

SECOND EDITION

The Wheelchair Evaluation

A CLINICIAN'S GUIDE

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Dedication

*This book is dedicated to two individuals who have made
an indelible mark on my personal and professional growth.*

H. Gumprecht

J. G. Gianutsos

“Cut once, measure twice.”

—Source unknown

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Preface

Changes to the *Second Edition*

The chief aim of this *Second Edition of The Wheelchair Evaluation* remains the same—to offer a concise and practical approach to prescribing wheelchairs. It has been 10 years since the *First Edition*, and the landscape for mobility devices has changed dramatically. Although technology has made great advances in mobility options to enhance function and quality of life, acquiring funding for devices has, ironically, become more challenging.

To address these challenges, the changes in this *Second Edition* include (1) four new chapters dedicated to funding, documentation, ethics, and fitting; (2) a Medicare algorithm for wheelchair clinical decision making; (3) updated *evidence* for wheelchair prescription; (4) information on American National Standards Institute (ANSI)/Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Wheelchair Standards, useful when comparison shopping (e.g., wheelchair strength, stability, durability, fire retardance); (5) photographs depicting wheelchair categories; (6) updated contacts/resources/links with a greater reliance on Web links; (7) suggested strategies for staying current in the mobility field; and (8) a companion CD containing a PowerPoint slide presentation with videos and animation to complement material contained in the text. I hope this book continues to be useful to the busy clinician who needs a prescription guide.

Why This Book Is Useful

The purpose of this book is to provide a *practical and concise approach* for successfully evaluating and recommending a wheelchair for a patient. Although wheelchair evaluation remains a complex and growing area of specialization, little training is provided in professional schools to teach competency in this area. As a result, clinicians learn on the job through trial and error, often with costly mistakes. In a time when third-party payers are cutting back on funding, it is becoming even more critical to conduct competent evaluations and prescribe appropriate, medically justifiable wheelchairs. It is hoped that this manual will be a practical and concise guide for clinicians and students in health fields who work with physically challenged individuals in need of a wheelchair.

xiv Preface

This book has several unique features that distinguish it from other books on this topic. First, the book is *organized* to concisely guide the clinician through a logical sequence in the wheelchair prescription process using a real world (in the trenches) rather than an academic (in the classroom) perspective. The clinician is taken through the necessary steps of patient evaluation, choice of wheelchair components, documentation, and finally, funding using a letter of medical necessity. Second, this book emphasizes *history-taking skills*, which are sadly deficient in most wheelchair-related books and journal articles. Taking a comprehensive history can provide a wealth of vital information that can bear on the success or failure of a wheelchair prescription. Third, this book places special emphasis on evaluating *body shape* variation in order to successfully fit or match the patient to the wheelchair. Body shape is an area that is not emphasized in the education of the health professional, and yet has an important impact in the ultimate fit of an individual with equipment. Fourth, the book was designed to be *portable* and is therefore small enough for the clinician to carry around in the hospital, clinic, school, or nursing home. Finally, this book offers a *general approach* to patient evaluation with emphasis on breadth over depth of subject matter because it is usually what the clinician forgets to assess that leads to a poor result. A general approach has been used because so many clinical decisions must be made based on unique patient needs, regardless of that patient's diagnosis. A seating system, for example, will need to accommodate a hip extension contracture in a patient regardless of whether that patient has cerebral palsy or a spinal cord injury.

In a similar light, this book focuses on wheelchair features driven by patient need rather than reviews of specific brand name components offered by manufacturers, because products may later be added or discontinued. Durable medical equipment suppliers and manufacturers can provide clinicians with information about currently produced wheelchair components once the clinician determines the most important features for a patient.

This book provides several unique and practical aids to facilitate wheelchair prescription. The book utilizes a *question-answer format*. Critical questions that arise during a wheelchair evaluation are asked and then succinctly addressed. *Algorithms* are included to facilitate clinical decision making in choosing wheelchair components. *Illustrations* are provided to clarify difficult concepts and to educate and facilitate communication among clinicians, family members, patients, durable medical equipment suppliers, and manufacturers during a clinic visit. A *sample letter of medical necessity* is included to emphasize important information that needs to be communicated in order to successfully acquire funding for a wheelchair. Finally, *exercises* have been included at the end of each chapter to clarify a concept or drive home a point. These exercises can be used to educate a patient and family member in the clinic or student in the classroom. Every effort has been made to simplify the subject matter. Simplification was done in order to demystify the process and help empower health professionals in their clinical decision making. *The ultimate goal is to provide better patient care.*

Much of the information in this book was empirically derived while working with children and adults with developmental disabilities, but effort has been made to apply this evidence to other populations. Subsequently, information derived from other sources, such as journal articles and texts, has been cited to credit, substantiate, or offer a more complete survey of the subject matter. Although solutions to wheelchair problems are suggested throughout the text, final decisions regarding equipment *MUST* be made by the health professionals, patient, and family who consider all variables and safety issues specific to their case.

