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Bettie Lilley Nosek, RN, BA

*Medical instructor, journalist,
and entrepreneur*

**Deborah Trendel-Leader,
RN, BSN, PHN**

Certified IV therapist and instructor



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FOR
DUMMIES®

**by Bettie Lilley Nosek, RN, BA, and
Deborah Trendel-Leader RN, BSN, PHN**



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About the Authors

Bettie Lilley Nosek is a registered nurse, published author, and entrepreneur. Bettie began her career working in the ICU-CCU at Memorial Baptist Hospital in Houston. She then moved to Denver, Colorado, and worked as the Staff Development Coordinator in the operating room at Porter Memorial Hospital.

While in Colorado, she obtained a journalism degree from Loretto Heights College and worked as a copy editor for the *Rocky Mountain Medical Journal*.

After moving to California, she created instructional videos demonstrating infusion pumps and conducted evaluations of infusion pumps at the University of California, San Diego, and Children's Hospital in Los Angeles. She then worked as Director of Surgical Services at Garfield Medical Center in Monterey Park, where she supervised the operating room, recovery room, and central service.

Later, she worked as a Bureau Chief for International Medical News Group, covering medical conventions, and was published in physicians' newspapers and healthcare magazines.

Bettie began her entrepreneurial career by joining her husband in owning a telecommunications company. After running and later selling the company, Bettie started her own consulting firm, helping small businesses develop sales.

She owns several patents, copyrights, and trademarks, and she's a licensed California real estate agent and notary. She lives in Southern California and enjoys playing golf with her husband and being constantly amazed by her granddaughter.

Deborah Trendel-Leader is a registered nurse and freelance medical journalist with a bachelor's degree in nursing. She holds current certifications in critical care, IV therapy, public health nursing, and advanced cardiac life support and has a teaching credential issued by the Board of Vocational Nursing. With her career spanning more than two decades, Deborah has worked in a variety of healthcare facilities, specializing in critical care, and has served as a clinical supervisor/nurse educator in both the hospital and home health settings. She has taught numerous IV therapy certification courses for vocational nursing programs and keeps her IV skills current with continuing education courses specific to the principles, administration, and management of IV therapy. Currently, she is an active member of the Infusion Nurses Society, works per diem in adult critical care, and is a freelance medical journalist for About.com, part of the New York Times Company.

Dedication

From Bettie: I dedicate this book to my wonderful husband and best friend, Jim, who has inspired, helped, tolerated, and believed in me for more than 30 years. His indomitable spirit and unconquerable soul fill me with life's most valuable commodities — love, courage, and hope.

This book is also dedicated to our children, Tamitha, Jason, and Rebecca, who have inspired us with their accomplishments and blessed us with beautiful grandchildren.

I also dedicate this book to my sisters, Dortha and Lynda, who have always been a part of my life and have allowed me to be a part of theirs. I will cherish our love and memories forever.

Finally, I dedicate this book to my lifelong friends, who have grown up with me and shared all of life's passages.

From Deborah: I would like to dedicate this book to my mother, Virginia Trendel, who has been a constant source of support for me throughout my life. I also dedicate this book to my dear friends, Lori Israel and Arlene Wyman, whose inspiration and encouragement have been the backbone of my adult life. Finally, I want to dedicate this book to all of the aspiring nurses and other healthcare professionals who read this book. You're about to embark on one of the most rewarding journeys of your life, and I'm proud to be a part of your journey.

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Introduction

I (Bettie) recently donated blood at a local blood bank, and I have to admit I was a little nervous. I knew that the needle would be a large-bore, 18-gauge needle and the unit of blood would be 500 cc of my own life-sustaining commodity. I worried that the IV nurse would need more than one try to get my vein and that I would feel sick as the blood drained from my body. It's scary for a nurse to be on the *other side* of the needle!

Then the IV therapist said, "Hi, Bettie. My name's Amanda, and I'll be your nurse today. What's your favorite television station?"

With just one sentence, she immediately established rapport and put me at ease for the impending procedure. After that, I experienced a successful one-stick venipuncture and a feeling of confidence that I was in the right hands at the right time.

