Mehmedic et al, 2010
  - Warner et al, 2014

"It's not your mother's marijuana"



UCSF Benioff Children's Hospitals

Cannabis (marijuana/cannabinoids/delta-9-tetrahydrocannabinol/THC)

Effects of Marijuana on the fetus & neonate

- May be associated with fetal growth restriction, stillbirth, and preterm birth
- Decreased birth weight, more likely to be admitted to the NICU that non-cannabis exposed neonates (Gunn, et al, 2016)

Effects of Marijuana on the child

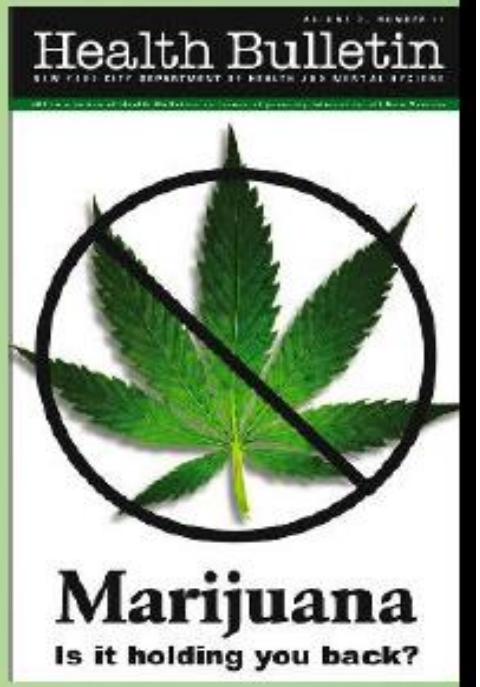
- May cause problems with neurological development, resulting in hyperactivity, poor cognitive function, and changes in dopaminergic receptors

Ross, E. J., Graham, D. L., Money, K. M., & Stanwood, G. D. (2014). Developmental Consequences of Fetal Exposure to Drugs: What We Know and What We Still Must Learn. *Neuropsychopharmacology,40*(1), 61-87. doi:10.1038/npp.2014.147

Marijuana

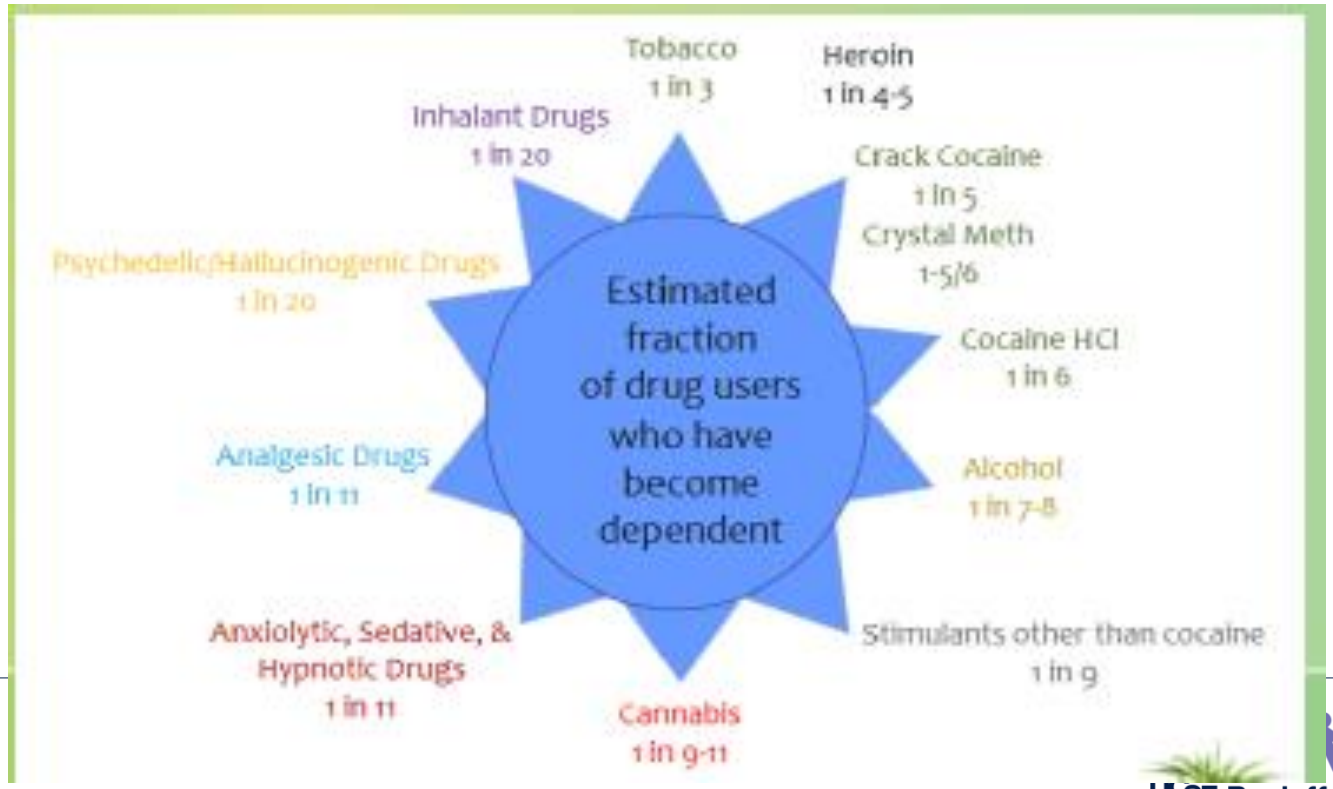
Cannabis' **Acute Effects** (Intoxication Phase)

- Cognition
  - Impaired short-term memory
    - Difficulty with complex tasks
    - Difficulty learning
- Executive function
  - Impaired decision-making
  - Increased risky behavior – STDs, HIV?
- Mood (especially after high doses or edibles)
  - Anxiety – panic attacks
  - Psychosis - paranoia



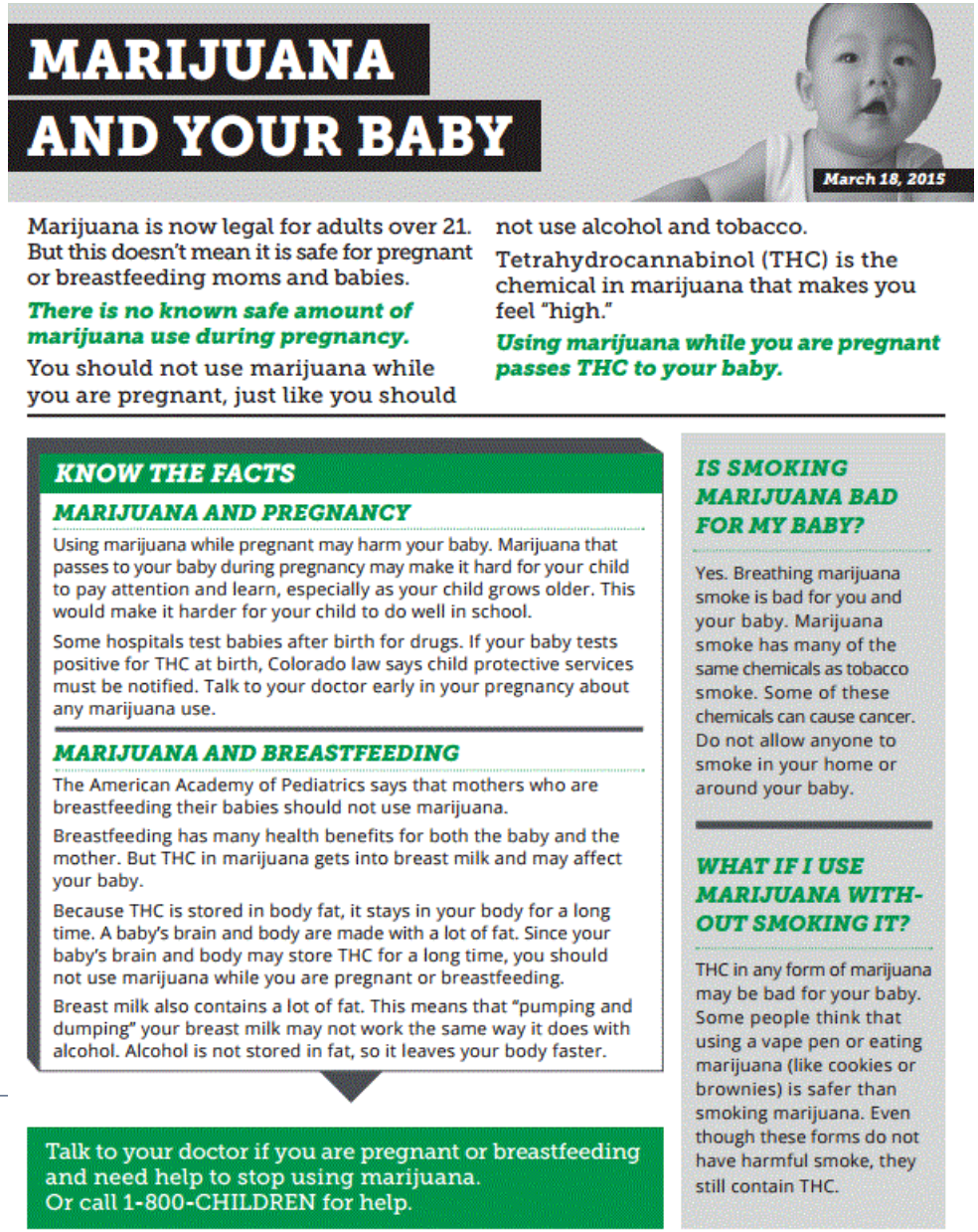
Myth: You can't become addicted to cannabis

- ~9% of cannabis users become dependent
  - 1 in 6 (17%) who start in adolescence
  - 25-50% of daily users



The Colorado Experience…

How does legalizing Marijuana change the discussion?



MARIJUANA AND YOUR BABY

March 18, 2015

Marijuana is now legal for adults over 21. But this doesn't mean it is safe for pregnant or breastfeeding moms and babies.

There is no known safe amount of marijuana use during pregnancy.

You should not use marijuana while you are pregnant, just like you should not use alcohol and tobacco.

Tetrahydrocannabinol (THC) is the chemical in marijuana that makes you feel "high."

Using marijuana while you are pregnant passes THC to your baby.

KNOW THE FACTS

MARIJUANA AND PREGNANCY

Using marijuana while pregnant may harm your baby. Marijuana that passes to your baby during pregnancy may make it hard for your child to pay attention and learn, especially as your child grows older. This would make it harder for your child to do well in school.

Some hospitals test babies after birth for drugs. If your baby tests positive for THC at birth, Colorado law says child protective services must be notified. Talk to your doctor early in your pregnancy about any marijuana use.

MARIJUANA AND BREASTFEEDING

The American Academy of Pediatrics says that mothers who are breastfeeding their babies should not use marijuana.

Breastfeeding has many health benefits for both the baby and the mother. But THC in marijuana gets into breast milk and may affect your baby.

Because THC is stored in body fat, it stays in your body for a long time. A baby's brain and body are made with a lot of fat. Since your baby's brain and body may store THC for a long time, you should not use marijuana while you are pregnant or breastfeeding.

Breast milk also contains a lot of fat. This means that "pumping and dumping" your breast milk may not work the same way it does with alcohol. Alcohol is not stored in fat, so it leaves your body faster.

