ne Pill Fits For All" Approach Has to Stop!





Correct Drug Selection



Suitable Drug Regimen



No Error in **Prescribing &** Dispensing



Adequate **Duration**



Suitable formulation and Route of Administration



Correct Dose

FDA-Approved Drugs: A study found that 76 out of 86 drugs had negative effects in women when prescribed at equal doses as men, with reactions such as depression and hallucinations occurring twice as often (Zucker & Prendergast, 2020)





Adaptation to Chronic Use

- Males develop faster drug tolerance due to higher enzyme activity and receptor desensitisation
- Females develop slower tolerance but may have stronger withdrawal symptoms (e.g: benzodiazepine)



Metabolism

- Females have more active CYP3A4 activity
- Thus, females clear cyclosporine and erythromycin faster

Ever wonder why men crash from caffeine sooner?

Male have faster clearance due to higher CYP1A2 activity.



Risk & Safety

Females have higher risks of drug-induced liver injury

e.g.: Teratogenic drugs (e.g. ACE inhibitors) cause severe harm in the embryonic stage (W3-W8) in a pregnant female



Pharmacokinetics

- Females generally have more body fats than Male
 - E.g. Lipophilic drugs like diazepam have a longer half-life in women.



P.H.A.R.M.A

GENDER DIFFERENCES IN

CLINICAL PHARMACOLOGY

World Smart

Medication Day 2025

Influences A "BIG" term. Prescribe drug to the right

Pharmacogenomic

- patient, maximises the benefit-risk ratio
- **E.g (PK aspect):** Patients with CYP2C19 enzyme deficiency can have anti-bleeding effects when taking clopidogrel.
 - E.g (PD aspect): Patients with HLA-B*5701 polymorphism can increase skin hypersensitivity when taking abacavir



Hormonal Influence

- Oestrogen and Testosterone have ADME effects
- E.g. Propranolol clearance in men surpasses that of women because testosterone affects liver enzyme activity.





Adverse Drug Reactions

- Female has MORE ADR due to metabolism and body composition
- E.g: Warfarin & Fluconazole (oral candidiasis) increase **bleeding** in female



I actually consider it a scandal that researchers who know the complete female cycle has an influence on a drug or a disease ignore this cycle by conducting studies only on male test animals, and then it is approved for both sexes.

(Regitz-Zagrosek, 2023) Translated from German

There are a lot of drugs that are prescribed on a 'one-size-fits-all' basis, and it's clear that this doesn't always work (Prendergast, 2020)

Practical Recommendations



Labellings should include researchproven dosage recommendations and ADR for different genders

Role of Inclusive Trial Design & Regulatory Guidance

Advocate more women's representation in clinical, disease research trials

Conclusion Statement

As clinicians, providing treatment is essential for our patients, but we must always take into consideration of gender differences and ensure we tailor personalised treatment ALWAYS!











