

# **Role of Family Physician in Guiding Drug Use during Pregnancy**

Essay

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**FAMILY MEDICINE**

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*To*

*The Memory Of*

*My Father*

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## ABSTRACT

Health care providers face a dilemma when a pregnant woman develops a condition that usually is treated with a pharmacologic agent. It is well known that pregnancy can induce changes in the plasma concentrations of some drugs. Understanding of these pharmacokinetic changes, basic teratology associated with drugs as well as the pregnancy drug risk categorization can assist professionals in recognizing which pharmaceuticals should be used or avoided in treating a pregnant woman. The role of family physician in guiding drug use during preconception as well as antenatal care was elucidated. Some ethical issues regarding maternal-fetal medicine were discussed, and the impact of alcohol and illicit drugs on the mother and the fetus was reviewed.

### **Keywords:**

Pregnancy - Pharmacokinetics – Placenta – Fetus – Drug – Family Medicine  
– Alcohol - Teratology

## **C o n t e n t s**

### **INTRODUCTION 1**

### **AIM OF WORK 3**

### **CHAPTER 1: PHARMACOEPIDEMIOLOGY 4**

### **CHAPTER 2: PHARMACOKINETIC CHANGES 7**

#### 1. Mother: 9

a. Absorption: 9

b. Distribution: 10

c. Metabolism: 10

d. Excretion: 13

Clinical implications of the pharmacokinetic changes: 14

#### 2. Placenta: 15

A. Placental transport of drugs: 16

B. Drug metabolism in the placenta: 22

Clinical Significance of Placental Transfer and Metabolism: 25

#### 3. Fetus: 25

a. Fetal uptake, distribution and excretion: 26

b. Fetal drug metabolism: 27

### **CHAPTER 3: TERATOGENIC DRUG ACTIONS 29**

Evaluating teratogenic risk of a drug 31

Background Prevalence of Adverse Pregnancy Outcomes: 31

Combined vs. Individual Rates of Birth Defects: 31

Major vs. Minor Birth Defects: 32

Timing of Exposure: 33

Dose Response: 34

Variability of Response: 37

Class Effects: 38

Biologic Plausibility: 39

Mechanisms of Teratogenicity 39

Sources of Data on Gestational Drug Exposures 40

1. Animal studies: 40

2. Human Studies: 41

A. Case Reports: 41

B. Epidemiology Studies: 41

1. Prospective Studies: 41

2. Retrospective Studies: 44

Classification of Drugs for Teratogenic Risk 45

Known Human Teratogens 50

Emotional Impact of Congenital Malformations 52

## **CHAPTER 4: DRUGS COMMONLY USED IN PREGNANCY 53**

Analgesics: 54

Common cold medications: 56

Anesthetic Agents: 58

Anticoagulants: 58

Antiemetics: 59

Antiepileptic Drugs (AEDs): 60

Antihypertensives: 62

Antidiabetic Agents: 65

1. Insulins: 65

2. Oral Antidiabetic Agents: 66

Glyburide (Glibenclamide): 67

Metformin: 68

Antimicrobials: 69

Antibacterial Agents: 69

Antifungal Agents: 73

Antiviral Agents: 74

Antiparasitic Agents: 75

Asthma Medications: 76

Oral Contraceptives and Progestin Exposure: 77

Thyroid Medications: 78

1. Hypothyroidism: 78

2. Hyperthyroidism: 79

Psychotropic Drugs: 80

Benzodiazepines: 80

Lithium salts: 81

Antidepressant Drugs: 82

Antipsychotic Medications: 83

Gastrointestinal Medications: 83

Herbal Remedies: 86

## **CHAPTER 5: FETAL PHARMACOTHERAPY 88**

1. Antenatal Corticosteroids (ACS): 89
2. Prevention of Fetal HIV Infection: 91
3. Fetal Arrhythmias: 92
4. Other medical interventions: 93

## **CHAPTER 6: PRECONCEPTION COUNSELING 95**

### **A. Counseling for the mother-to-be: 96**

1. Optimal folate and vitamin supplementation: 96
2. Nonessential Medications: 98
3. Chronic illnesses: 99
  - a. Diabetes Mellitus: 99
  - b. Epilepsy: 100
  - c. Hypertension: 102
  - d. Depression and Anxiety: 103
  - e. Thromboembolism: 103
  - f. Asthma: 103
4. Infectious disease prophylaxis: 105

### **B. Counseling for the father-to-be: 106**

1. Anticancer drugs: 106
2. Leflunomide: 106
3. Griseofulvin: 107



**CHAPTER 7: ANTENATAL COUNSELING FOR DRUGS 108**

1. Prevention of congenital malformations: 110
2. Prevention of unnecessary pregnancy termination: 111
3. Support of optimal drug therapy during pregnancy: 111
4. Knowledge transfer and translation to the family and community: 113