Talk to your doctor if you are pregnant or breastfeeding and need help to stop using marijuana.
Or call 1-800-CHILDREN for help.

IS SMOKING MARIJUANA BAD FOR MY BABY?

Yes. Breathing marijuana smoke is bad for you and your baby. Marijuana smoke has many of the same chemicals as tobacco smoke. Some of these chemicals can cause cancer. Do not allow anyone to smoke in your home or around your baby.

WHAT IF I USE MARIJUANA WITHOUT SMOKING IT?

THC in any form of marijuana may be bad for your baby. Some people think that using a vape pen or eating marijuana (like cookies or brownies) is safer than smoking marijuana. Even though these forms do not have harmful smoke, they still contain THC.

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

COMMITTEE OPINION

Number 637, July 2015

Committee on Obstetric Practice

This document reflects emerging clinical and scientific advances as of the date issued and is subject
information should not be construed as dictating an exclusive course of treatment or procedure to b

Marijuana Use During Pregnancy and Lactation

UCSF Benioff Children's Hospitals

The Problem with Pot

- Limited evidence of short and long term effects
- Use way up in US
- Perception that if it is legal, it must be safe
- High potency
- Highly lipophilic

https://www.cdph.ca.gov/Programs/DO/letstalkcannabis/Pages/LetsTalkCannabis.aspx

UCSF Benioff Children's Hospitals

Methamphetamine

Methamphetamine (METH)

- About 5% of women self-report using methamphetamine during pregnancy (Arria et al, 2006)
- High lipophilicity
  - Rapid transport of drug across blood-brain barrier
  - High potential for abuse
  - Affects serotonin (5-HT), triggers massive release of dopamine (DA)

Arria, Amelia M. et al. "Methamphetamine And Other Substance Use During Pregnancy: Preliminary Estimates From The Infant Development, Environment, And Lifestyle (IDEAL) Study". Maternal and Child Health Journal 10.3 (2006): 293-302. Web.

Effects of Methamphetamine on neonate

Methamphetamine (METH)

- Little is known about the effects of METH during infancy
- Meth use is associated with:
  - Cardiac anomalies
  - Cranial abnormalities
  - NEC
  - Abnormal brain development similar to asphyxiated infants (Dixon&Behar, 1989)
  - Withdrawal symptoms less common
    - No medication for withdrawal

Ross, Emily J et al. "Developmental Consequences Of Fetal Exposure To Drugs: What We Know And What We Still Must Learn". Neuropsychopharmacology 40.1 (2014): 61-87. Web.
Arria, Amelia M. et al. "Methamphetamine And Other Substance Use During Pregnancy: Preliminary Estimates From The Infant Development, Environment, And Lifestyle (IDEAL) Study". Maternal and Child Health Journal 10.3 (2006): 293-302. Web.

Effects of Methamphetamine on child

- Exposed children performed significantly worse on visual motor integration tasks, verbal memory, and long-term spatial memory
- Subtle but significant decreases in brain volume (Ross, et al, 2015)
  - Correlated with poorer attention and delayed verbal memory
- Externalizing behavior problems seen at 5 years

Ross, et al, 2015

Amphetamine

Amphetamines (AMPH/Speed)

- Legally prescribed AMPHs or nonmedical users
- Similar action as METH, increasing norepinephrine (NE), DA, 5-HT
- Increases risk of placental hemorrhage

Effects of amphetamine on neonate

- AMPH exposure has not been proven teratogenic
- Higher odds of:
  - preterm birth
  - low birth weight
  - small for gestational age (Ladhani, et al, 2009)
- Difficult to arouse, hypotonic
- Difficult to console once awake

Effects of amphetamine on child

- In utero exposure to AMPH caused changes in affective, behavioral and cognitive outcomes
- Increased prevalence of ADHD, aggression and learning difficulties

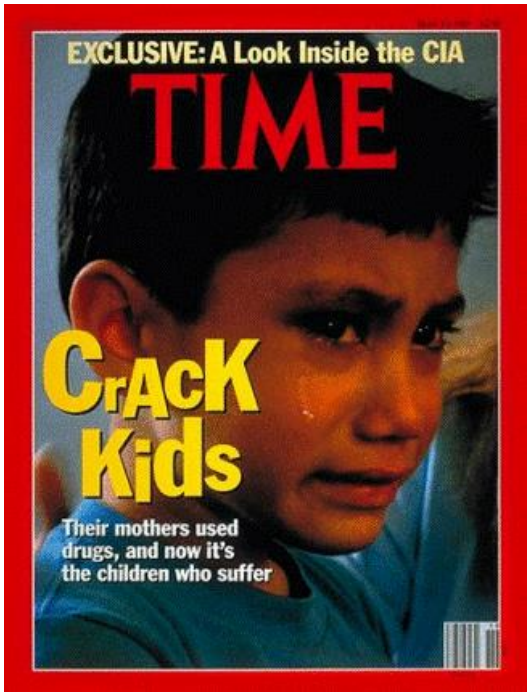
Ross et al, 2015

Cocaine/Crack

- Cocaine is the third largest used illicit drug (SAMHSA, 2013)
- Cocaine easily crosses the placenta and blood-brain barrier and can have teratogenic affects on the fetus (Mayes, 1994)
- Clinical reporting on the impact of prenatal cocaine exposure vary

“Crack babies” of the 1980s-90s

- Have you heard the term “crack or meth babies”?
- Do you think these children are lost forever, incurable? What can be done for them?
- How can treating these children differently be considered abuse?
- Do you think their parents are bad people/parents, who should have their children taken away from them?
- Do the stories of the women in the film change your viewpoint? Why or why not?



Effects of Cocaine on Neonate

- Increased premature birth rate
- Higher risk of NEC
- Generalized growth retardation
  - Decreased birth weight, shorter body length, smaller head circumference
- Lower arousal, poorer quality of movement and self-regulation
- Higher excitability, jitteriness, and non-optimal reflexes

<u>Behavioral outcomes observed at birth sometimes worsen until 12 months of age</u>

Ross et al, 2015

Effects of Cocaine on Child

- Impaired language development through adolescence
- Adoption and fostering appears to enrich the linguistic environment and protect child from language delays (Lewis, et al, 2011)
- First trimester exposure
  - Precursor of later psychiatric problems
- Second trimester exposure
  - ‘most sensitive’ period (Stanwood et al, 2001)
- Gestational cocaine exposure increases the sensitivity to development of reward circuits

Drugs and Approach to Care (UCSF Collaborative)

Drug	Tox screen	Scoring ?	Observation location	Symptoms	Treatment
ETOH	**Yes** poss cord blood etoh sample	No	Room in	Possible symptomatic hypoglycemia Counsel family on risks	Supportive care

Drug	Tox screen	Scoring ?	Observation location	Symptoms	Treatment
Cannabis	No unless concern for poly drug use	No	Room in	Unknown Counsel family on exposure and risks	**None**

UCSF Benioff Children's Hospitals

Drugs and Approach to Care (UCSF Collaborative)

Drug	Tox screen	Scoring ?	Observation location	Symptoms	Treatment
Meth	**Yes**	No	**NICU until safety/ disposition determined**	Jitteriness Hypertonia Hyperreflexia Irritability Sleepy as drug leaves system	Supportive care
Drug	**Tox screen**	**Scoring ?**	**Observation location**	**Symptoms**	**Treatment**
Cocaine	**Yes**	No	**NICU until safety/ disposition determined 4-5 days**	Jitteriness Hypertonia Hyperreflexia Irritability Signs may mimic NAS	Supportive care

Drugs and Approach to Care (UCSF Collaborative)

Drug Name(s)	Tox screen	Scoring	Observation location	Symptoms	Treatment
Opiates	**Yes**	**Yes**	**NICU until safety/ disposition determined 4-5 days**	Same as NAS	NAS pharmacologic and non pharmacologic

Drug	Tox screen	Scoring	Observation location	Symptoms	Treatment
SSRIs	No	No	Nursery vs rooming in until safety/ disposition determined	Jitteriness Poor feeding	Supportive care

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Guidance for the Clinician in Rendering Pediatric Care

CLINICAL REPORT

Neonatal Drug Withdrawal

Exposure to Stimulants

Hudak, M.L. et al, Pediatrics, 2012

- Stimulants such as cocaine and methamphetamine lead to neurobehavioral abnormalities that occur most commonly in the first 2-3 days after birth
- Most studies show that infants blinded to evaluators either had no or minimal withdrawal signs

Neonatal Drug Withdrawal or Toxicity States

Pediatrics, 2012

- Signs characteristic of neonatal withdrawal have been attributed to intrauterine exposure to a variety of drugs
- Other drugs cause an acute toxicity
- Withdrawal from opiate exposure **worsens** as drug levels decrease in the infant
- Symptoms of acute toxicity **abate** with drug elimination for stimulants and SSRI's

Withdrawal or Toxicity and SSRI's
Pediatrics, 2012.

- Continuous crying
- Irritability, jitteriness, hypertonia
- Shivering, tremors
- Fever
- Tachypnea
- Feeding difficulties, hypoglycemia and seizures

Neonatal Morbidity After Maternal Use of Antidepressant Drugs During Pregnancy

Ulrika Nörby, MSc Pharm, a, b Lisa Forsberg, MD, PhD, c, d Katarina Wide, MD, PhD, c, d
Gunnar Sjörs, MD, PhD, e Birger Winbladh, MD, PhD, f Karin Källén, PhDa

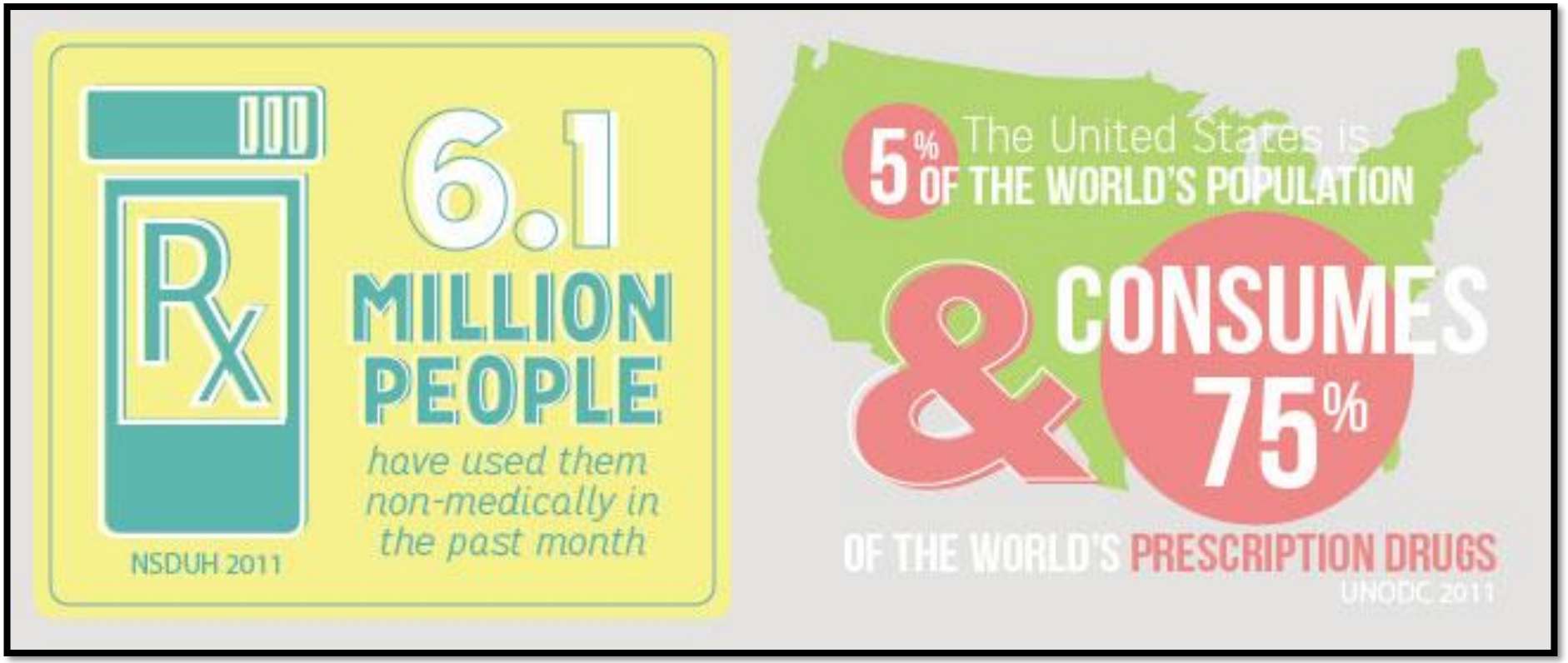
- Published in Pediatrics August 2016
  - Higher rates of NICU admission
  - Respiratory, CNS, hypoglycemia seen more