Lying under a warm blanket, watching my favorite TV news station, with the blood draining from my vein, I thought, "This is the beautiful part of IV therapy nursing — it's not only about providing a life-saving therapy. It's about an opportunity to change a patient's attitude about healthcare and transform a terrifying experience into a show-and-tell moment."

Deborah and I have written *IV Therapy For Dummies* (Wiley) to help IV nurses wrap the knowledge, skills, and techniques we include in this book in a warm blanket of caring and compassion.

About This Book

IV therapy is a broad subject, encompassing many disciplines and subdisciplines within nursing. It's impossible to cover every IV topic in great detail without using a 3-pound textbook, but it *is* possible to provide practical, useful, everyday information in a handy, accessible format.

To provide an easy-to-understand framework, this book answers the following five questions and focuses on the critical how-to information related to each one:

- ✔ Why should you start an IV?
- ✔ When should you start, monitor, and discontinue an IV?
- ✔ Who should start an IV?
- ✔ Where's the best vein for an IV?
- ✔ What equipment should you use for an IV?

In a nutshell, this book gives you an easy-to-understand guide to the most important skills and procedures associated with IV therapy. It also provides something that's unavailable in other books — insider secrets and techniques from frontline nurses who work in the everyday trenches of IV therapy.

Conventions Used in This Book

We use the following conventions throughout the text to make things consistent and easy to understand:

- ✔ All web addresses appear in `monofont`.
- ✔ New terms appear in *italic* and are closely followed by plain English definitions.
- ✔ **Boldface** highlights the action parts of numbered steps and the key words in bulleted lists.
- ✔ On first reference, we spell out a unit of measurement and follow it with the relevant abbreviation to help you become familiar with the abbreviations used in physician's orders. For example, you may see this kind of measurement: 10 milliliters (10 mL).
- ✔ We use generic and brand names for medications. So that you know which is which, we format all drug names on first reference like so: generic name (Brand name); for example, phenytoin (Dilantin).

What You're Not to Read

Although we'd love for you to read this book cover to cover, we understand the demands on your time, so we've clearly marked sections that you don't need to read when your time is limited. When you want the facts and just the facts, feel free to skip the following sections:

- ✔ **Text in sidebars:** *Sidebars* are shaded boxes that usually give detailed examples or describe historical perspectives on the topic at hand.
- ✔ **Anything marked with a Technical Stuff icon:** This icon indicates information that's interesting but that you can live without. Read these tidbits later when you're not pressed for time.

Foolish Assumptions

We normally don't like making assumptions, but as we wrote this book, the following assumptions helped us direct this book's focus to material that you can use in your everyday nursing practice:

- ✔ We assume that you're either a student nurse or a practicing caregiver.
- ✔ We assume that you have an understanding of common medical terminology, although we define quite a few of the medical terms we use in this book.
- ✔ We assume that you have a general working knowledge of basic nursing skills and that you know how to carry out physician's orders and promote patient safety.
- ✔ We assume that you have a passion for caring for others and a desire to help people at their most critical moments.

How This Book Is Organized

To help you navigate this book, we've divided it into six parts. This section provides a breakdown of those six parts and a quick look at what you can find in each one.

Part I: Tapping Into IV Therapy

Part I covers the basics of IV therapy. Chapter 1 kicks things off with a quick overview of the book. Chapter 2 highlights the medical-legal aspects of IV therapy, including federal, state, and institutional standards of care, and explains how you can avoid malpractice problems and keep yourself and your patients safe. Chapter 3 introduces you to the equipment and supplies you need to be familiar with in IV therapy.

Part II: What's Your Type? Components of IV Therapy

Part II walks you through the various types of IV therapy. Chapter 4 reviews the pharmacologic interactions between medications and the human body and explains how drugs work to cure infections and fight disease. Chapter 5 discusses the components and compatibilities of life-saving blood products, while Chapter 6 discusses the pros and cons of another life-saving IV therapy — chemotherapy. Chapter 7 takes you on a journey into the cellular world of fluid and electrolyte balance. Finally, Chapter 8 deals with the increasingly sophisticated regimens of IV nutrition and the important role of parenteral nutrition in restoring health.

