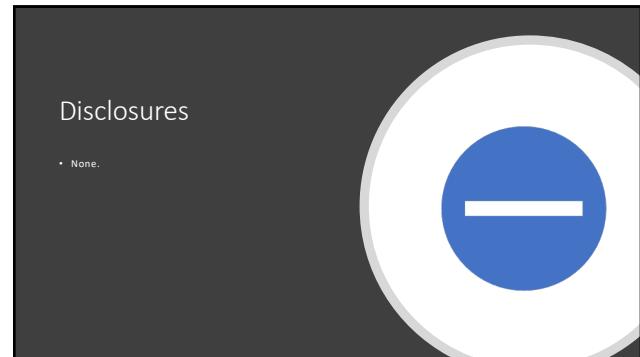




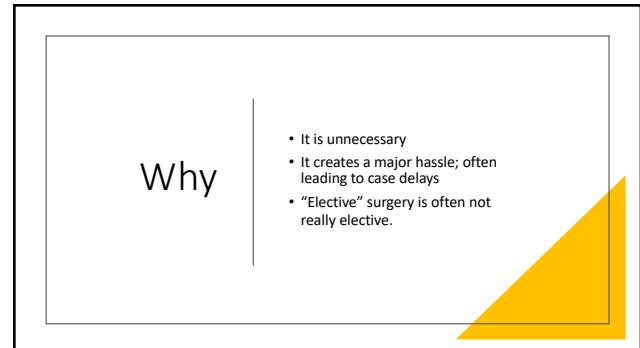
1



2



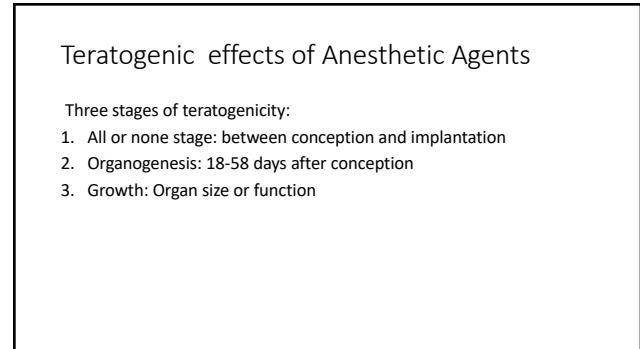
3



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5



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## Teratogenic effects of Anesthetic Agents

Three stages of teratogenicity:

1. All or none stage: between conception and implantation
2. **Organogenesis: 18-58 days after conception**
3. Growth: Organ size or function

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No anesthetic agent has been identified that is a definite human teratogen



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## Anesthetic agents

- Inhalational Anesthetics
- Induction Agents
- Neuromuscular blocking agents
- Local Anesthetics
- Opiates
- Benzodiazepines
- NSAIDS

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## Anesthetic agents

- Inhalational Anesthetics OK
- Induction Agents
- Neuromuscular blocking agents
- Local Anesthetics
- Opiates
- Benzodiazepines
- NSAIDS

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### Inhalational Agents

- No clinical data have linked inhalational agents with teratogenic outcomes
- N<sub>2</sub>O inhibits methionine synthase (oxidizes B12) but does not impact fetus after brief exposure.

## Anesthetic agents

- Inhalational Anesthetics OK
- Induction Agents (**Ketamine**)
- Neuromuscular blocking agents
- Local Anesthetics
- Opiates
- Benzodiazepines
- NSAIDS

### Induction Agents

- No clinical data have linked Etomidate, Propofol or Thiopental with teratogenic outcomes.
- **Ketamine can cause uterine contractions in early pregnancy.**

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## Anesthetic agents

- Inhalational Anesthetics OK
- Induction Agents (**Ketamine**)
- Neuromuscular blocking agents OK
- Local Anesthetics
- Opiates
- Benzodiazepines
- NSAIDS

### Neuromuscular Agents

- **Do not cross the placenta...**
- Safe (unless you hurt the mother.)

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## Anesthetic agents

- Inhalational Anesthetics **OK**
- Induction Agents **(Ketamine)**
- Neuromuscular blocking agents **OK**
- Local Anesthetics **OK**
- Opiates
- Benzodiazepines
- NSAIDS

## Local Anesthetics

- Almost no placental drug transfer
- No teratogenic effects

## Anesthetic agents

- Inhalational Anesthetics **OK**
- Induction Agents **(Ketamine)**
- Neuromuscular blocking agents **OK**
- Local Anesthetics **OK**
- Opiates **OK**
- Benzodiazepines
- NSAIDS

## Opiates

- Experience with recovering addicts and pregnant patient treated for acute pain fail to show adverse outcomes
- In ASC only given a few doses.
- Multimodal pain improves these outcomes.

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## Anesthetic agents

- Inhalational Anesthetics **OK**
- Induction Agents **(Ketamine)**
- Neuromuscular blocking agents **OK**
- Local Anesthetics **OK**
- Opiates **OK**
- Benzodiazepines **OK**
- NSAIDS

## Benzos

- Previous retrospective studies found an association with oral clefts. (When moms would often be taking diazepam at home.)
- SINCE DISCREDITED in better, more recent studies.

## Anesthetic agents

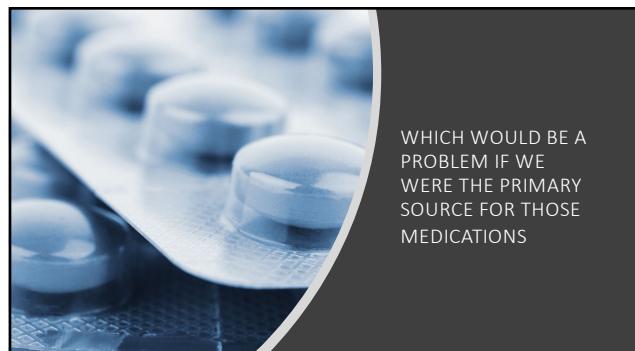
- Inhalational Anesthetics **OK**
- Induction Agents **(Ketamine)**
- Neuromuscular blocking agents **OK**
- Local Anesthetics **OK**
- Opiates **OK**
- Benzodiazepines **OK**
- NSAIDS

## NSAIDS

- Aspirin and Ibuprofen may be associated with increased risk for gastroschisis. Even though prospective studies have failed to show an association.
- Naproxen with oral clefts

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## Anesthetic agents

- Inhalational Anesthetics **OK**
- Induction Agents **(Ketamine)**
- Neuromuscular blocking agents **OK**
- Local Anesthetics **OK**
- Opiates **OK**
- Benzodiazepines **OK**
- NSAIDS

## NSAIDS

- Aspirin and Ibuprofen may be associated with increased risk for gastroschisis. Even though prospective studies have failed to show an association.
- Naproxen with oral clefts
- Considered safe in first trimester

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What are the concerns with anesthesia

- Fetal Demise
- Fetal malformations

19

What are the concerns with anesthesia

- ~~Fetal Demise~~
- Fetal malformations

20



Unnecessary hassle

- Patients can now “opt-out”
- Case delays from unavailable urine samples.
- Not accounted for in the studies alluded to that demonstrate a very “low cost.”
- They also don’t account for the grey hair on my head.

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“Elective Surgery” is often not really elective.

Ask patients to test themselves when it is a truly elective procedure.

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Most anesthesiologists agree that anesthesia is generally safe during pregnancy. Opting out of testing would not otherwise be a thing.

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Thank you

Victor R. Davila, M.D., FASA  
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WEARING A WORK UNIFORM  
“I wore this ridiculous thing for YOU”

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