Opioids (Heroin/Morphine/OxyContin/Percocet/Norco/Vicodin)

- Patients who use opioids are a diverse group
  1. Prescribed medical care
  2. Opioid misuse
  3. Untreated opioid use disorder
     - Tolerance, craving, inability to control use and continued use despite adverse consequences

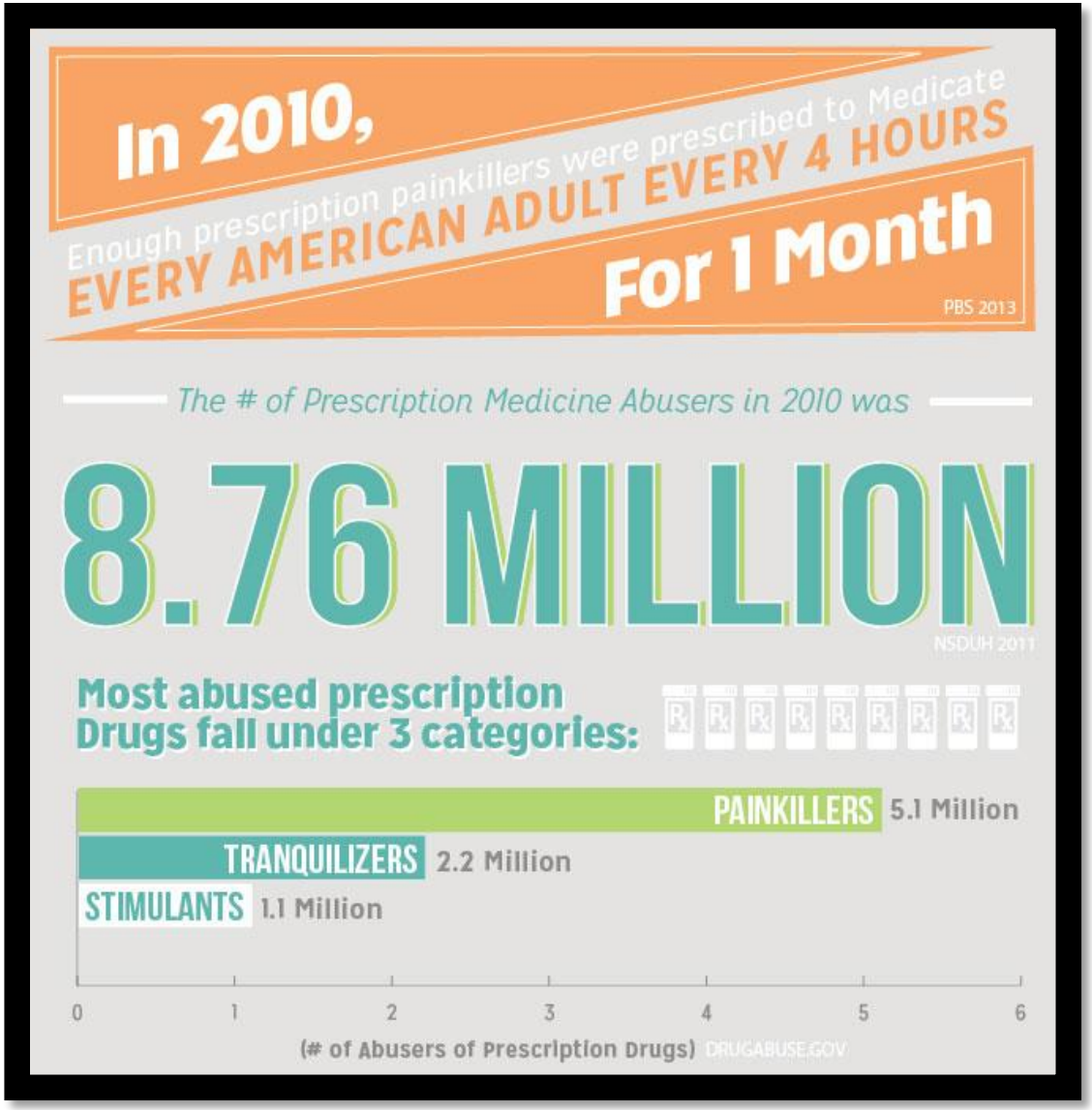
ACOG 2017 Committee opinion 711

Why?



https://www.drugabuse.gov/related-topics/trends-statistics/infographics/popping-pills-prescription-drug-abuse-in-america
Retrieved June 1st 2016

How Many?



https://www.drugabuse.gov/related-topics/trends-statistics/infographics/popping-pills-prescription-drug-abuse-in-america

UCSF Benioff Children's Hospitals

ACOG Committee Opinion Number 711
Opioid Use and Opioid Use Disorders in Pregnancy

- For women with OUD Agonist pharmacotherapy is the recommended therapy
- Medically supervised withdrawal is associated with higher relapse rates which may lead to worse outcomes.
- Infants born to women who used opioids during pregnancy should be monitored by a pediatric care provider for neonatal abstinence syndrome

Detoxification from opiate drugs during pregnancy

Jennifer Bell, MD; Craig V. Towers, MD; Mark D. Hennessy, MD; Callie Heitzman, RN; Barbara Smith; Katie Chattin

- 5.5 years
- 301 opiate addicted pregnant patients fully detoxified
- 4 Methods:
  - No adverse fetal outcomes related to detox were identified
    - 94 newborns were treated for NAS (31%)
    - Patients with intense outpatient behavioral health F/U had significant success compared to 93 patients who had no intense F/U tx plan
- Conclusion: Detoxification of opiate-addicted pregnant women does not appear to be harmful.
- The rate of NAS can also be reduced if the patient is drug free and has intense behavioral health F/U.

Opioids

Effects of exposure to heroin on school-age children

- Motor and cognitive impairments
- Inattention, hyperactivity, ADHD
- Problems with self-regulation

Drugs of Exposure and Approach to Care
(UCSF Collaborative)

Drug Name(s)	Tox screen	Observation location	Symptoms	Treatment
Buprenorphine/ Suboxone	Yes	NICU until safety/ disposition determined Room in?	Same as NAS	NAS pharmacologic and non pharmacologic

Drugs and Approach to Care (UCSF Collaborative)

Drug	Tox screen	Scoring	Observation location	Symptoms	Treatment
Benzo-diazepenes	Yes	Consider	Nursery vs rooming in until safety/ disposition determined	Jitteriness Hypertonia Hyperreflexia Irritability	Supportive care

Drugs and Approach to Care (UCSF Collaborative)

Drug	Tox screen	Scoring ?	Observation location	Symptoms	Treatment
Poly drug use	Yes	Yes	NICU until safety/ disposition determined Monitor for 3-5 days	Varied	Supportive care

Pain Management

- *….“every patient with pain, including those with substance use disorders, has the right to be treated with dignity, respect, and high quality pain assessment and management.”* 2012ASOPM Nursing statement
- Tolerance
- Cross tolerance: methadone and morphine / nicotine and morphine
- Concern for dose dependent respiratory and CNS depression
- Hyperalgesia - ↑ sensitivity to pain

Pregnancy-Associated Deaths From Drug Overdose in Virginia, 1999-2007

A Report from the Virginia Maternal Mortality Review Team

- Providers of care reported profound challenges
- Chronic pain - with and without established diagnosis
- Providers were unable to find support for pain mgmt.
  - Women exhibited drug seeking behavior
  - Pain Management Specialists were reluctant to treat pregnant women
  - Prescribing responsibility was left to OB
- Lack of coordination of care among specialist

http://www.vdh.virginia.gov/content/uploads/sites/18/2016/04/Final-Pregnancy-Associated-Deaths-Due-to-Drug-Overdose.pdf

Antenatal Care

- Routine prenatal plus
- Substance abuse program
- Social service support
  - Intimate partner violence education, housing, legal advise
- Observe for OB complications: HTN, IUGR, oligo
- RN Home visits
- Nutrition status – consider Registered Dietician consult
- Mindfulness-based stress reduction
- Promote adequate sleep

Antenatal Care: medication- assisted program

- Methadone
- Opioid Agonist
- Standard tx since 70's
- Prevents withdrawal sx
- Dispensed daily at registered tx program
- Part of comprehensive tx:
  - Behavioral/Family/Counseling
- May need dose ↑ in 3rd ∇
- May need ÷ dosing
- Potential drug interactions

- Buprenorphine
- Partial opioid agonist
- Offered as outpatient
- Part of comprehensive tx:
  - Behavioral/Family/Counseling
- Less likely to overdose
- Stable dosing
- Fewer drug interactions
- Liver dysfunction (rare)
- Potential for misuse

Intrapartum Care

- Anxiety
- Pain
- Hx of sexual trauma
- PTSD – panic attacks
- Buprenorphine in divided doses plus pain meds prn
  - Prodomal /Early Labor : Morphine, Fentanyl
  - Active labor: Epidural with Bupivacaine (Marcaine)
- Contraindicated: Nalbuuphine (Nubain), and Butoephanl (Stadol)
- Non-pharmacologic comfort measures
- Consider referral to Pain Management Specialists

Postpartum Care

- Continue with their current maintenance therapy
- Multimodal nonsteroidal/antinflammatory approach is preferred
- Opioids for pain relief: Morphine, Fentanyl, Meperidine, Tylenol/Codeine, Hydrocodone, Oxycodone
- Contraindicated: Nalbuuphine (Nubain), and Butoephanl (Stadol)
- Consider leaving epidural in place for significantly painful birth
- Maternal-newborn bonding
- Successful breastfeeding
- Inadequate sleep
- The risk of relapse is greatest during the immediate postpartum period because the motivation to prevent fetal harm is no longer present

NOPE!