Part III: Getting Down to IV Therapy Business

In Part III, you get a glimpse of the overall IV therapy process. Chapter 9 directs your attention to the significance of accurately and completely documenting the IV procedure from start to finish, along with the consequences you can face when you keep inadequate documentation. Chapter 10 reviews some basic math and walks you through a couple of simplified methods for calculating common IV infusion rates and dosages. Chapter 11 lays the groundwork for administering medications by IV push and piggyback and shows you how to put the power of technology to work with infusion pumps, auto-syringe pumps, and patient-controlled anesthesia pumps. Chapter 12 demonstrates how to start, stabilize, monitor, and discontinue peripheral IVs, and Chapter 13 shows you how to do the same with central lines.

Part IV: Administering IV Therapy

Part IV covers all the how-to info you need to know about administering the most common types of IV therapy. In it, you get a rundown on how to assess patients, administer specialty IV substances, and manage adverse IV reactions. In Chapter 14, you find all the details on initiating, monitoring, and discontinuing pharmacological IV therapy (that is, medication infusions), as well as on recognizing and managing adverse drug reactions. Chapter 15 walks you through the steps needed to safely administer blood and blood products. Chapter 16 deals with advanced procedures associated with administering toxic substances like chemotherapy and shows you how to protect yourself and your patient when working with hazardous agents. Chapter 17 discusses the nitty-gritty of replacement therapy with fluids and electrolytes. Finally, Chapter 18 covers the essentials of administering parenteral nutrition.

Part V: Considering Unique Populations

Part V covers the full gamut of IV therapy from pediatrics to geriatrics. Chapter 19 is all about administering IVs to children and overcoming the special challenges you may face as a pediatric IV nurse. Chapter 20 deals with the other end of the age spectrum — elderly patients — and explains the various modifications you need to make to administer IV therapy safely to geriatric patients. Finally, Chapter 21 centers on the growing demand for IV therapy at home and the steps you have to take to create a safe home environment for yourself and your patient.

Part VI: The Part of Tens

Part VI contains ten handy techniques and insider secrets for starting and administering IV therapy. Chapter 22 presents ten take-away tips on the general subject of IV therapy, and Chapter 23 gives you ten how-to tips on starting IVs.

Icons Used in This Book

To make this book easier to use, we include the following icons that can help you find and fathom key ideas and information:



The Tip icon appears whenever the text next to it can save you time or help you promote patient safety when administering IV therapy.



Any time you see this icon, you know the information that follows is important and worth reading more than once.



The Warning icon flags information that highlights dangers to you or your patient's health and safety.



This icon appears next to information that's interesting but not essential to the discussion at hand. When you're in a hurry, skip the paragraphs marked with the Technical Stuff icon and come back to them later.

Where to Go from Here

This book is organized so that you can skip around to find whatever information you need at the time. If you want to know how a chemotherapy drug works, jump to Chapter 6. If you want to find out how to administer chemotherapy, go to Chapter 16. You can use the table of contents to find broad categories of information or the index to look up more specific topics.

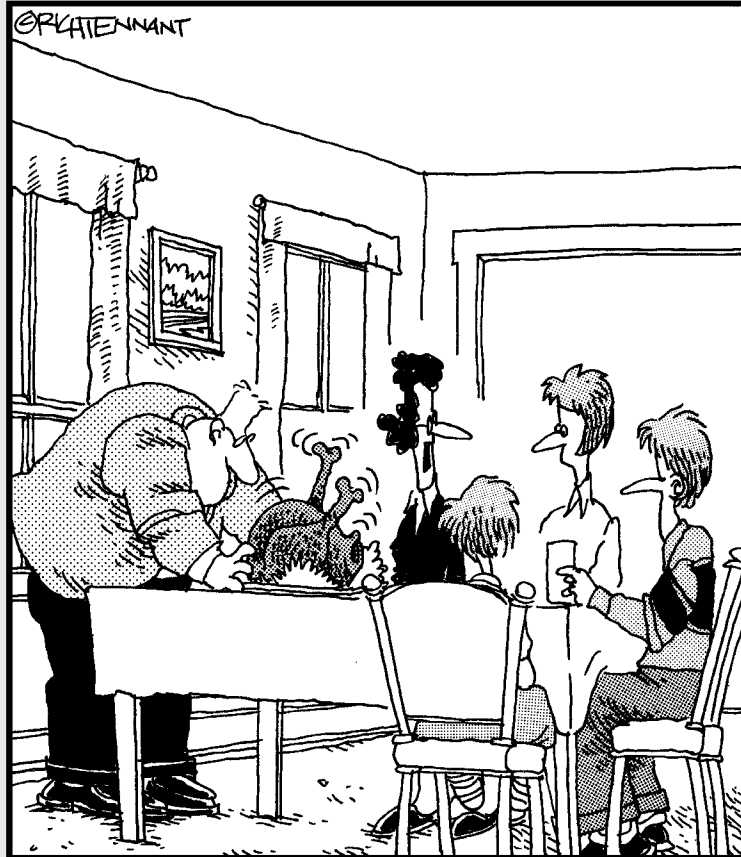
If you're not sure where you want to go next, why not start with Chapter 1? It gives you an overview of IV therapy and points you to places where you can find more detailed information.

