

A Practical Manual to Labor and Delivery

Second Edition





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Edited by

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This book would not have been possible without the constant support of my wife and three sons. Katie has supported our family and my career in obstetrics through the long days and longer nights while completing her Master's in Education degree and continuing to teach. It was seeing her experience complications in labor with our first child that inspired me to write this book. And, every day since then, Tyler, Conner, and Jake are a constant reminder of why this book is needed.





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Preface

There are few experiences in medicine that are more emotionally charged than the delivery of a child, and almost nothing is more rewarding than taking care of a pregnant patient and being able to place a healthy baby into her arms. To achieve this, every person on the labor and delivery unit must do their job. Every resident, nurse, staff member, and student plays a critical part in ensuring the best outcome possible.

On obstetric rotations, however, providers are placed in a fast-paced environment where there is often minimal time for instruction in the procedures performed and little explanation of why certain treatment plans are made. Similarly, when first working on labor and delivery, providers are expected to be able to perform many "basic" tasks and examinations for which there are no good teaching references available – or, if there are, they are buried in the middle of a large and cumbersome reference book. When you add to this the common variations in clinical practice patterns, you have the perfect setup for confusion as you try to learn how to take care of laboring patients.

This book is intended to bridge the gap between small handbooks that do not contain enough material to understand why you are doing certain things and large textbooks that lack the practical information you need for how to do specific procedures, and write notes, orders, and dictations. After reading it, you will be prepared to care for an obstetric patient from the moment she arrives in triage until the time she is discharged. You will understand not only how to perform both simple and complicated procedures, but why they are necessary. The most up-to-date literature and evidence-based recommendations have been used to create simple treatment algorithms for the most common issues you will face, and numerous illustrations are included for clarity as well.

This book should also be a valuable resource for staff physicians who need an updated text on current obstetric care, as well as for those who regularly interact with and teach residents, medical students, and nursing students.

In just the past few years, since the publication of the first edition of this book, there have been important changes in the practice of obstetrics. Some of the most notable include expanding the use of steroids for fetal lung maturity, new definitions for progress in labor, and more evidence-based guidelines for cesarean section techniques. For these reasons, the second edition has been updated to include the most recent literature and evidence for these and many other facets of obstetrics. What has not changed, however, are the basic principles that are included in this manual. The need for a solid foundation of practical knowledge will never go away, and this new edition retains this mission at its core.

You have the opportunity and privilege to be part of one of the most important moments in your patients' lives on every shift, and also the responsibility to do your job well. This book is the place to begin. Welcome to the adventure, and thank you for all you do for each and every patient.



Acknowledgments

A project of this magnitude does not happen without a dedicated team. I would like to thank each of the authors who gave of their time and energy to assist in updating this book. Despite their busy schedules, they each made it a priority to take part in this important project. I know that every provider who reads it and all the patients they take care of will be grateful for it as well.

I have greatly appreciated the feedback of many students, residents, nurses, and other staff since the first edition was published, and they have provided the impetus for many of the improvements that have been made in this second edition. Receiving all their comments has not only reinforced the notion that the book is needed more than ever, but it has demonstrated how important it is to keep it firmly grounded in the experiences of the providers who are working on labor and delivery every day.

I would also like to recognize the team at Cambridge University Press. Whether helping me to navigate through the process or gently reminding me of deadlines, they were instrumental in bringing this book to its final publication.



Abbreviations

ABD abdomen

ACOG American College of Obstetricians and Gynecologists

AFI amniotic fluid index

ALL allergies

ALT alanine transaminase

AROM artificial rupture of membranes
ART assisted reproductive technologies

AST aspartate transaminase

AV arteriovenous
BMI body mass index
BP blood pressure
bpm beats per minute
BPP biophysical profile
CBC complete blood count
CNS central nervous system

CPAP continuous positive airway pressure

CSF cerebrospinal fluid
CST contraction stress test
CTA clear to auscultation

Ctx contractions

D&C dilation and curettage

DIC disseminated intravascular coagulation

DM diabetes mellitus
DBP diastolic blood pressure
DTR deep tendon reflexes
DVT deep venous thrombosis
EBL estimated blood loss
ECG electrocardiogram
ECV external cephalic version
EDD estimated date of delivery

ECV external cephalic version
EDD estimated date of delivery
EFW estimated fetal weight
EGA estimated gestational age
ETT endotracheal tube

EXT extremities

FAVD forceps-assisted vaginal delivery

fFN fetal fibronectin FGR fetal growth restriction

FHR fetal heart rate
FKC fetal kick counts
FM fetal movement
FSE fetal scalp electrode
GABA gamma-aminobutyric acid

χi



xii List of Abbreviations

GBS group B streptococcus

GC gonorrhea

GHTN gestational hypertension

GU genitourinary

H&P history and physical examination

hematocrit Hct

HEENT head, eyes, ears, nose, and throat

HELLP hemolysis, elevated liver enzymes, low platelet count

Hgb hemoglobin

HIV human immunodeficiency virus

HR heart rate

HSV herpes simplex virus

HTN hypertension IM intramuscular I/O intake/output IUD intrauterine device intrauterine fetal demise **IUFD IUP** intrauterine pregnancy

IUPC intrauterine pressure catheter

IVintravenous

LARC long-acting reversible contraception

LDH lactate dehydrogenase LE lower extremity LF low forceps LFT liver function test **LMP** last menstrual period left occiput anterior LOA LOP left occiput posterior lactated Ringer's LR MDI metered-dose inhaler midline episiotomy **MLE** MSV Mauriceau-Smellie-Veit

MVP maximum vertical pocket **MVUs** Montevideo units

MTP

neonatal intensive care unit NICU NKDA no known drug allergies nil by mouth (nil per os) NPO non-reactive NST **NRNST**

NS normal saline

NSAID non-steroidal anti-inflammatory drug

massive transfusion protocol

NST non-stress test

non-tender to palpation NTTP

occiput anterior OA **OCP** oral contraceptive pill OF outlet forceps

occiput posterior OP



More Information

List of Abbreviations

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OR operating room

PCA patient-controlled analgesia

PCN penicillin

PDS polydiaxanone (suture)
PE pulmonary embolism
PID pelvic inflammatory disease

PLTCS primary low transverse cesarean section

PMH past medical history
PNV prenatal vitamin
PO by mouth (per os)
PPH postpartum hemorrhage
PPV positive-pressure ventilation

PR per rectum

PRBCs packed red blood cells

Pre-E preeclampsia

PRN as needed (pro re nata)

PROM premature rupture of membranes

PPROM preterm premature rupture of membranes

PSH past surgical history PT prothrombin time PTL preterm labor

PTT partial thromboplastin time

RBC red blood cell

RLTCS repeat low transverse cesarean section

RNST reactive NST

ROA right occiput anterior
ROM rupture of membranes
ROP right occiput posterior
RRR regular rate and rhythm
RUQ right upper quadrant
SAA same as above

SBP systolic blood pressure

S/P status post SQ subcutaneous

SROM spontaneous rupture of membranes

SSE sterile speculum exam STAT urgent priority

SVD spontaneous vaginal delivery

SVE sterile vaginal exam

SVT supraventricular tachycardia TAP transversus abdominis plane TOLAC trial of labor after cesarean

UO urinary output
US ultrasound
VAC vacuum delivery

VAVD vacuum-assisted vaginal delivery VBAC vaginal birth after cesarean



xiv	List of Abbreviations
VS	vital signs
VTE	venous thromboembolism
WBC	white blood cell
WNL	within normal limits
WPW	Wolff-Parkinson-White