Neonatal Abstinence Syndrome (NAS)

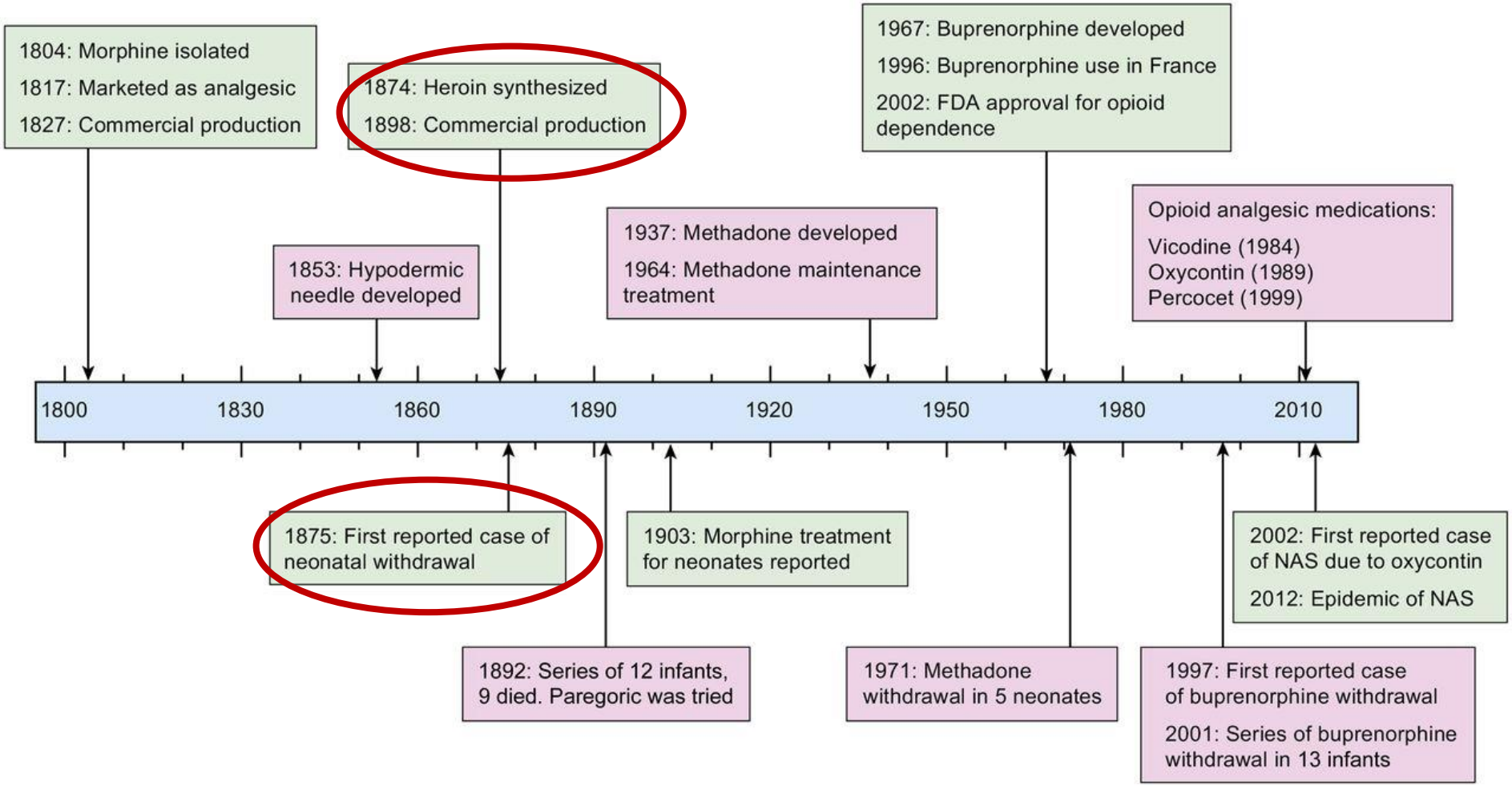
- Neonatal Abstinence Syndrome (NAS) is a drug-***withdrawal*** syndrome most commonly occurring after in utero drug exposure
- NAS may also occur as a result of postnatal opioid exposure resulting in tolerance and dependence

Jones, HE and Fielder, A (2015); Tolia, V, et al (2015).

The History of NAS

- First documented case of NAS in medical litera was in Germany in 1875 and the US in 1892
- Initially NAS was termed “congenital morphinism” (1912) and then later termed “infant addiction” or “congenital neonatal addiction” (1964)
- Between 1892 and 1950 there were 216 infants identified as offspring of mothers suffering from “maternal morphinism”

Jones, HE and Fielder, A (2015).


1804: Morphine isolated
1817: Marketed as analgesic
1827: Commercial production
1874: Heroin synthesized
1898: Commercial production
1967: Buprenorphine developed
1996: Buprenorphine use in France
2002: FDA approval for opioid dependence
1853: Hypodermic needle developed
1937: Methadone developed
1964: Methadone maintenance treatment
Opioid analgesic medications:
Vicodine (1984)
Oxycontin (1989)
Percocet (1999)
1800
1830
1860
1890
1920
1950
1980
2010
1875: First reported case of neonatal withdrawal
1903: Morphine treatment for neonates reported
2002: First reported case of NAS due to oxycontin
2012: Epidemic of NAS
1892: Series of 12 infants, 9 died. Paregoric was tried
1971: Methadone withdrawal in 5 neonates
1997: First reported case of buprenorphine withdrawal
2001: Series of buprenorphine withdrawal in 13 infants

NAS

- Early descriptions of NAS were consistent with abstinence syndrome in the adult with an emphasis on “restlessness”
- Characteristics of NAS include signs and symptoms indicating CNS hyperirritability, dysfunction of the autonomic nervous system, gastrointestinal tract, and respiratory system
- NAS typically occurs at 48 - 72 hours post birth; delayed onset may be up to 4 weeks

Hadman, AH (2016); Jones, HE and Fielder, A (2015).

NAS Incidence

- From 2000 to 2009 the annual rate of NAS increased from 1.2 to 5.63 per 1000 live births
- From 2004 to 2013, the rate of NICU admission for NAS increased from 7 cases per 1000 admissions to 27 cases per 1000 admissions
- The *median* length of stay increased from 13 days to 19 days

Jones, HE and Fielder, A (2015); Patrick, SW (2015); Saunders, C, et al (2015); Tolia, VN, et al (2015).

UCSF Benioff Children's Hospitals

NAS Incidence

- Total percentage of NICU days increased from 0.6% to 4%
- Infants with NAS requiring pharmacotherapy for management increased from 74% (2004-2005) to 87% (2012-2013)
- In 2012, costs associated with NAS infants requiring pharmacotherapy were $93,000 (on average $4000 per day)

Jones, HE and Fielder, A (2015); Patrick, SW (2015); Saunders, C, et al (2015); Tolia, et al (2015)..

The incidence and onset of symptoms of NAS is dependent on the drug, half-life, last time used, and genetics

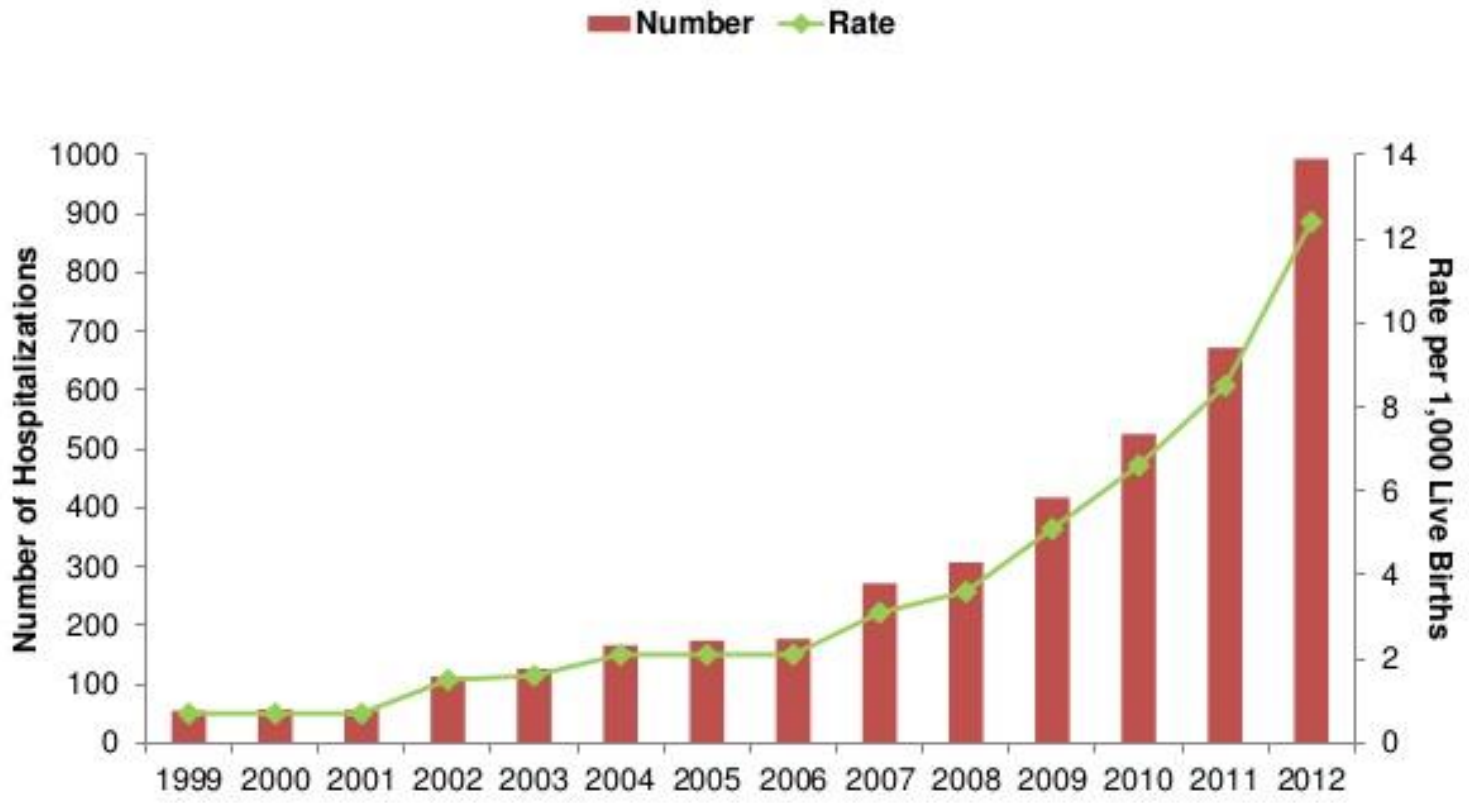
(Maureen Shogan MN, RNC 2016)

Opioids	Onset (hrs)	Frequency (%)	Duration (days)
Heroin	**24-48**	**40-80**	**8-10**
Prescription Opioids	**36-72**	**5-20**	**10-30**
Buprenorphine	**36-60**	**22-67**	**Up to 28 or more**
Methadone	**48-72**	**13-94**	**Up to 30 or more**

Garey, D and Stellwagen, L (2015).

UCSF Benioff Children's Hospitals

NAS Hospitalizations in TN: 1999-2012



Data sources: Tennessee Department of Health; Office of Health Statistics; Hospital Discharge Data System (HDDS) and Birth Statistical System. Analysis includes inpatient hospitalizations with age less than 1 and any diagnosis of drug withdrawal syndrome of newborn (ICD-9-CM 779.5). HDDS records may contain up to 18 diagnoses. Infants were included if any of these diagnosis fields were coded 779.5.

