

# Methamphetamine an MCH perspective

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# Case presentation 1

- 22 yo presents to ED with low back pain
- no prior history of trauma
- sudden onset that day
- no other symptoms

# Case 1

- past med history: known history of past drug abuse (“skin popping”) and alcohol abuse
- LMP not noted, hx irreg menses
- dx: low back strain
- rx: ativan

# Case 1

- < 24 hours later, patient delivers 35 week gestation infant in her car en route to health center
- transferred to OB unit
- mother's urine tox screen positive for meth, THC, benzodiazapines
- infant urine tox (+) for meth

# Case 1

- because of no prenatal care and history of injectable drug use, baby given HepB vaccine/HBIG at birth
- rapid RPR negative, HIV negative
- discussed with DSS, child removed from custody of mother

## Case presentation 2

- 35 yo paraplegic G4 P2 SAB 1 presents in 1st trimester with urinary tract infection
- PMHx remarkable for paraplegia in adulthood secondary to T5-6 spinal cord injury post MVC
- neurogenic bladder with frequent UTI

## Case 2

- SAB at 31 weeks gestation when mother had *Serratia urosepsis* 1 year ago
- known meth and alcohol abuse for many years, (+) meth at the time of last SAB
- history of depression and suicidal ideation in past
- FHx- boyfriend (+) meth, mother (+) EtOH abuse

## Case 2

- unplanned but desired pregnancy
- patient agrees to inpatient treatment of resistant UTI
- patient refuses counseling for known substance abuse or depression

## Case 2- progression

- hospitalized x 2 for extended periods of time for treatment of recurrent UTI- E. Coli, pseudomonas
- allowed to go on pass during hospitalizations, (+) urine tox screen for meth both times immediately post home pass

## Case 2

- no consistent prenatal care in between hospitalizations
- confronted at 34 weeks gestation about need for rehab or possible DSS intervention-  
mother will not accept any services
- patient removes herself from hospital AMA

## Case 2

- presents in labor at 38 weeks
- uncomplicated vaginal delivery
- mother's urine tox screen (+) for meth
- infant screen (+) for meth
- FOC and mother both confronted- refuse intervention
- infant removed from home by DSS

## Case 2

- mother has 2x week visitation with infant
- court ordered substance abuse treatment
- mother has not complied in 1st 6 weeks of baby's life
- infant is thriving in foster care

# 2004 meth related crimes- Tuba City

- 4 cases resulting in assault (serious bodily injuries)
- 3 cases of assaults with a deadly weapon
- 1 assist with another agency
- 1 case of 1st degree murder (2 suspects/1 victim)
- 1 case of 2nd degree murder (1 suspect/1 victim)
- 10 cases involving meth/other narcotics (13 suspects)
- 1 suicide

# meth related crimes

- 38 individuals arrested for meth related crimes
  - 9.5 lbs. of meth confiscated
  - 350.5 lbs of marijuana
  - 12 grams “heroin like substance”
- 16 meth dealers prosecuted
  - 6 are also bootleggers
- 10% of all TC case load is related to drug use

# TC stats-2004

- 1/3 of all tox screens run in 2004 were (+) for meth
- 20% of HS students in TC admit to trying meth

# Methamphetamine: Physiology

- Average dose 50 – 200 mg
- Onset of action
  - Oral: 30-60 min
  - Nasal: 15-20 min
  - Inhaled or injected: 1-3 min
- Canine LD-50 = 11 mg/kg
- Elimination half-life and duration of action:  
4 – 6 hours

# Methamphetamine: Physiology

- Potent systemic sympathomimetic,  $\alpha$ - and  $\beta$ -adrenergic direct and indirect effects

– blood pressure

–heart rate

–bronchial dilation

–vascular  
constriction

–mydriasis

–increased  
alertness

–anorexia

# Methamphetamine: Physiology

- Dopamine receptor stimulation and reuptake inhibition effects

- Movement

- Motivation

- Emotion

- Pleasure

- Serotonin receptor stimulation and reuptake inhibition effects

- Mood

- Motor function

- Personality

- Temperature regulation

- Affect

- Sexual activity

- Appetite

- Sleep induction

# Methamphetamine: Pathophysiology

## CENTRAL NERVOUS SYSTEM

- Hyperthermia/Hyperpyrexia (up to 108 F) → DIC
- Seizures
- Intracerebral hemorrhage
- Headache
- Choreoathetoid movements
- Hyperreflexia
- Cerebral vasculitis (chronic use)

# Methamphetamine: Pathophysiology

## PSYCHOLOGICAL

- Acute psychosis
  - Hallucinoses
  - Formication
  - Homicidal/suicidal ideation
  - Paranoia
- Anxiety
- Agitation
- Anger and aggression
- Euphoria
- Stereotypy

