Substance-Exposed Newborns:
The Importance of Promoting Parental Attachment
Neonatal Abstinence Syndrome

- https://www.youtube.com/watch?v=mGEDalP6kw4
Addiction: Chronic, acute and future consequences

- Addiction is a disease that affects at least 2 patients.
- A mother with the chronic, relapsing disease of addiction that involves biological changes in oxytocin and dopamine in the brain, resulting in disorders of attachment and reward.
- An infant with immediate need for permanence and stability.
- The infant’s future ability to mother, via epigenetic modifications of gene expression.
The Biology of Addiction: Dopamine

- Dopamine is a neurotransmitter involved in regulation of movement, emotion, motivation, pleasure and reward.
- Drugs of abuse can cause the release of dopamine in an amount up to 10 fold that which natural rewards such as eating and sex do, and the effects can last much longer.
- Reward and reinforcement of drug use overwhelms that of naturally rewarding behaviors and becomes the primary motivator in the person’s life.
Surges of dopamine as a result of drug abuse lead to less production of dopamine or down regulation of dopamine receptors by the brain.

The drug abuser’s ability to experience any pleasure is reduced because of low levels of dopamine.

The person now has to take increasing amounts of drugs to achieve a normal functional dopamine state.
Dopamine

• Changes occur in the prefrontal cortex involved in control of impulses and desires, which often prevent an addicted person from being able to follow through with a decision to detox.

• The desensitization to dopamine in this region impairs self control, impulse resistance, and follow through on plans and resolutions.
Relapse: G Protein Signaling

• Events associated with drug use become cues that trigger uncontrollable cravings, even after years of abstinence.

• This “reflex” is secondary to a change in proteins & receptors in the brain that is part of the chronic relapsing disease of addiction.
The Biology of Attachment

- Attachment is an innate biological system promoting contact between an infant and mother, in order to increase the likelihood of survival.
- Changes in oxytocin and dopamine during pregnancy and lactation prime the mother to attach to and nurture her infant.
- Infant contact stimulates oxytocin release, which may result in activation of the dopamine reward pathway, reinforcing the maternal response to the infant’s social cues.
The Biology of Attachment

- Stress during pregnancy may reduce oxytocin receptor binding, and chronic drug abuse reduces oxytocin levels.
- Either result in increases in maternal anxiety and decreased maternal bonding behavior.
- Decreased maternal bonding behavior may then result in decreased oxytocin receptor binding in the offspring.
The Biology of Attachment

- Early maternal caregiving influences the infant’s programming of the oxytocin and dopamine neuroendocrine systems, which then influences that infant’s maternal behavior in adulthood.

- A neglected infant is biologically vulnerable to become a neglectful mother.
Epigenetics

- Epigenetic modifications can switch a gene “on” or “off” or alter the level of expression of genes.

- Crucial in normal development by governing proper gene expression of critical developmental genes.

- However, environmental stimuli can influence these developmental pathways to induce epigenetic changes of these critical genes.
Epigenetics

• Such changes are often necessary to ensure immediate survival under adverse circumstances during development.

• The change in gene expression may become maladaptive as the individual ages and may increase lifelong risk for certain diseases.

• The environment during prenatal and early postnatal development imposes the greatest impact on epigenetic modifications of critical genes.
Intrauterine Growth Retardation: an example of epigenetic effects

- Babies with poor in utero growth have increased incidence of heart disease, hypertension and type 2 diabetes mellitus as adults.
Impact of NAS

• Over 400,000 infants per year in the US are estimated to be affected by prenatal alcohol or illicit drug exposure representing 10-11% of all births

• A baby is born with NAS in the U.S. every 25 minutes according to an NPR report

• The percentage of pregnant women using opioids has tripled between 2002 and 2012, with 1.2% of all pregnant women reporting opioid use in 2012
Impact of NAS

- In Virginia: the number of NAS cases have risen from 85 (0.9 per 1000 live births) in 1999 to 542 (5.3 per 1000 live births) in 2014.