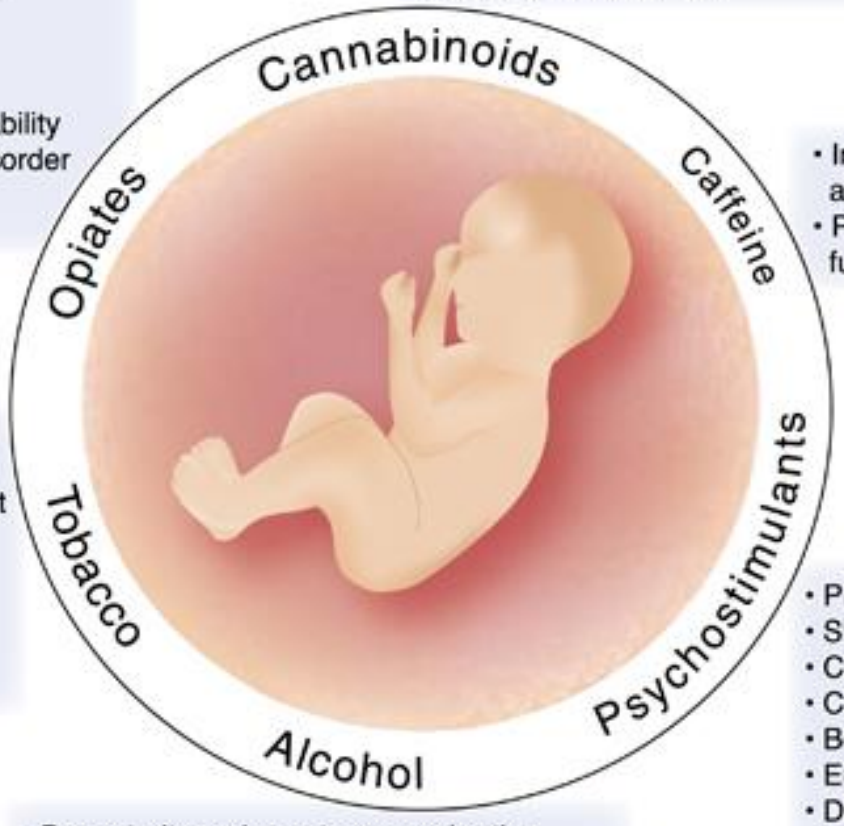
TENNESSEE DEPARTMENT OF HEALTH

UCSF Benioff Children's Hospitals

Other Risk Factors for Increased Severity of NAS

- Term Infant
- Polydrug or polysubstance abuse
- Combination with benzodiazepines
- Smoking
- Methadone
- Combination with SSRIs

Kocherlakota (2014).



- Decreased growth
- Deficits in attention
- Increased impulsivity
- Long-term deficits in executive function
- Depression diagnosis
- Future substance use

- Neonatal abstinence syndrome
- Preterm birth and obstetric complications
- Attenuated myelination in infants
- Respiratory insufficiency
- Heart defects
- Reduced growth
- Deficits in cognitive and motor ability
- Attention deficit hyperactivity disorder
- Lower IQ
- Behavioral problems

- Increased risk of growth restriction and prematurity (at high levels)
- Possible decrease in executive function at school age

- Decreased birthweight
- Altered response to stimuli
- Poorer academic achievement
- Poorer cognition
- Attention deficits and hyperactivity
- Adolescent aggression
- Oppositional defiance issues

- Preterm labor
- Short- and long-term growth defecits
- Cardiac and cardiovascular anomalies
- Cranial and brain abnormalities
- Behavior problems
- Emotional and social effects
- Deficits in attention, memory and motivation
- Anxious/depressed behaviors and symptoms
- Aggression and delinquent behavior

- Prematurity and spontaneous abortion
- Limb and facial development
- Reduced growth
- Cognitive delays and impairments
- Reduced brain volumes
- Abnormalities in the corpus callosum
- Deficits in attention, memory, verbal fluency, executive functioning, reaction times, and motor learning

Ross et al, 2015

Prenatal Substance Abuse: Short- and Long-term Effects on the Exposed Fetus (AAP, 2012)

TABLE 2 Summary of Effects of Prenatal Drug Exposure

	Nicotine	Alcohol	Marijuana	Opiates	Cocaine	Methamphetamine
Short-term effects/birth outcome						
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.

ABM Clinical Protocol #21: Guidelines for Breastfeeding and Substance Use or Substance Use Disorder, Revised 2015

Encourage women under the following circumstances to breastfeed their infants (III):

- Engaged in substance abuse treatment; provision of maternal consent to discuss progress in treatment and plans for postpartum treatment with substance abuse treatment counselor; counselor recommendation for breastfeeding
- Plans to continue in substance abuse treatment in the postpartum period
- Abstinence from drug use for 90 days prior to delivery; ability to maintain sobriety demonstrated in an outpatient setting
- Toxicology testing of maternal urine negative at delivery
- Engaged in prenatal care and compliant.

Counsel women under any of the following circumstances not to breastfeed (III):

- Not engaged in substance abuse treatment, or engaged in treatment and failure to provide consent for contact with counselor
- Not engaged in prenatal care
- Positive maternal urine toxicology screen for substances other than marijuana at delivery [see (b) above]
- No plans for postpartum substance abuse treatment or pediatric care
- Women relapsing to illicit drug use or legal substance misuse in the 30-day period prior to delivery
- Any behavioral or other indicators that the woman is actively abusing substances
- Chronic alcohol use.

Evaluate carefully women under the following circumstances, and determine appropriate advice for breastfeeding by discussion and coordination among the mother, maternal care providers, and substance abuse treatment providers (III):

- Relapse to illicit substance use or legal substance misuse in the 90–30-day period prior to delivery
- Concomitant use of other prescription medications deemed to be incompatible with lactation
- Engaged later (after the second trimester) in prenatal care and/or substance abuse treatment
- Attained drug and/or alcohol sobriety only in an inpatient setting
- Lack of appropriate maternal family and community support systems
- Report that they desire to breastfeed their infant in order to either retain custody or maintain their sobriety in the postpartum period.

Breastfeeding Recommendations

Mothers are encouraged to breastfeed when:

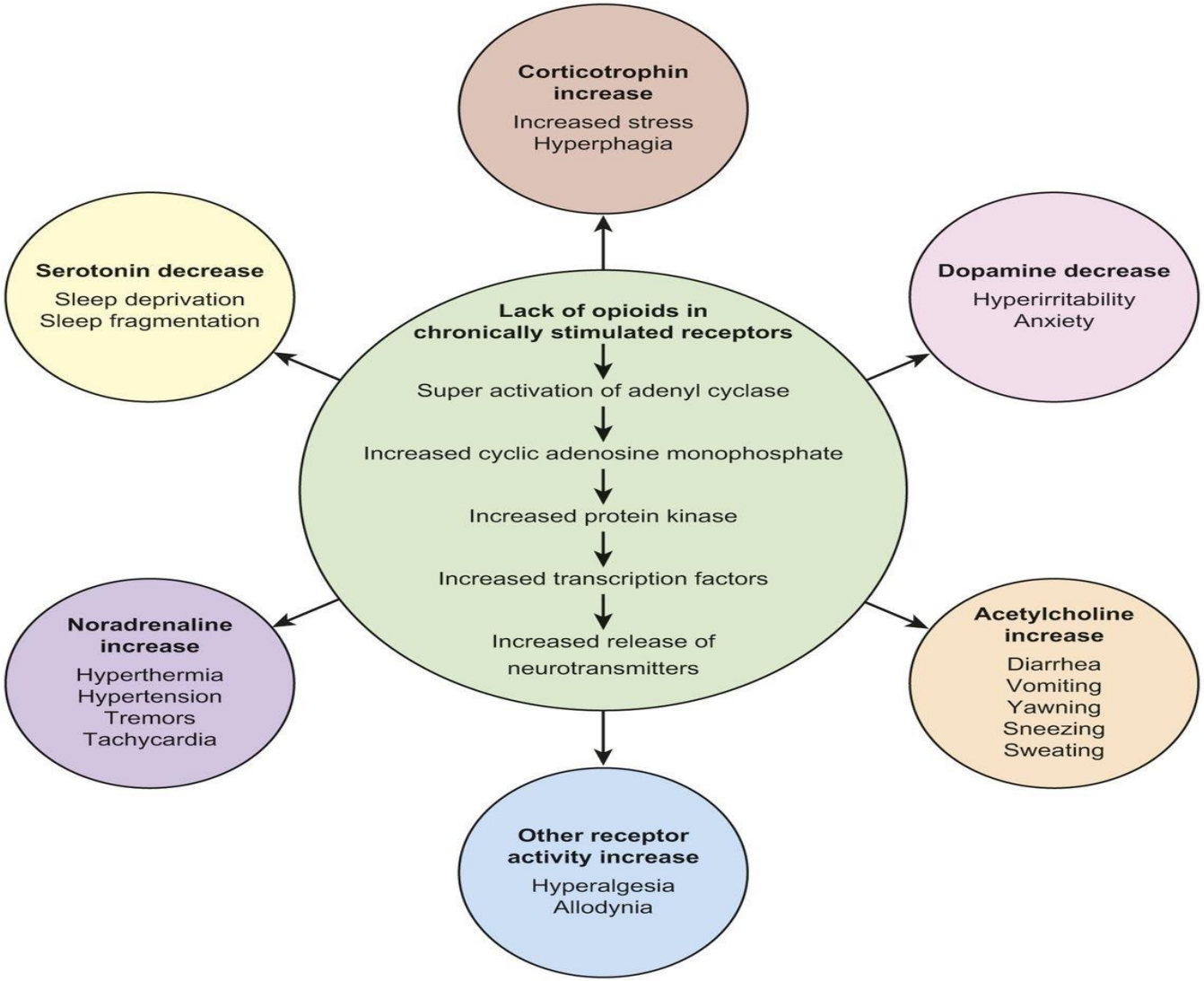
- Stable on methadone or buprenorphine regardless of dose
- Not using illicit drugs prior to birth
- Negative toxicology testing at time of birth
- Active in treatment
- HIV negative
- Good resources:
  - Hale's medications and mother's milk 2014 edition
  - Lactmed-NIH free, downloadable app

Clinical Presentation of Withdrawal

"Because opiate receptors are concentrated in the CNS and the gastrointestinal tract, the predominant signs and symptoms of pure opioid withdrawal reflect CNS irritability, autonomic over-reactivity and GI dysfunction."

Neonatal Drug Withdrawal AAP Committee on Drugs, Pediatrics 2012

A schematic illustration of the mechanism of opioid withdrawal in neonates.



Prabhakar Kocherlakota Pediatrics 2014;134:e547-e561

PEDIATRICS

Abstinence and The Preemie

- Less exposure time
- Decreased receptor development
- Decreased fatty tissues for drugs like methadone to accumulate in
- Immature muscular development
- Less robust pain response

Multidisciplinary NAS Approach

- **Identify neonates at risk** for NAS and make appropriate referrals rapidly
- **Consistently evaluate** the presence and severity of withdrawal symptoms
- **Standardize** and simplify the opioid withdrawal treatment plan
- **Initiate** appropriate non-pharmacologic and pharmacologic **interventions** to control symptoms
- Safely **minimize length of stay**
- **Discharge infants successfully** weaned from opioids

D'Apolito, K (2014); Saunders, C, et al (2015).