**CHAPTER 8: ETHICS 115**

The pregnant woman: 115

Physicians: 117

Pharmaceutical industry: 120

**CHAPTER 9: ALCOHOL AND ILLICIT DRUGS 121****1. ILLICIT DRUGS: 121**

Impact on maternal health and nutrition: 121

Fetal damage: 122

Neonatal abstinence syndrome (NAS): 122

Impact of partner's drug-using status: 124

Antenatal care of women who use drugs: 124

**2. ALCOHOL: 125****SUMMARY 128****REFERENCES 130****ARABIC SUMMARY 149**

## LIST OF TABLES

Table 2.1	Pregnancy induced pharmacokinetic changes for selected drugs	18
Table 2.2	Localization and function of placental drug transporters involved in drug transfer	26
Table 3.1	The causes of major congenital malformations in newborns	33
Table 3.2	Criteria for proof of human teratogenicity	42
Table 3.3	Comparison of FDA drug classification and TERIS rating systems	50
Table 3.4	Pregnancy drug categories from two countries	51
Table 3.5	Drugs long recognized to have teratogenic effects in humans at therapeutic doses	53
Table 4.1	Commonly used insulin therapies	68
Table 4.2	Gastrointestinal Medications during Pregnancy	87
Table 5.1	Conditions in which fetal pharmacotherapy is or has been used	91
Table 6.1	Preconception health care checklist	99
Table 6.2	Preconception Care for Women with Diabetes	104
Table 9.1	Impact of substances on the fetus and neonate, according to $\geq 2$ reports in humans	126
Table 9.2	Features of Fetal Alcohol Syndrome	130

## List of Figures

Figure **2.1** Schematic representation of the interrelationship of the four main processes of drug metabolism **10**

Figure **2.2** Drug dispositions in the mother, placenta, and fetus. **11**

Figure **2.3** Schematic cross section of the circulation of the mature placenta. **19**

Figure **2.4** schematic representation of the maternal-fetal interface in the placenta. **19**

Figure **2.5** Transport across the placental barrier. **22**

Figure **2.6** The fetal circulation. **30**

Figure **3.1** Critical periods in Human development **38**

Figure **3.2 (A)** Phocomelia, the lack of proper limb development, was the most visible of the birth defects that occurred in many children whose mothers took the drug thalidomide during pregnancy. **(B)** Thalidomide disrupts different structures at different times of human development. **39**

Figure **9.1** Fetal alcohol syndrome. At 2 1/2 years, At 12 years **130**

## LIST OF ABBREVIATIONS

ABC	ATP Binding Cassette
ACAAI	The American College of Allergy, Asthma, and Immunology
ACE	Angiotensin Converting Enzyme
ACOG	The American College of Obstetricians and Gynecologists
ADA	American Diabetes Association
AEDs	AntiEpileptic Drugs
AIDS	Aquired Immunodeficiency Syndrome
ASHP	American Society of Health-System Pharmacists
ATP	Adenosine TriPhosphate
BCRP	Breast Cancer Resistance Protein
C.G.D.U.P.	the Collaborative Group on Drug Use in Pregnancy
CAs	Congenital Anomalies
CDC	Center for Disease Control and Prevention
C <sub>max</sub>	Peak plasma concentration
CYP	Cytochrome P
Da	Dalton
DVT	Deep Venous Thrombosis
ECF	ExtraCellular Fluids
FDA	Food and Drug Administration (USA)
G6PD	Glucose-6-Phosphate Dehydrogenase
GDM	Gestational Diabetes Mellitus
GFR	Glomerular Filtration Rate
GPs	General Practitioners
GST	Glutathione S-Transferase
HG	Hyperemesis Gravidarum
HIV	Human Immunodeficiency Virus
IBD	Inflammatory Bowel Disease

LT4	Levothyroxine
MDR	MultiDrug Resistance gene
MRP	Multidrug Resistance-associated Protein
MW	Molecular Weight
NADP	Nicotinamide-Adenine Dinucleotide Phosphate
NAS	Neonatal Abstinence Syndrome
NTD	Neural Tube Defect
OC	Oral Contraceptives
OTC	Over-The-Counter
OTIS	The Organization of Teratology Information Specialists
PCOS	Polycystic Ovarian Syndrome
PEPT	Peptide Transporters
P-gP	P-glycoprotein
PK	Pharmacokinetics
RCTs	Randomized Controlled Trials
RDS	Respiratory Distress Syndrome
TERIS	Teratogen Information System
TIS	Teratogen Information Service
Tmax	Time of peak plasma concentration
TSH	Thyroid Stimulating Hormone
UGT	uridine diphosphate glucuronosyltransferase
USPSTF	US Preventive Services Task Force
UTI	Urinary Tract Infection



## INTRODUCTION

Since the thalidomide disaster over 40 years ago, we have known that medication use in early pregnancy poses a potential risk to the fetus. Yet, drugs typically enter the marketplace and are used in pregnancy without our being able to reliably predict whether they carry teratogenic risk. Premarketing pharmacologic, animal, and clinical studies often fail to accurately identify drugs of concern. In the postmarketing setting, case series and small cohorts of exposed pregnant women, like the ongoing pregnancy registries for newly marketed drugs, can only detect major human teratogens such as thalidomide or isotretinoin. While major teratogens fortunately appear to be few, less dramatic teratogens may be more numerous and more widely used and could therefore lead to a greater excess number of birth defects than major teratogens (Hernandez-Diaz 2006).

Pharmacotherapy during pregnancy is often necessary mainly because of the need to treat the mother either for chronic diseases (e.g. epilepsy, diabetes, asthma, or hypertension) or for acute illnesses (e.g. infections, seizures and gastrointestinal disorders) or even for severe complications such as tumors. On the other hand, there is an increasing demand to treat the fetus via maternal drug administration, e.g. for fetal tachycardia or to prevent materno-fetal transmission of HIV infection (Ceckova-Novotna et al. 2006).

Pregnant women are worried about medication use during pregnancy and need good advice. Women usually overestimate the teratogenic risk of medication exposures during pregnancy and therefore, may avoid prescriptions or exhibit non-compliance with recommended therapy. A study noted that women exposed to non-teratogenic medications in early pregnancy estimated the risk of a major fetal abnormality at about 25%. Pregnant women may avoid necessary medications out of fear or poor advice (Gibson