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

SAEM

Sex and Gender in Emergency Medicine
Interest Group

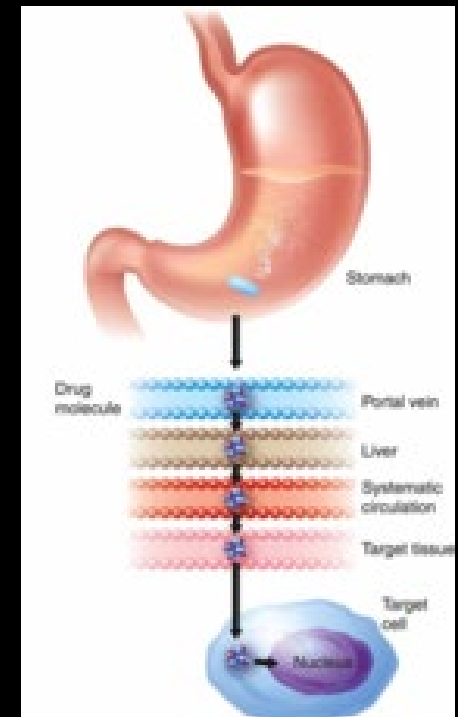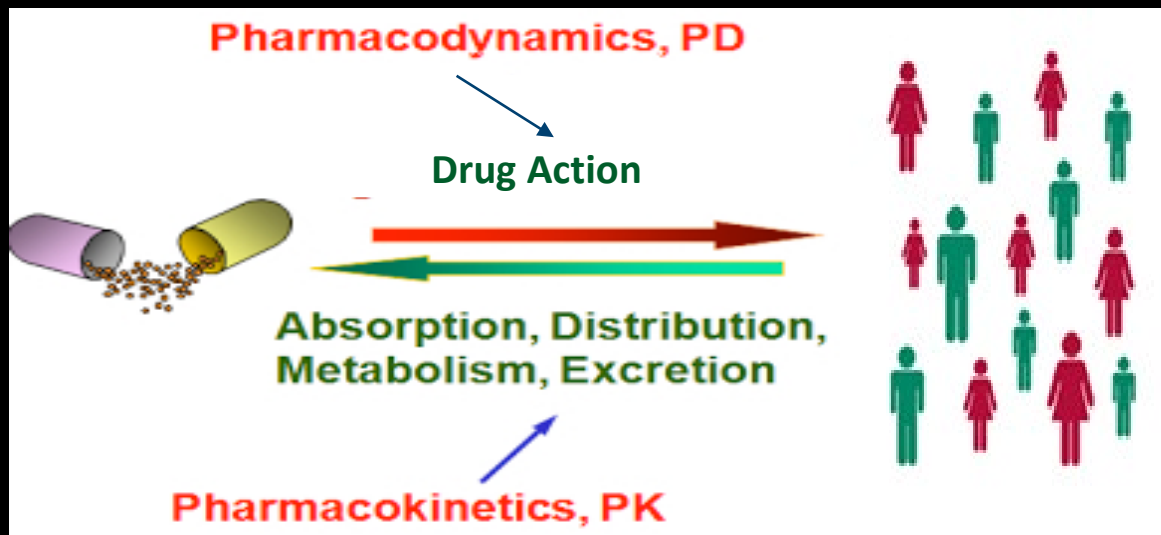# Mind the Gap

Physiological

Hormonal

Genetic

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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

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TABLE 1: Suggested reasons for sex differences in adverse event reporting.

Reason for sex difference	Pharmacological reason	Pharmacological factors
Women are overdosed	Pharmacokinetics	Sex differences in volume of distribution Sex differences in protein binding of drugs Sex differences in transport, phase 1, and phase 2 metabolism

Women are more sensitive	Pharmacodynamics	Sex differences in drug targets
		    (i) receptor number
		    (ii) receptor binding
		    (iii) signal transduction following receptor binding

Women are prescribed multiple medications	Drug-drug interactions	Drug-drug induced alterations Pharmacokinetics Pharmacodynamics