Part I

Tapping Into IV Therapy

The 5th Wave

By Rich Tennant



“This is what I get for marrying a phlebotomist. Every Thanksgiving he’s got to inject the turkey with gravy before he’ll carve it.”

In this part . . .

Part I introduces you to the basics of IV therapy. It starts with a quick overview of IV therapy and the many topics we cover in the rest of the book. It also focuses on the important medical-legal aspects of infusion nursing and the equipment and supplies you may use at one point or another as you work as a nurse in IV therapy.

Chapter 1

Introducing IV Therapy: A Purpose-Driven Practice

In This Chapter

- ▶ Exploring the types of IVs and the different methods of administration
 - ▶ Figuring out what your role is in IV therapy
 - ▶ Getting familiar with standards of care to protect yourself and your patient
-

Intravenous (IV) therapy is more than just another medical procedure. It's a universal method of saving lives and restoring health that healthcare facilities all around the world use every day.

In this chapter, you find out how IV medications work to restore vital signs and relieve pain, and you get a glimpse of the various types of IVs used to treat clinical conditions, as well as the assorted methods of administering them. You take a journey through all aspects of IV therapy, including starting, monitoring, and discontinuing IVs, and you explore important methods of promoting patient safety and preventing complications. Finally, you get a closer look at the medical-legal implications of IV therapy and the importance of performing to national standards of care, particularly those set by the Infusion Nurses Society (INS).

What's the Point? The Purpose of IV Therapy

Doctors prescribe IV therapy when they need to deliver fluids and medications quickly, copiously, and frequently. They also use it to administer products like blood, parenteral nutrition, and chemotherapy that can't be delivered any other way.

As a healthcare worker, you use IVs to administer all types of therapies, ranging from a simple normal saline drip to hydrate a depleted marathon runner to a sophisticated thrombolytic drug infusion to dissolve blood clots in a patient who just had a heart attack. Regardless of which type of therapy you use them for, the main purpose of IVs is to save lives.

Administering emergency fluids and medications

During emergencies, you use IV fluids and medications for countless reasons, including the following:

- ✓ To stabilize blood pressure
- ✓ To dilate bronchial tubes in patients with asthma
- ✓ To convert heart arrhythmias back to sinus rhythm
- ✓ To relax vocal cords to facilitate intubation
- ✓ To restore blood volume to prevent circulatory collapse

In short, IV fluids and medications are vital, irreplaceable elements in an emergency response, and they frequently make the difference between life and death. For details on preparing for and administering IV therapy, check out Parts III and IV.

Delivering pharmacological agents

When patients need to receive medications quickly, frequently, or over a long period of time, the intravenous route is the method of choice. The use of IV medications has skyrocketed since the advent of modern IV therapy in World War I. Today, every department of the hospital, from intensive care to medical-surgical units to labor and delivery and beyond, uses IV medications.

Nurses who administer IV medications must know how to administer IV drugs safely, prevent potential complications from both the drug itself and the IV, and monitor the patient's response to therapy. For details on administering IV medications and managing complications, go to Chapter 14. For drug classifications and other IV medication basics, see Chapter 4.