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# Pharmacokinetic Changes Related with Pregnancy

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## DESCRIPTION

During pregnancy, women typically use a range of drugs, including prescription, Over-The-Counter (OTC), and herbal treatments. The average number of drugs (prescription and nonprescription) taken per woman in North America during the first trimester has grown by 60% in the previous three decades, from 1.6 to 2.6. More recently, between 2006 and 2008, more than 80% of women reported taking at least one drug during the first trimester, and more than 90% reported using at least one medication at some time during their pregnancy. Several Studies have found an increase in the usage of certain OTC drugs during the first, second, or third trimester of pregnancy as compared to the prepregnancy period. While some studies show that the proportion of women getting at least one prescription treatment increases from the first to third trimester of pregnancy, others show that rates of prescription drug usage are highest in the first trimester of pregnancy. Nonprescription or over-the-counter drugs are the most often utilized during pregnancy. According to a longitudinal research aiming at identifying the pharmaceuticals most commonly ingested during pregnancy, 95.8% of individuals took prescription medications, 92.6% self-medicate with OTC meds, and 45.2% utilized herbal treatments.

Throughout pregnancy, most organ systems undergo significant morphological and physiological changes. Reduced gastrointestinal motility and increased gastric pH (affecting absorption), increased total body water and plasma volume and decreased concentrations of drug-binding proteins (affecting apparent volume of distribution and, in some cases, clearance rates), increased glomerular filtration rate (increasing renal clearance), and altered activity of drug-metabolizing enzymes in the liver are all observed during pregnancy (affecting hepatic clearance). Generally, these alterations in physiological indicators occur gradually during pregnancy.

Modifications in drug metabolism by cytochrome P450 isoenzymes (such as CYP3A4, CYP2D6, CYP2C9, CYP1A2, and CYP2C19) and Uridine 5′-diphospho-Glucuronosyltransferase (UGT) isoenzymes (such as UGT1A4 and UGT2B7) have also been seen during pregnancy.

A substantial number of PK clinical studies during pregnancy are known in the literature for several medication types. According to a recent analysis, about one-third of these studies have focused on medications used to address acute labour and delivery difficulties, another third on infectious illness therapy during pregnancy, and the other third on pharmaceuticals used for diverse antepartum reasons. Unfortunately, there is little or no information available on PK changes or dose needs during pregnancy for the vast majority of pharmaceuticals taken during pregnancy.

Moreover, it is frequently unclear whether reported PK changes result in changes in medication effectiveness and/or adverse effect profiles. Given the field's complexity, the lack of a clear understanding of the clinical significance of PK changes, and the renewed recognition of the need to rationalize drug therapy for pregnant and lactating women, it is critical to conduct a systematic review of existing data on PK changes in pregnancy and their potential clinical impact.

The goal of this study was to identify all known evidence of PK alterations during pregnancy that had clinical importance. We expected that recognized physiological changes during pregnancy, as well as related PK changes, would result in modifications in dose guidelines.

## CONCLUSION

The Conversation speculates on and addresses the likely source of discrepancy. It should be noted that the above-mentioned categories are based on statistically significant changes in PK parameters, although statistically non-significant changes are also included for completeness. Moreover, if just one research found a statistically significant change in PK parameters for a medication, the drug was placed in the "consistent" category for ease of data presentation, even if the PK parameters were given in only one trial.