

The Harvard Medical School Guide to



# Healthy Eating During Pregnancy

Dozens  
of Delicious,  
Nutrient-rich  
Recipes

Latest research: What  
you eat shapes your  
baby's health—for life

Foods and toxins to  
stay away from

**W. Allan Walker, M.D.**  
Professor of Pediatrics and Director of the  
Division of Nutrition, Harvard Medical School  
with Courtney Humphries





# Healthy Eating During Pregnancy

# Book Jacket

None

**THE HARVARD MEDICAL SCHOOL GUIDE TO**  
**Healthy Eating During Pregnancy**

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**Healthy Eating During Pregnancy**

**W. Allan Walker, M.D.**  
**with Courtney Humphries**  
**Recipes by Lisa O'Gorman, C.E.C.**

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*I dedicate this book to my daughter, Dr. Kim Walker;  
my daughter-in-law, Heather McDonald Walker;  
and my nieces, Dr. Beth Eames Littlejohn and Pam Henley—  
all of whom have recently delivered healthy, full-term newborns.*

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# Preface

In 2005, McGraw-Hill published our book *Eat, Play, and Be Healthy*, which summarized what is known, scientifically, about what constitutes a healthy diet for infants and young children. A *child's* diet can have important and lasting health effects—for good and bad.

It may seem hard to believe, but recent research reveals that what a *mother* eats during pregnancy can affect whether her child will develop diseases such as heart disease and diabetes—forty to fifty years later, when that child is an adult.

Women who have poor nutrition or weight problems during pregnancy are more likely to give birth to babies who are not at their optimal weight at birth, and birth weight has been shown to play an important role in health into adulthood. Research has shown that you can improve your child's health if you do the following:

- Reach a healthy weight before becoming pregnant
- Follow a balanced diet and boost key nutrients before conception
- Avoid gaining too little or too much weight while you're pregnant
- Flourish yourself with a balanced diet with the right nutrients
- Stay active during your pregnancy

This book tells you what you need to know about healthy eating while you are pregnant so that you can give your child the best start on a healthy life. You will learn about the science of pregnancy while also getting sound, practical advice about nutrition and health before, during, and after your pregnancy.

The recent widespread interest in nutrition early in life—from conception to birth and into infancy and early childhood—stems in part from exciting observations made by Dr. David Barker and his associates from Birmingham, England. Several international conferences have been held in recent years to examine what we know about this subject and to identify the additional research that is needed in this important new area. The latest conference, held in November 2005 in Bethesda, Maryland, was sponsored by the U.S. National Institute of Child Health and Human Development (NICHD) at the National Institutes of Health. Experts in the field of obstetrics, public health, perinatology, and nutrition met to review the current evidence for nutrition during pregnancy. Attending that conference helped give us the impetus to write this book.

Much additional research is under way. One of the most exciting projects is being conducted here at Harvard Medical School. Researchers are analyzing data obtained from children born to participants in the famous Nurses' Health Study, and they should have important findings to report in the foreseeable future. NICHD is establishing a large-scale database of newborn infants from various ethnic and racial backgrounds to identify the factors that can predict adult disease. Through studies such as these, we hope to learn about nutrition's role in health from conception to adolescence.

The information in this book is consistent with the nutritional policy statements issued by the Committee of Nutrition of the American Academy of Pediatrics, the most influential body for advising pediatricians on appropriate nutritional care for children.

My own interest in children's nutrition and the need for establishing healthy eating habits early in life stems back to my undergraduate, premedical days at a small midwestern liberal arts college, DePauw University. As a participant in a service project in my senior year, I worked with welfare agencies in Indianapolis to help prevent malnutrition and subsequent infection among inner-city children. This happened in the days before the U.S. government established the Special Supplemental Nutrition Program for Women, Infants, and Children (known as WIC) and the School Lunch Nutrition Program to offer federal support to nutritionally needy kids.

My interest in infant nutrition continued when as a medical student at Washington University School of Medicine in St. Louis, Missouri, I delivered milk to inner-city kids in Chicago. As a resident and chief resident in pediatrics at the University of Minnesota teaching hospital in Minneapolis, Minnesota, I became interested in how the digestive system develops in newborns and the role that nutrition plays in keeping them healthy. After my residency, I trained at Massachusetts General Hospital (MGH) in gastroenterology and nutrition and established the first Pediatric Gastroenterology and Nutrition Division at that hospital. In the early 1980s, I was asked to merge the two pediatric gastroenterology and nutrition programs at Harvard (one based at Children's Hospital Boston and the other at Massachusetts General Hospital for Children) into a combined training program for pediatricians. During the past twenty years, I've helped train many, if not most, of the pediatric nutritionists in academic centers throughout North America and Europe. As leader of one of seven National Institutes of Health—funded Clinical Nutrition Research Centers, I study how nutrition influences the development of intestinal allergies and intestinal immune defenses against infections.