UCSF Benioff Children's Hospitals

Challenges with NAS in the NICU

- Scoring tools and inter-rater reliability
- Embracing the philosophy of care
- Setting aside bias
- Staffing for “non-critical” patients
- Adhering to the protocol
- Promoting parent-infant bond

http://claad.org/federal-legislation-introduced-to-address-neonatal-abstinence-syndrome/

D’Apolito, K (2014); Saunder, C (2015);

NEONATAL ABSTINENCE SCORING SYSTEM

SYSTEM	SIGNS AND SYMPTOMS	SCORE	AM					PM						COMMENTS
CENTRAL NERVOUS SYSTEM DISTURBANCES	Continuous High Pitched (or other) Cry	2												Daily Weight:
	Continuous High Pitched (or other) Cry	3												
	Sleeps <1 Hour After Feeding	3												
	Sleeps <2 Hours After Feeding	2												
	Sleeps <3 Hours After Feeding	1												
	Hyperactive Moro Reflex	2												
	Markedly Hyperactive Moro Reflex	3												
	Mild Tremors Disturbed	1												
	Moderate-Severe Tremors Disturbed	2												
	Mild Tremors Undisturbed	3												
	Moderate-Severe Tremors Undisturbed	4												
	Increased Muscle Tone	2												
	Excoriation (Specific Area)	1												
	Myoclonic Jerks	3												
	Generalized Convulsions	5												
METABOLIC/VASOMOTOR/RESPIRATORY DISTURBANCES	Sweating	1												
	Fever 100.4°-101°F (38°-38.3°C)	1												
	Fever > 101°F (38.3°C)	2												
	Frequent Yawning (>3-4 times/interval)	1												
	Mottling	1												
	Nasal Stuffiness	1												
	Sneezing (>3-4 times/interval)	1												
	Nasal Flaring	2												
	Respiratory Rate >60/min	1												
	Respiratory Rate > 60/min with Retractions	2												
GASTRO-INTESTIONAL DISTURBANCES	Excessive Sucking	1												
	Poor Feeding	2												
	Regurgitation	2												
	Projectile Vomiting	3												
	Loose Stools	2												
	Watery Stools	3												
	TOTAL SCORE													
	INITIALS OF SCORER													

Mark L. Hudak et al. Pediatrics 2012;129:e540-e560

PEDIATRICS®

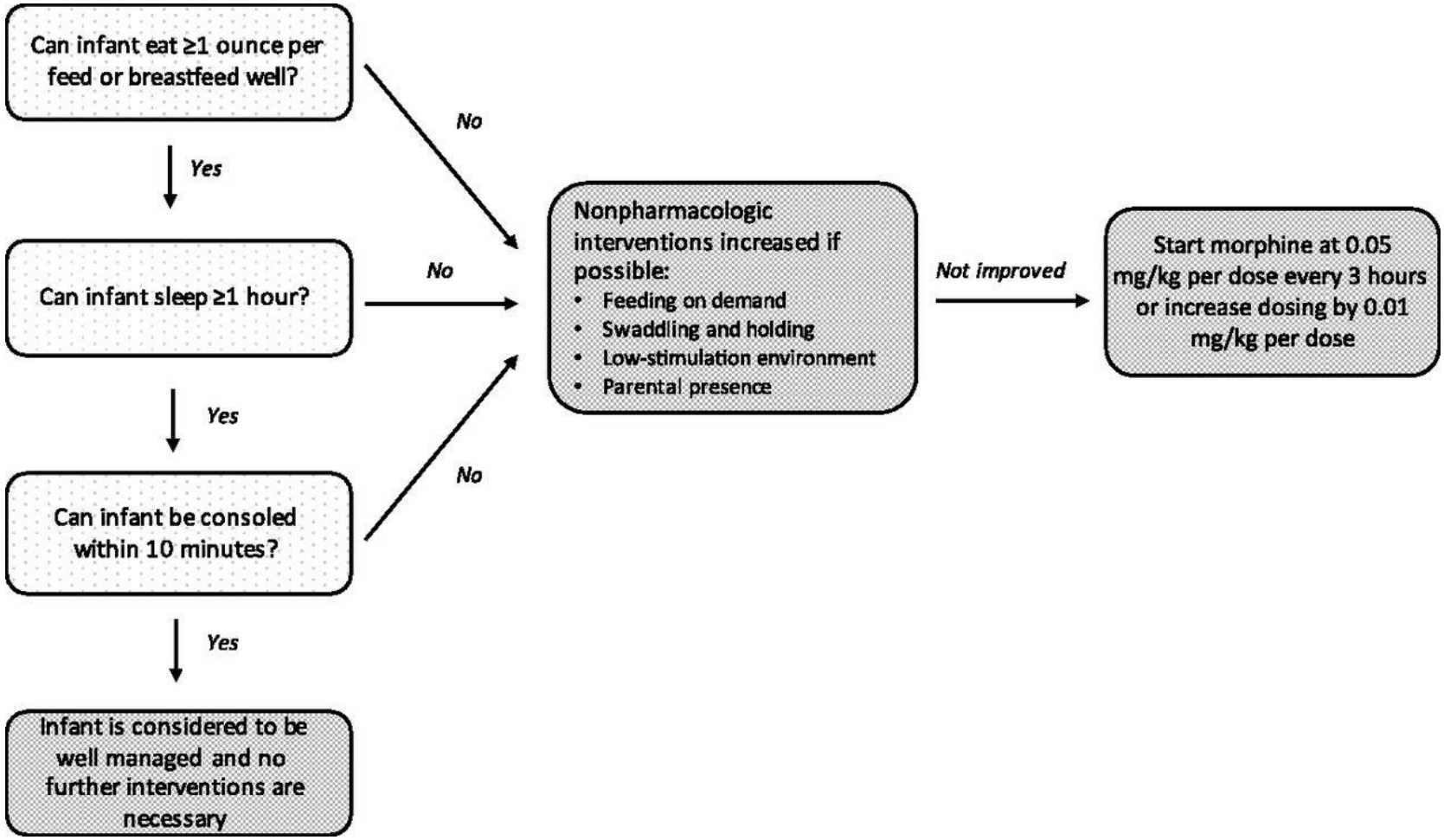
The ESC Approach

- Can the baby EAT?
- Can the baby SLEEP?
- Can the baby be CONSOLED within 10 minutes?

- What does the baby need
- What would you do for a non NAS baby?

The ESC approach…

- Eat Sleep Console!!
- Why this method?
- What does the research show?
- What are the barriers to implementation?
- What have been YOUR successes?


Can infant eat ≥1 ounce per feed or breastfeed well?
Yes
Can infant sleep ≥1 hour?
Yes
Can infant be consoled within 10 minutes?
Yes
Infant is considered to be well managed and no further interventions are necessary
No
No
No
Nonpharmacologic interventions increased if possible:
• Feeding on demand
• Swaddling and holding
• Low-stimulation environment
• Parental presence
Not improved
Start morphine at 0.05 mg/kg per dose every 3 hours or increase dosing by 0.01 mg/kg per dose

- What is the first-line treatment?
- Where do these babies need to cared for?
- Can we decrease the length of stay?
- What support is needed?

Pharmacologic Treatment UCSF Collaborative

First-line Treatment: Morphine

- Initiation dose: 0.05 mg/kg
- Titration: increase by 0.025 mg/kg if same/increased scores after 2 doses
- Suggested maximum dose: 0.2 mg/kg (higher doses per provider discretion)
- Wean: decrease by 10% of infant's highest dose if scores remain <10
- Discontinue: after 0.04 mg / dose

Methadone

-PO q 6 - 8 h

-Increase by 0.05 mg/kg until symptoms controlled

-Decrease frequency to q 12 to 24 h once symptoms controlled

-Taper dose by 10% to 20% every week to a dose of 0.05 mg/kg per day before discontinuing

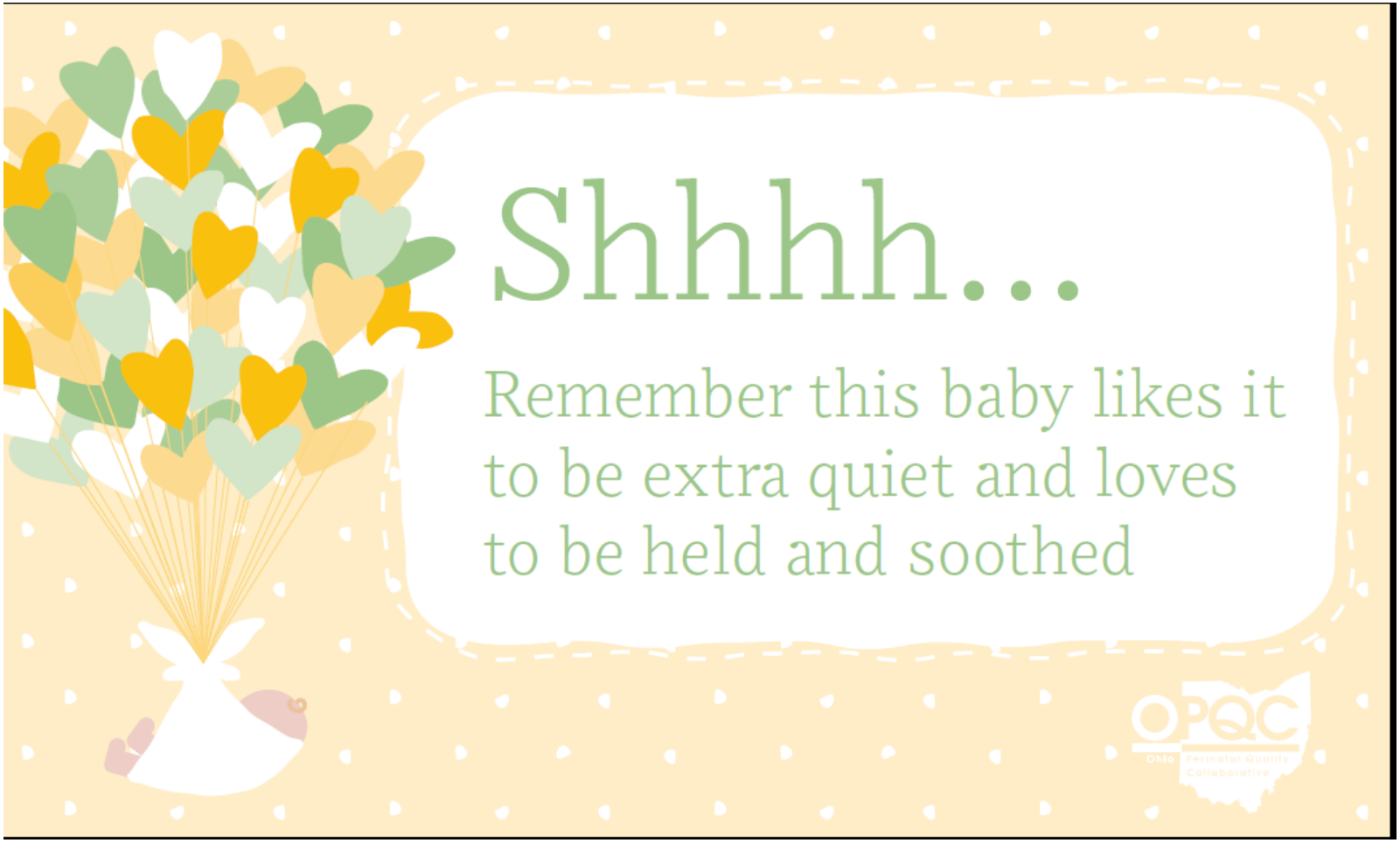
Phenobarbital

-Not drug of choice for opioid withdrawal

-Ok for non-opioid NAS

-Can be used as second line drug when infants have NAS due to poly-drug exposure in utero

