Neonatal Abstinence Syndrome (Opioid Withdrawal)

I. Opioids
   a. activate mu-opioid receptors in CNS → CNS depression
   b. include morphine, codeine, heroin, methadone, fentanyl, hydromorphone and buprenorphine
   c. methadone and buprenorphine used to treat opioid dependence in pregnancy

II. Prevalence
   a. From 2000 to 2009, incidence of NAS increased from 1.2 → 3.39/1000 births
   b. Due to increased maternal opiate use, 1.19 → 5.63/1000 births

III. Clinical Presentation
   a. timing of withdrawal sx’s depends on drug (i.e. short half-life of heroin vs. long half-life of methadone), onset usually 24-72 hrs after birth but may be delayed up to 5 days
   b. CNS
      i. Seizures (2-11%), tremors, irritability, hypertonicity, hyperactive reflexes, excessive sneezing, increased wakefulness, high-pitched cry
      ii. benign neonatal sleep myoclonus
   c. GI
      i. poor feeding, uncoordinated sucking, vomiting, loose stools, dehydration
   d. Autonomic
      i. sweating, fever, temperature instability, tachypnea

IV. Evaluation
   a. based on history of maternal opioid use and clinical findings in neonate
   b. drug screen of neonatal urine and meconium
   c. rule-out other causes of seizures, fever and poor feeding
      i. hypocalcemia, hypoglycemia, sepsis, hyperthyroidism, polycythemia
   d. Finnegan neonatal abstinence scoring system
      i. 3 consecutive scores >8 → pharmacologic tx
   e. eval for comorbidities
      i. maternal STIs (GC/CT, HIV, Hep C, syphilis)
      ii. polysubstance abuse (cocaine, amphetamines) → contraind to breastfeeding
      iii. tobacco exposure
      iv. home safety issues

V. Management
   a. Supportive care
      i. small frequent feedings, calorically dense formula/fortified breast milk
      ii. dec sensory stimulation
      iii. encourage breastfeeding (may reduce severity of NAS)
   b. Pharmacologic tx
      i. initiate based on NAS score or sx’s (i.e. seizures, failure to gain wt)
      ii. opioid therapy with either oral morphine or methadone recommended
      iii. some evidence that buprenorphine may be acceptable alternative
      iv. adjunct tx with phenobarbital or clonidine may be indicated in infants with severe NAS or exposure to multiple drugs
### References


Neonatal opioid withdrawal (Neonatal abstinence syndrome), UpToDate, Inc. Sept 2012.