My ultimate goal is to help improve children's health by encouraging better nutrition through research and education. But this goal has increasingly brought me to the field of maternal health, because the two are inextricably linked. You can give your child a boost toward a healthy life during your pregnancy. Our goal in writing this book is to let you know how you can do that. I hope you think we have succeeded.

# Acknowledgments

Many people and institutions made this book possible. I am grateful to Harvard Medical School and Massachusetts General Hospital for their institutional support. Harvard Medical School recognized the importance of nutrition in health by establishing a schoolwide Division of Nutrition (DON) in 1996, and I was asked to be its first director. The intent of establishing this division was to give more recognition to nutrition in medicine and to coordinate the large but diffuse resources in nutrition at the medical school and its major teaching hospitals. At the request of numerous graduating classes of the medical school, the DON has aimed to teach practical information about nutrition to Harvard medical students to help create physicians who are more knowledgeable regarding the importance of nutrition in medical practice. Harvard Medical School and Massachusetts General Hospital, where I practice pediatrics, recognized the importance of this field by creating an endowed chair, the Conrad Taff Professorship of Nutrition and Pediatrics, which I am honored to hold.

Courtney Humphries drafted the book in clear and engaging prose and demonstrated a remarkable facility for explaining complicated concepts in a simple way. She eliminated my "medicalese" and straightened out my syntax.

Many individuals have reviewed portions of this book—experts, potential readers (women of childbearing age), and many who were both. Drs. Emily Oken and Matt Gillman, experts on intrauterine programming at Harvard Medical School and Harvard School of Public Health, reviewed the most complex chapter ([Chapter 3](#)) for accuracy. Dr. Carine Lenders, at Children's Hospital Boston and Boston City Hospital, and Dr. Alison Hoppin, at Massachusetts General Hospital for Children—experts for optimal weight for life programs—provided a review of the factual content of this book. Dr. Chris Duggan also provided valuable advice.

Dr. Kim Walker, a child psychologist and my daughter; Dr. Beth Littlejohn, a pediatric endocrinologist and my niece; Dr. Helen Delichatsios, an internist; Dr. Annemarie Broderick, a pediatric gastroenterologist; Sharon Collier, dietary director of the Nutrition Support Service at Children's Hospital; Heather McDonald Walker, my daughter-in-law; and Kirsten Steward Beckwith, a mother of two and a self-taught expert on perinatal nutrition, all reviewed early chapters for readability and clarity. Each of them is a recent mother.

Julie Redfern, a well-known nutritionist in obstetrics at the Brigham and Women's Hospital, reviewed and provided practical dietary suggestions for the recipes in [Chapter 9](#). This is particularly true for suggested healthy snacks and easily prepared but balanced meals. I also wish to thank Lisa F. O'Gorman, a certified executive chef, for the practical recipes provided to parents wishing to make healthy meals during their pregnancy and healthy school lunches for their children. Chris Just, a registered nurse and certified nurse midwife, and Elizabeth Noble, an author and physical therapist, provided practical information about exercises during pregnancy.

Dr. Anthony Komaroff, editor-in-chief; Nancy Ferrari, managing editor; and Christine Junge, editor, of the Harvard Health Publications Division of Harvard Medical School provided important support and encouragement in the development of this book. Judith McCarthy, publisher at McGraw-Hill, helped enormously in editing and organizing this book.

As always, I am grateful to my wife, Dr. Ann Sattler, who is also a pediatrician and mother, for her encouragement and support of my many activities in pediatric nutrition. I also thank my children—Kim, Mike, Andy, and Meredith—and my grandchildren—Douglas, Lena, and Giselle—for keeping me honest in my suggestions for practical approaches to developing healthy eating habits during childhood.