Promoting a Healing Environment



From: The Ohio Perinatal Quality Collaborative

UCSF Benioff Children's Hospitals

Handling with Care

- Skin to skin whenever possible
- Infant massage
- Music
- Swaddling
- Midline, flexed, hands to mouth

- The ESC approach…

Supportive Care

- Maintain consistency of care providers & maximize non-pharmacologic interventions for NAS symptoms
- Educate staff, families in supportive care measures for NAS

Daily Care

- Skin care needs
- Positioning
- Therapeutic touch
- Comforting with non-pharmacologic interventions

Staffing Challenges

- Where should these babies be cared for?
- Can we provide continuity of care?
- What are ideal staffing ratios?
  - How do we make the case for more staffing?
  - Working with the families…

General Principles of Therapeutic Communication

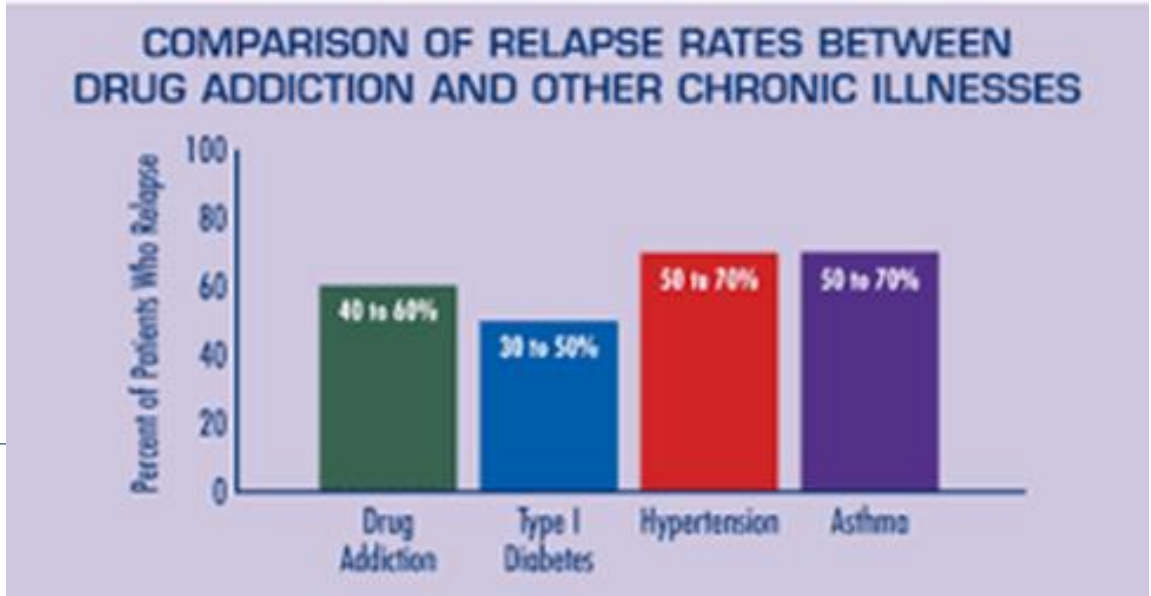
- Acknowledge the complexity of the patient's medical condition
- Speak slowly and avoid using medical jargon
- Active listening - let the patient tell their story
- If you get to a difficult point, consider taking a break
- Use teach back techniques to assess comprehension of key points
- Use decision aids and other resources to help comprehension
- Include Family members can be key supporters

Tips for working with mothers who have addictive disorders

- Empathy
- Access resources together
- Advocacy
- Encouraging bonding between mother and baby
- Boundaries
- Building support system
- Increasing links to community-based resources
- Integrated approach for co-occurring disorders

Factors to Consider

- Co-Occurring Disorders
- Cultural Factors/Language
- Accessibility to care
- Criminal history
- Motivation
- Caregiver bias



"It's all about that B.A.S.E" –Lisa Jaacks, MD, 2013

- BASE
  - Build Trust & Establish Rapport
  - Ask Questions
  - Set the Expectation
  - Educate

Neonatal Abstinence Syndrome. (2016). Retrieved 7 November 2016, from http://www.azdhs.gov/documents/prevention/womens-childrens-health/injury-prevention/prescription-drugs/educating-families-about-nas-weise-and-scull.pdf

Build Trust & Establish Rapport

- Know the difference between addiction and dependence
- Barriers: Nursing and Mothers
- Ways to Build Rapport/Trust

- GOAL: “Provide supportive care to baby, mother and extended family in a non-judgemental manner”

Ask Questions

- Active Listening
- Comprehensive History
- Assess how the mother learns
  - Visual, auditory, read/write, kinesthetic

Set the expectation

- Be upfront about expectations for their infant's hospital stay
- Possibly a written and signed agreement?

Educate

- Causes of NAS
- Symptoms & Diagnosis
- Treatment
- Cue Recognition
- Sensitive care
- Soothing techniques
- Breastfeeding
- Discharge planning

Working with Hostile Behavior

- Providing boundaries
- Know your hospital security policy

Adding to Our Practice Toolkit: Using the ACTS Script to Address Stigmatizing Peer Behaviors in the Context of Maternal Substance Use

- Acknowledge
- Create circumstance for reflection
- Teach
- Support

Adding to Our Practice Toolkit: Using the ACTS Script to Address ...: Ingenta Connect. (2016). Ingentaconnect.com. Retrieved 7 November 2016, from http://www.ingentaconnect.com/content/springer/jnn/2016/00000035/00000005/art00011

Adding to Our Practice Toolkit: Using the ACTS Script

- Examples of comments that you may hear:
  - How can she do that to her baby? She is a terrible mother.
  - Some women can't have babies, and they would give anything to have this beautiful baby—she doesn't deserve it.
  - If she really cared about her baby, she would . . . (stop using, leave the guy).
  - I can't believe they are letting her go home with her baby—what kind of life will that child have?

ACKNOWLEDGE

Create safety by not directly criticizing. Rather, create an opportunity to open a dialogue:

- "I know, I used to feel the same way, then I got to know one of my moms and . . . "
- "I find it really difficult too, but I keep thinking about her circumstances and what has happened in her life."

CREATE CIRCUMSTANCE FOR REFLECTION

It is hard to challenge a coworker's values or judgments about a client. Instead of creating a confrontational situation, provide a circumstance that helps the other person to reflect on his or her practice:

- Ask questions or think out loud—"I wonder if she has experienced violence in her life? I wonder what may have happened to if this is the choice that she made?"
- "We probably need to think about some different ways of talking about this mom, since I am feeling uncomfortable with how this is being talked about."
- "It is difficult, I know. On the one hand, I feel frustrated and confused at her substance use/staying with her abuser, and, on the other hand, she is so gentle with her baby and trying to learn how to care for her baby . . . she asks all the same questions as any other mother."

TEACH

There are many opportunities for sharing this information with your team:

- Choose a high-quality, brief, and practical article about substance use and pregnancy that addresses attitudes and stigma. Leave it in multiple places around the unit.
- Ask permission—"Can I share something with you that I learned in a workshop?" (Share a little piece of information at a time).
- "I heard something that made me think about moms a little differently, about what I could do differently that would make mom feel better and me feel better."
- "I have learned that lots of women have experienced a lot of life before I have met them and learned to cope in ways that I don't necessarily approve of or agree with. I try to keep that in mind when I am working with them, and it helps me to take it slowly and try to build bridges rather than set up a wall between us."
- Use a recent clinical scenario to "unpack" what happened, what worked, and what didn't work. For example, you may discuss how a woman may have used substances as a way to cope with past or present abuse and violence . . . it may have been a rational decision for her to start with . . . and that by supporting the woman and the baby without judgment leads to improved outcomes for both.

SUPPORT

Provide immediate and continuing support to your coworkers as they try out some new approaches:

- Help them debrief: how did that work for you versus what you were doing before?
- Point out what you saw in the client—what the response of the client was to the new approach and also what you saw in your coworker: "I saw her smiling a lot when she was talking to you, that is new . . . she looked a lot more relaxed, and I saw her asking you questions about her baby . . . you looked more relaxed when you were with her."
- Share at staff meetings how you are seeing positive changes; ask how can we do this as a whole team instead of as just a few people.
- Identify and celebrate success. What worked? How can we do this more?

Challenging patient nurse scenarios

1. RN & hostile patient's family
2. Nurse to Nurse shift report with negative stigma/bias
3. Non-compliant patient in early labor found smoking
4. Neonatal nurse has breast feeding conversation with Mom

UCSF Benioff Children's Hospitals

Partnering with Community Health

Outpatient treatment

Child protection and safety

Strategies to keep Mom and baby together

Outpatient laboratory tests

What About After Discharge?

- No current requirement for NAS infants to receive developmental follow up assessment
- Long term effects of NAS are significant
- 60 - 90% of people with substance use disorders may have mental health, emotional, or personality disorders leading to poor parenting skills
- What about future pain management needs during “routine” life events?
- Above all the environment must be safe, and the family well supported

UCSF Benioff Children's Hospitals

Caring for Patient and Self

RN Self Check

Intention to Care

Mindfulness Meditation

Burnout Prevention

Questions to ask yourself….

- What makes working with addicts so challenging?
- What can we influence?
- What are key skills, practices?

The patient is making terrible choices

The situation is very concerning, it may even seem hopeless

We might feel responsible (and care too much)

We might be judging the patient (and care too little).

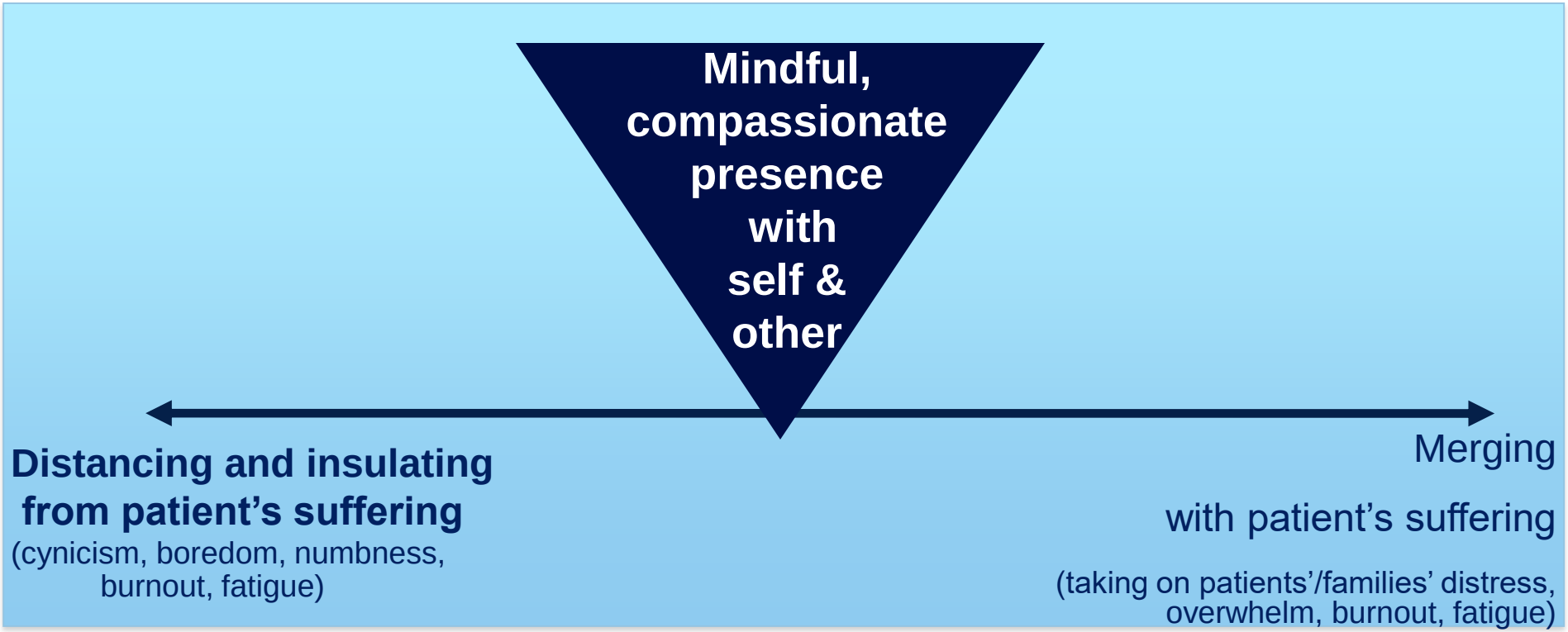
The patient is challenging to work with

It's difficult to witness and participate in

What can we do?