Back to our patient
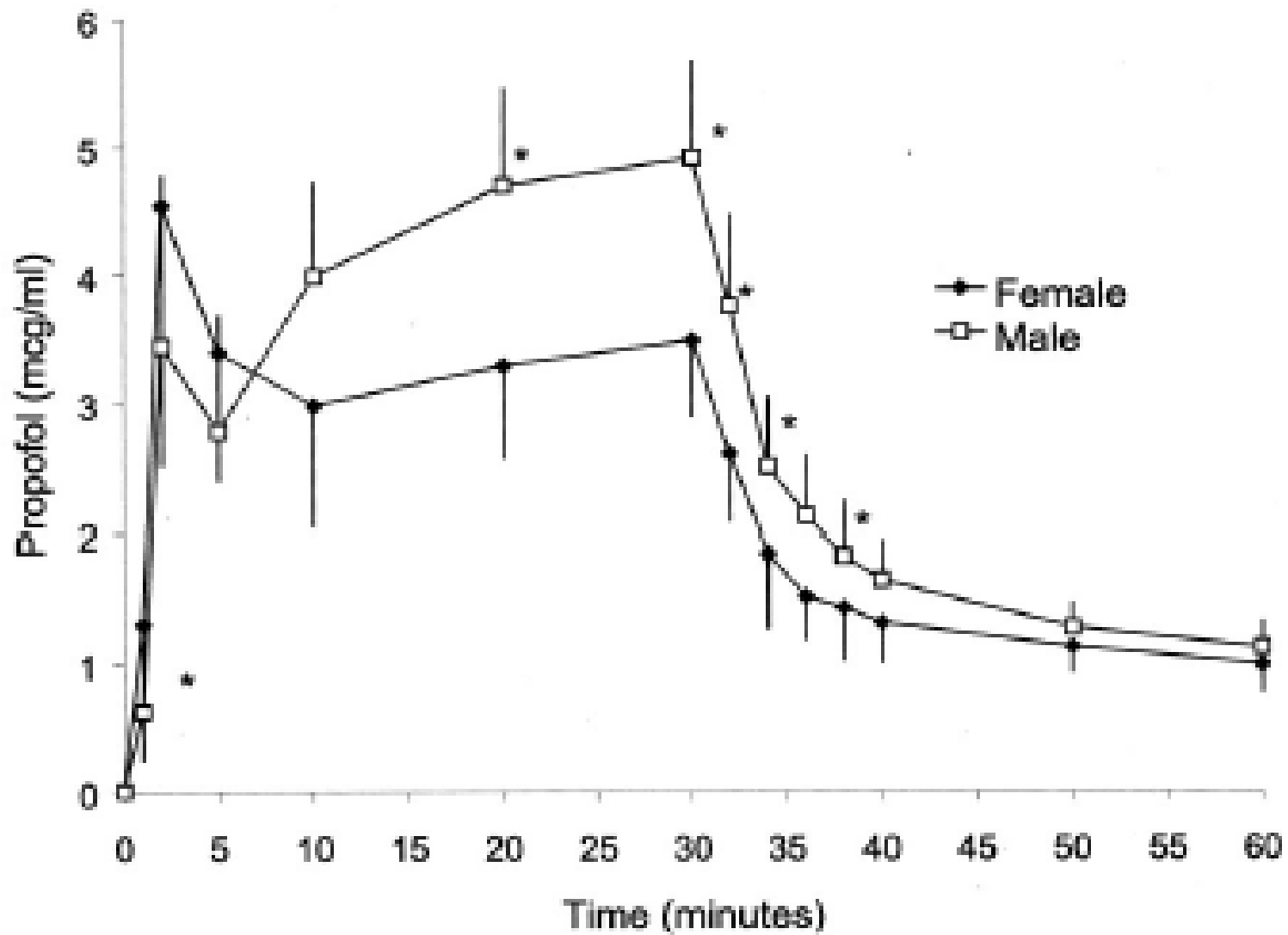
Opioid analgesia

Slower onset

Increased potency

Adverse effects

RSI & Sedation

Neuromuscular blockade

Duration & potency

Rocuronium: 0.6-1.2 mg/kg

Ward DS, Norton JR, Guivarc'h PH, Litman RS, Bailey PL. Pharmacodynamics and pharmacokinetics of propofol in a medium-chain triglyceride emulsion. Anesthesiology 2002;97(6):1401-8.

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