The reader may get frustrated by the numerous terms used to refer to the same wheelchair component. An example is the *seat belt*, which may also be referred to as a *pelvic belt*, *lap belt*, or even a *positional belt*. Although attempts are being made to standardize the jargon, variability unfortunately still exists in the literature and industry. Therefore, in this book effort has been made to include all terms that may refer to a piece of equipment so the reader can effectively communicate with others who may still be familiar with only one of the terms.

Helping the patient fit well in a wheelchair involves dealing with multiple and complex variables that are frequently *unique* for that individual. As a result, the evaluation process becomes both an art and a science. Much research still needs to be done in this field to determine how to best serve the patient. An example is the sheer number of variables to consider in choosing a pressure-reducing seat cushion for a patient at risk for a pressure ulcer. Getting it right is not always easy. Hopefully this book will help health professionals to focus on critical areas, anticipate problems, and avoid the “quicksand” associated with a poor wheelchair prescription. Because the wheelchair becomes an extension of the individual and a substitute for the lower limbs, it is imperative that equipment complement the individual’s needs and the two fit together into a functional and harmonious whole.

How to Use This Book

This book is organized into four parts and several appendices to provide easy access for wheelchair prescription. Part I is an overview of the wheelchair prescription process and provides a summary of a suggested sequence for the evaluation, important issues to consider during the evaluation, and algorithms for selecting wheelchair bases and components. For example, if only a specific wheelchair part needs to be ordered, the clinician can first refer to the algorithm for component selection and then go to Chapter 7 for more detailed information for that part feature.

In Part II, Chapter 2 addresses history taking (including home accessibility), Chapter 3 covers clinical examination (including measuring a patient for a wheelchair), and Chapter 4 reviews functional examination relevant to manual and power wheelchair prescription. Predictors for power wheelchair performance and the importance of rear wheel position for efficient manual wheelchair use are both underscored in Chapter 4.

In Part III, Chapter 5 is a basic introduction to the wheelchair and discusses general indications, risks, and contraindications for prescription. Issues surrounding wheelchair-related deaths and repetitive strain injuries to the upper extremity are highlighted. Also reviewed are the American National Standards Institute (ANSI)/Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Wheelchair Standards that may be useful when shopping for wheelchairs. Chapters 6 and 7 cover wheelchair bases (frames) and components (parts), respectively, along with details on features, advantages, disadvantages, and relevant published studies for each piece of equipment.

Part IV includes issues related to ethics (Chapter 8), funding (Chapter 9), documentation and letter writing (Chapter 10), and fittings/dispensing wheelchairs (Chapter 11).

Finally, five appendices include Medicare's algorithm for deciding on mobility assistive equipment (Appendix A), a generic wheelchair evaluation form (Appendix B), resources and links to manufacturers and wheelchair-related topics (Appendix C), a list of differential diagnoses of common wheelchair problems (Appendix D), and body shape considerations (Appendix E). Exercises are included for review at the ends of chapters, which may be particularly useful in the classroom.

A CD complements the textbook to illustrate key concepts in wheelchair prescription using bulleted text, animation, and video clips.

Acknowledgments

Acknowledgments for *Second Edition*

It's been gratifying to revisit and help transport *The Wheelchair Evaluation* into the new millennium. I wish to thank Jones and Bartlett Publishers and David D. Cella, Publisher, for giving the new edition a good home, Maro Gartside, Associate Editor, for assisting with the preparations and copyright issues during the early phases of the manuscript, Catie Heverling, Editorial Assistant, for helping to launch the book and CD into production, and Julia Waugaman, Production Assistant, for shaping the *Second Edition* into final form.

Acknowledgments for *First Edition*

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About the Author

Dr. Mitchell Batavia is an Associate Professor in the Department of Physical Therapy at New York University. He earned a BS in Physical Therapy from the University of Delaware in 1981, an MA in Motor Learning from Columbia University in 1986, and a PhD in Pathokinesiology/Physical Therapy from New York University in 1997. He completed a Robert Salant post doctoral fellowship at NYU in 1998 and a professional training program in the Feldenkrais Method (Toronto) in 1987. In 2008, Dr. Batavia earned a Postgraduate Diploma in Epidemiology from the University of London. In addition to peer-reviewed journal publications in the area of instrument development, augmented feedback, and wheelchair prescription,

Dr. Batavia has published three other textbooks, including the *First Edition of The Wheelchair Evaluation: A Practical Guide* in 1998 (of which a Korean translation was published in 2004), *Clinical Research for Health Professionals: A User-Friendly Guide* in 2001, and *Contraindications in Physical Rehabilitation: Doing No Harm* in 2006.

Dr. Mitchell Batavia currently teaches wheelchair prescription at NYU.