# Methamphetamine: Pathophysiology

## RESPIRATORY SYSTEM

- Tachypnea
- Pulmonary edema

# Methamphetamine: Pathophysiology

## CARDIOVASCULAR SYSTEM

- Chest pain
- Hypertension
- Tachycardia
- Dysrhythmias (mostly ventricular)
- Myocardial ischemia/infarction
- Cardiomyopathy
- Vasospasm

# Methamphetamine: Pathophysiology

## GASTROINTESTINAL SYSTEM

- Nausea
- Vomiting
- Anorexia
- Diarrhea
- Constipation
- Xerostoma
- Unpleasant taste

# Methamphetamine: Pathophysiology

## CUTANEOUS

- Diaphoresis
- Urticaria
- Erythematous painful rashes
- Ecthyma (infected deep ulcerations)
- Psoriatic symptoms

# Methamphetamine: Pathophysiology

## HEENT

- Mydriatic, sluggish pupils
- Bruxism

# Methamphetamine: Pathophysiology

## GENITOURINARY

- Rhabdomyolosis in overdose
- Difficult micturition

# Methamphetamine: Pathophysiology

## OBSTETRETIC

- Intrauterine growth retardation
- Placental abruption
- stimulation of premature labor

# Methamphetamine- fetal effects

- thought to have similar effects to cocaine
  - vasoconstriction related anomalies
    - intrauterine CVA
    - gut atresia secondary to mesenteric artery vasoconstriction
    - ? Gastroschisis
  - withdrawal syndrome
    - jittery, difficult to console
  - ?long term developmental consequences

# Methamphetamine- fetal effects

- meth DOES cross in significant amounts in breast milk
  - but are the short term risks outweighed by the long term benefits of breast feeding if baby stays with mom?
- meth is volatilized in second hand smoke

# Methamphetamine: Pathophysiology

## LABORATORY ABNORMALITIES

- Leukocytosis
- Hyperglycemia
- Elevated CPK
- Elevated LFTs
- Myoglobinuria (or acellular hematuria)

# Methamphetamine: Clinical Presentation

- **Rush (5-30 min) –**
  - Adrenal gland release of epinephrine
  - Explosive release of dopamine
  - Intensely euphoric
  - BP spike, dysrhythmias

# Methamphetamine: Clinical Presentation

- **High** (4-16 hrs)
  - “The shoulder”
  - Feelings of aggression and heightened intellect
- **Binge** (3-15 days)
  - Continuation of the high
  - Larger doses required to achieve same intensity
  - Little or no rush or high felt
  - Physical and mental hyperactivity

# Methamphetamine: Clinical Presentation

- **“Tweaking”**
  - Follows a binge
  - Feelings of emptiness and dysphoria
  - Often alcohol and heroin used self-medicate
  - Most dangerous state of cycle for law enforcement and medical personnel

# Methamphetamine: Clinical Presentation

- **“Crash” or “Washout” (1-3 days)**
  - Total excitatory neurotransmitter depletion
  - No threat posed, lifeless and sleepy
- **Withdrawal (30-90 days) –**
  - Slow progression to depression, lethargy, cravings, suicidal thoughts
  - MAP use during this period can alleviate dysphoria

# Treatment

- no medical antagonist/adjunct to treatment
- “cognitive behavioral model”
  - 12 step program models
  - success rates similar to alcohol treatment
- 10 individuals referred from TC in 2004

# So- the big question- DO WE SCREEN?

- If we screen
  - universal?
  - Targeted-
    - with consent
    - without consent
- If positive- what do we do?
  - law enforcement role?
  - DSS role?
  - DBHS role?

# UNM policy

- Guidelines for obtaining maternal and neonatal UDM

- 1) UDM should only be ordered for specific indications and should be sent on all patients with these indications:
  - Maternal UDM in OB triage or L and D
    - History of substance abuse in this pregnancy
    - Preterm labor (Not POOC)
    - Placental abruption
    - Behavior consistent with acute intoxication

# UNM policy (cont.)

- Neonatal UDM at newborn nursery
  - History of substance abuse in this pregnancy
  - Preterm labor (Not POOC)
  - Placental abruption
  - Unexplained neonatal depression, seizures, jitteriness or possible neonatal
  - abstinence syndrome

# UNM policy (cont.)

- Informed consent
  - Pregnant woman and postpartum mothers are to be informed that a UDM will be sent based on our standard guidelines. Written consent is not required. If they refuse to send a maternal UDM that request should be noted and honored. Parents do not have a legal right to decline a medically indicated infant UDM