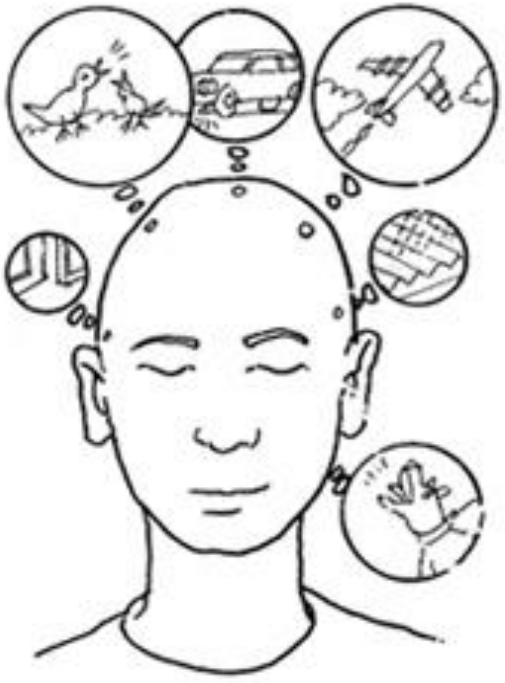
1. Be mindful
2. Have healthy boundaries
3. Reflect on our own attitudes
4. Cultivate compassion
5. Act with intention and purpose

Being "close but separate"



Being mindful can help:

- **Being mindful means:**
  being attentive to the present moment without judgment
  - *With* ***curiosity***
  - *With* ***acceptance***



UCSF Benioff Children's Hospitals

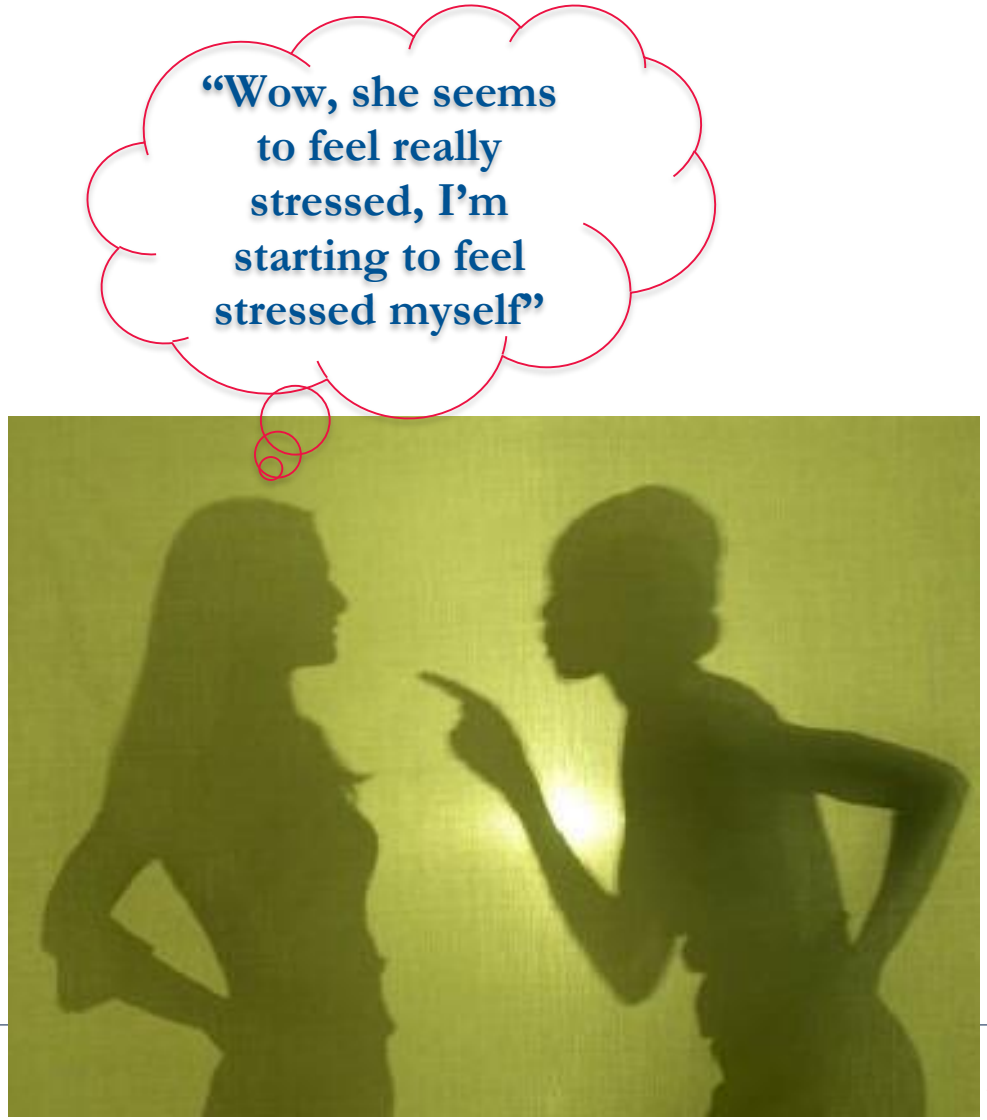
Being mindful to your own experience

- Notice your feelings, body sensations, thoughts
- Just witness without judgment

- When we mindfully observe our experience,
  - ➢ We are much less influenced and impacted by the state of the other person
  - ➢ we can act more purposefully

Curious verses Furious

Mindful presence helps being less judging/reactive with others



Mindful to your frame of reference

Think of a difficult substance-using patient

- What feelings are you aware of?
- What judgments do you have about her?
- What do you feel is your role and responsibility?

Is there possibly another way to look at the situation, the patient, your role and responsibility?

“Serving instead of fixing”

Helping, fixing and serving represent three different ways of seeing life.

When you help, you see life as weak.
When you fix, you see life as broken.
When you serve, you see life as whole.

- Rachel Naomi Remen

Developing Intentional Compassion: Loving kindness practice

May I / you be filled with loving kindness.

May I / you be safe from inner and outer dangers.

May I / you be well in body and mind.

May I be happy and free.

Intentions and practices for a sustainable practice

- Before the encounter, prepare with practices, intentions, rituals
  - take a few deep breaths, choose an intention, prayer, meditate

- Before and throughout – remember your intentions and mental frames:
  - "I do what I can"
  - "I care, but I'm not responsible"
  - "I serve with what I have to offer"
  - "I'm in my chair, you are in your chair"
  - "I wish you well, but we are separate people"
  - "I will not take on anything that is not mine"

- Throughout: Stay connected to your own body and mind
  - Notice your breath, notice your feet on the ground, notice your body sensations, thoughts and feelings

- After the encounter/workday: cleansing rituals and acknowledgements
  - "I'm not taking anything with me that is not mine"
  - "I wish her well, may she be safe and healthy"
  - Also: hand washing, walks, hot shower, yoga, prayer, mediation, …

View the UCSF Neonatal Collaborative NAS consensus document on our website under resources:

bchsfoutreach.ucsf.edu

(You will need to create an account using your work email to access the document)

Our Partners and NICU Levels of Care MAP

1. Mad River Community Hospital Arcata
2. St Joseph Hospital Eureka
3. Redwood Memorial Hospital Fortuna
4. Mendocino Coast District Hospital, Fort Bragg
5. Ukiah Valley Medical Center
6. Santa Rosa Memorial Hospital
7. Petaluma Valley Hospital
8. Sonoma Valley Hospital
9. Queen of the Valley, Napa
10. St Helena Hospital, Napa Valley
11. St Helena Hospital Clearlake
12. Marin General Hospital
13. San Francisco General Hospital
14. UCSF
15. San Joaquin General Hospital
16. Saint Joseph Hospital Stockton
17. Washington Hospital Fremont
18. Community Hospital of the Monterey Peninsula
19. Natividad Medical Center
20. Community Regional Medical Center

Summary

- In general, a coordinated multidisciplinary approach without criminal sanctions has the best chance of helping pregnant women, infants, and their families.
- Take an active role to reduce substance use for pregnant women

References

- Cook, E.K., et al. “A multidisciplinary approach to intrauterine drug exposure and neonatal abstinence syndrome,” presented October 24, 2015, NANN Educational Conference, Dallas, TX.
- D’Apolito, K. (2014). Assessing neonates for neonatal abstinence: are you reliable?. *Journal Perinatal Neonatal Nursing, 28 (3)*: 220-231.
- Garey, D. and Stellwagen, L. “Improving breastfeeding rates in neonatal abstinence syndrome infants in the NICU,” presented January 2015, UCSD, Retrieved January 11, 2016.
- Jones, H.E. and Fielder, A. (2015). Neonatal abstinence syndrome: historical perspective, current focus, future directions. *Preventative Medicine, 80*: 12-17.
- Kocherlakota, P. (2014). Neonatal abstinence syndrome. *Pediatrics, 134 (2).*
- Patrick, S.W. (2015). The triple aim for neonatal abstinence syndrome. *Journal of Pediatrics, 167 (6)*: 1189-1191.

References

- Saunders, C, et al. (2014). Neonatal abstinence syndrome: evaluating the effectiveness of an evidence-based multidisciplinary are approach. *Journal Perinatal Neonatal Nursing, 28 (3)*: 232-240.
- Tolia, V. N., et al. (2015). Increasing incidence of the neonatal abstinence syndrome in US neonatal ICUs. *The New England Journal of Medicine, 372 (22)*: 2118-2126.
- Consensus Summary for Management of Neonatal Abstinence Syndrome & Drug-Exposed Infants:UCSF Multi-Site Neonatology Collaboration
- Children's Hospital of Philadelphia Neonatal Abstinence Clinical Pathway http://www.chop.edu/clinical-pathway/neonatal-abstinence-syndrome-clinical-pathway
- Ohio Perinatal Quality Collaborative: https://www.opqc.net/projects/NAS

Thank you!!

Questions??

Tanya.kamka@ucsf.edu

Valerie.Huwe@ucsf.edu

UCSF Benioff Children's Hospitals