# **Introduction**

## ***Good Nutrition Begins Before Birth***

When does good nutrition become important in our lives? For some people, nutrition may not enter their concerns until they are well into adulthood, when they begin worrying that the foods they eat may increase their risk of developing diabetes or heart disease. Others worry about nutrition only when it causes them to gain weight as their metabolism slows with age. For parents, the first time they may become aware of their children's nutrition is when their babies first start eating solid foods. Then there are decisions to make. Which foods are best? Should my baby or small child eat sweets? Is my picky child eating enough of the right kinds of foods to grow? The decisions become more complicated as babies become toddlers and start making demands and refusals for food, and parents must balance their children's wishes with what's good for their health. And as children get older and go to school, they are more influenced by peers, the media, and the food available at school, and suddenly nutrition can become a major issue in parents' minds.

In fact, in this book I'm going to argue that good nutrition starts in the womb. Your role as a prospective parent begins with the choices you make while you're pregnant. We used to think that babies grow and develop inside their mothers about the same way regardless of the mothers' health and nutrition. A fetus, it was thought, would simply feed upon the reserves of energy and nutrients stored in its mother's body and get everything it needed from her internal supplies. Now we know that that picture is not entirely true. How well a mother eats and how she cares for herself make a big difference in the quality of nutrition her baby receives.

If you are reading this book, it's likely that you are either planning a pregnancy or are already pregnant and wondering how to eat well for your baby's health. Congratulations on taking the time to educate yourself about nutrition now, at the beginning of your child's life. Your effort will help to better your own health and the long-term health of your future baby.

A growing body of research is showing that the time a baby spends in the womb is the period when the foundation for her later health is put into place. Research has now shown that the events that happen in fetal life can in part determine a person's chances of developing diseases such as heart disease, high blood pressure, diabetes, and obesity in adulthood. As a mother-to-be, your first step in improving your child's nutrition is to take care of your own health and nutrition before and during pregnancy. By doing so, you will be helping to ensure your child's health at birth and into adulthood.

### **What's in This Book**

This book will help educate you about good nutrition before, during, and after pregnancy. More than just a list of foods to eat or not eat, this book will help you understand the following:

How to be nutritionally ready for pregnancy

What happens to your body and your baby's body throughout your pregnancy

low the behaviors you adopt affect your baby's development

Why certain foods and dietary habits are healthier than others

Which nutritional "building blocks" your baby needs from your diet

How to incorporate healthy weight gain and exercise into your pregnancy

How to recover from pregnancy, follow good nutrition while nursing, and gradually return to what you weighed before pregnancy

This book is about *your* nutrition, but it's also about *your baby's* nutrition while he is growing inside you. Your baby's nutrition depends not only on the foods you eat but also on how well your body can deliver those nutrients. "Fetal nutrition" relies on the overall health of the mother and her health habits. So I will talk about nutrition broadly, including some of your behaviors and physical activities as well as the foods you eat.

Here is a more detailed look at the contents of this book, chapter by chapter:

If you're not yet pregnant but are planning a pregnancy, you have the opportunity to improve your health now and help prevent pregnancy complications or health problems in your baby. [Chapter 1](#) discusses how you can nutritionally prepare for pregnancy, make sure your weight and nutrition aren't causing infertility problems, eliminate habits that may harm your baby, and make sure your weight is at the healthiest level possible for pregnancy.

[Chapter 2](#) is a brief look at how pregnancy works, what changes occur in your body, and how your baby's growth progresses. Your body will accomplish some amazing things in just nine months, and you are undoubtedly curious about what's happening. This chapter will help satisfy your curiosity.

In [Chapter 3](#), I will share with you some important new research showing that good health begins in the womb and that problems with nutrition during development can have impacts on certain diseases in adulthood. This chapter is heavier on science than the others, but I think it will help readers who are interested in what is known about health and disease understand how research is shaping our view on pregnancy.

[Chapter 4](#) will help you change your diet for the better. I will help you understand how to follow a balanced diet, choose the healthiest foods and avoid unhealthy ones, and pay attention to the nutrients that are particularly needed during pregnancy.

After explaining how to make positive changes in your nutrition, in [Chapter 5](#) I'll review all the habits and substances that may be harmful to your fetus during pregnancy. I'll help you distinguish the habits that should be avoided entirely, such as alcohol and drug use, from those that require caution, such as eating fish that may be contaminated with mercury.

[Chapter 6](#) will discuss dietary supplements, which include any "extras" people add to their diets, such as multivitamins, herbal remedies, and nutritional supplements. I'll help you sort fact from hype and determine which products are useful and which may be dangerous.

Weight gain and weight control are confusing issues in pregnancy, and many women don't get the proper advice they need. [Chapter 7](#) will explain why paying attention to weight gain is

important for your health and your baby's, and how you can make sure you're gaining the right amount of weight.

[Chapter 8](#) explains **[End of Sample]**