Sex and Gender Specific Considerations in Procedural Sedation
Case: 53 Year Old Patient

Ethanol intoxication and fall

Agitation

Tender, externally rotated R hip
Male? Female?

Opioid analgesia
Rapid sequence intubation
Sedation
Mind the Gap
Physiological
Hormonal
Genetic

Response to therapy
Mind the Gap

Sex alters how the body handles a drug, and what the drug does to the body.
Mind the Gap

Large gaps
Knowledge of sex differences
in clinical pharmacology

More research is needed
<table>
<thead>
<tr>
<th>Reason for sex difference</th>
<th>Pharmacological reason</th>
<th>Pharmacological factors</th>
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<tbody>
<tr>
<td>Women are overdosed</td>
<td>Pharmacokinetics</td>
<td>Sex differences in volume of distribution, Sex differences in protein binding of drugs,</td>
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<td></td>
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<td>Sex differences in transport, phase 1, and phase 2 metabolism</td>
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<td>Women are more sensitive</td>
<td>Pharmacodynamics</td>
<td>(i) receptor number, (ii) receptor binding, (iii) signal transduction following receptor</td>
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<td></td>
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<td>binding</td>
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<td>Women are prescribed multiple</td>
<td>Drug-drug interactions</td>
<td>Drug-drug induced alterations, Pharmacokinetics, Pharmacodynamics</td>
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<td>medications</td>
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Back to our patient

Opioid analgesia

Slower \textit{onset}

Increased \textit{potency}

Adverse effects
RSI & Sedation

Neuromuscular blockade

Duration & potency

Rocuronium: 0.6-1.2 mg/kg
Current Challenges

Dosing range

Titration to effect

Consider sex differences in pharmacologic response
On Your Next Shift...

**Opioids**
- Increased potency in females
- Increased risk of adverse effects in women

**Neuromuscular blockade**
- Longer duration and increased sensitivity in females

**Propofol**
- Increased dosing requirement
- Shorter duration of action in females