- “Since 1999, opioid overdose deaths have quadrupled and opioid prescriptions have increased markedly, almost enough for every adult in America to have a bottle of pills, yet the amount of pain reported by Americans has not changed” Surgeon General, August 2016.

- Deaths secondary to addiction outnumber deaths due to motor vehicle accidents.
NICU design for care of the NAS infant

• Comfort care (non-pharmacologic measures) should be provided for all opioid exposed infants, including minimizing stimuli such as light and noise, swaddling, responding early to the baby, swaying, rocking (vertical > sideways), pacifier use, frequent small feedings, rooming in with the mother
Care of the family and staff in NAS

• NICU NAS Committee
• Multi-Disciplinary Discharge Rounds
• Parent Advisory Council
• Cuddlers
• Social Work/Case Management
• Integrative Care
• CSB Liaison
NICU NAS Committee

- Staffing/Acuiities
- Model of Care/Therapeutic Interventions
- Parent Engagement/Parent & Staff Education
Multidisciplinary Discharge Rounds

- Neonatologist
- Nurse Practitioner
- Charge RN
- Staff RN
- Pharmacist
- Dietician
- Social Work
- Case Manager
- Early Intervention Program Intake Coordinator
Parent Advisory Council

- NICU Reunion
- Peer Support
- Holiday Gifts for Parents/Families
Cuddlers

- Volunteer Services
- NAS Training via NICU Educator
- Child-Life Coordinator: Older Infants
Social Work/ Case Management

• Discharge Planning
• Coordination of care: CPS, Healthy Families...
• Family Meetings for complex medical/social/financial management
• Referral to community resources
• Conflict resolution: Safety contracts
Integrative Care

- Music Therapy/Music Caregiving
- Animal Assisted Therapy
- Reiki Therapy
- MBSR Workshops: Mindfulness-Based Stress Reduction Workshops
Cleveland Clinic Video

• [https://www.youtube.com/watch?v=cDDWvj_q-o8](https://www.youtube.com/watch?v=cDDWvj_q-o8)
WMC Perinatal Substance Abuse Task Force: Identifying Substance Exposure

• OB offices obtain UDS at 1st prenatal visit
• Universal UDS on 1st L/D outpatient visit & on admission for labor.
• Universal umbilical cord collection (Lab stores for up to 3 weeks).
• Cord tissue toxicology screening.
• Finnegan’s neonatal abstinence scoring assessment.
• Adoption of AAP guidelines for increased length of stay of substance exposed newborns to monitor for NAS (4-5 days)
Women & Children’s Services - CSB Partnership: Infant, Youth, and Family Services Liaison

- Complete Assessments
  - Pregnant Woman or New Mother
  - Other Children in the Home
  - Partner/Spouse in the Home
  - Other Family Members in the Home
- Link to Services
- Monitor Follow-Up and Effectiveness of Services
Where Are Assessments Completed?

- Home
- OB/GYN office
- Place of the Mother’s Choosing
- Northwestern Community Services Office
  - Winchester Office
  - Front Royal Office
  - Woodstock Office
Assessment

- Mental Status
- Prenatal Care
- Current Situation
- Childhood
- Education
- Employment

- Relationships
- Legal/Criminal
- Substance Use
  - Substance Abuse Subtle Screening Inventory
  - ASAM Criteria
- Mental Health
  - Co-occurring
Referrals (Linking to Services)

- Infant Toddler Connection
- Healthy Families
- Residential Treatment
- Outpatient Treatment
- Medically Assisted Treatment
- LogistiCare/VA Premier

- Pregnancy Center
- Small Hands
- ABBA
- Targeted Case Management
- Shelters
Case Study: Home Visiting Transforms Lives!
Thank You

• PMC. Web. 13 Sept. 2015.


References


References


• Teratogenic Effects of Drugs and Passive Addiction, 859-889

• Volkow, N., Advances in Addiction & Recovery, Fall 2015
