

Mary Lynn McPherson

# ***Demystifying* Opioid Conversion Calculations**

**A Guide for Effective Dosing**

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# Dedication

This book is dedicated to my husband Jim, for his ceaseless love and support; and to our daughter Alex who makes us proud every single day.



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# Foreword

“To boldly go where no man (nor woman) has gone before.” With apologies to Star Trek fans everywhere, this book truly represents the definitive effort to explore the strange world of opioid conversions, to seek out new knowledge about these essential compounds, and to share this information with fellow pain clinicians. Dr. Mary Lynn McPherson takes the reader on the voyages and adventures of opioid conversions with the skill of an exceptionally brave commander.

It takes extreme courage to tackle this topic. Most of us who work in the field would enthusiastically agree to speak on any topic related to pain—with the exception of opioid conversions. This is the most complicated topic to share with others, in part because it entails equations and math. Nothing makes a trainee’s eyes glaze over like numbers, particularly when the information does not seem relevant to practice.

Yet, the information provided in this outstanding text is not only relevant, it is critical to the safe and effective delivery of opioids. Every clinician who comes in contact with patients needs this information. And Dr. McPherson makes this journey uncomplicated and painless. The text is concise, practical, and grounded in the author’s many years of clinical experience. The material is scholarly and well referenced, with clear tables and figures to illustrate key concepts. Practice problems with answers appear within each chapter to allow readers to test their newly acquired knowledge and skills. And yet, the tone is conversational with humor dispensed liberally throughout.

Dr. McPherson effortlessly transforms complex concepts into simple, practical solutions. Opioid conversions, routes of administration, the use of around-the-clock vs. prn dosing, and definitions regarding breakthrough pain are translated for new and experienced clinicians entering the world of pain management. Methadone, a complex but essential opioid, is described in detail, as well as delivery methods such as patient controlled analgesia, and epidural and intrathecal administration.

Very few have the credentials to undertake this mission. Mary Lynn McPherson, Pharm.D., BCPS, CPE, is a full professor at the University of Maryland School of Pharmacy and a well-known expert in the area of pain management and palliative care. She has lectured and published extensively on the topic of opioid therapy. In addition, Dr. McPherson has directed a pain management and palliative care residency for over a decade, and her remarkable teaching skills are evident throughout this text. Thanks to her knowledge and talent, opioid management is no longer an uncharted civilization. The final frontier has been conquered for all to go forth and put into practice.

*Judith A. Paice, Ph.D., RN*  
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# Preface

Writing a book such as this one is like purposely walking around with a bull's eye painted on your forehead. If you ask five “experts” about a specific opioid conversion calculation, you'll probably get fifteen different answers! Even though this book deals with drug math, which usually means there is ONE correct answer, that's not always the case with conversion calculations. As a matter of fact, after spending a fair amount of time banging my head on the desk wrestling with the limited, yet frequently conflicting, information published on opioid conversion calculations, I decided there had to be a better way to consistently address these situations! So I went looking for a resource that pulled together all this information, only to find there was none! We have a handful of facts, a few more semi-solid facts, and a LOT of “that's what we've always done!” when it comes to opioid conversions.

What can we agree on? First, patients frequently need to switch from one opioid to another, from one route of administration to another, or from one dosage formulation to another. Second, the data used to generate opioid equivalency charts is often anecdotal, unidirectional, based on single dose studies, and without regard for patient variability. The last and most important thing we can agree on is the absolute need to carefully consider our calculations and interpret them with a big dose of common sense. Good pain management is a basic human right, but I believe “safety first” even supersedes that edict.

Another thing we can agree on is that this book will be an indispensable resource for a wide range of clinicians, particularly physicians, nurses, and pharmacists. This resource could easily become the new best friend of acute care practitioners (converting to various opioids and dosage formulations on admission and discharge), those caring for chronic non-cancer pain patients, and clinicians working in end of life care. Being able to accurately and safely convert among opioids is a mandatory competency for physicians and other prescribers, as well as nurses caring for patients with chronic non-cancer pain and pain from advanced illness, such as hospice and palliative care nurses. This text will also be very useful for students and residents in training. As a matter of fact, you could easily become known as a smarty-pants with this information under your belt!

In writing this book, no stone was left unturned in an attempt to find evidence-based information. Unfortunately there are still things we don't understand about the opioid conversion process, and the variability among human beings doesn't help either! After writing each chapter, it was shipped off to a highly-respected, spooky-smart cadre of practitioners to evaluate critically. Reviewers included nurses, nurse practitioners, physicians, and pharmacists. These practitioners were from practice areas ranging from acute care to home-based hospice, education, and research. Tough love is a beautiful thing, believe you me!

My vision for the book was for the reader to learn about a systematic process for these calculations that relies not only on available evidence, but also on a healthy dose of common sense. You will learn about a five-step process to perform opioid

conversion calculations, first practicing on conversions between routes of administration and dosage formulations for the same opioid, then branching out to converting between various opioids and dosage formulations. You will learn how to titrate opioid dosages up and down (including magnitude of dosage change and timing), and how to calculate doses for rescue opioid therapy. Specific chapters devoted to calculations with fentanyl, methadone, high-tech parenteral infusions (including neuraxial) and oral solutions are included in this book. The text is written in an easy-to-understand conversational tone, with numerous illustrated examples and practice problems. Just to keep you on your toes, you will encounter a variety of “pearls,” “pitfalls,” and “fast facts” as you journey through this book! I hope you find these tips useful and feel they can save you time, improve patient outcomes (safety and efficacy), and keep you from stepping into potholes others have probably encountered. Many of the reviewers read the pearls, pitfalls, and fast facts and commented “Oh, yes, I’ve been there before!” Here’s a really important fast fact: even though this text is as evidence-based as possible, it is not a substitute for excellent clinical judgment!

Writing a book on drug math is a daunting prospect, and it couldn’t be completed without the help of numerous people. Thanks to the administration and staff at the University of Maryland School of Pharmacy for encouraging me to indulge in this adventure. Special kudos to Barbara Hunter, who could find an article under a rock! Special thanks to Dana Battaglia, Rebecca Olson, and Bill Fogle at the American Society of Health-Systems Pharmacists for keeping me on track, and for their invaluable guidance and suggestions for strengthening this book.

I am eternally grateful to the aforementioned reviewers who gave of their time and talent to read and critique every chapter in the book. I am very fortunate to have had such a wide range of compassionate and gifted clinicians on board. Special thanks to Dr. D, my guardian angel! I am very appreciative of Dr. Judy Paice’s very kind comments in the foreword to this book. Thanks to my family and friends for supporting me during the birthing of this book, despite their ponderings about my mental health (oh, no, not another book!).

Last, I would like to share any success this book may achieve with the clinicians I have worked with over the years, in doing a million or so opioid conversion calculations, and all the pharmacy students who have embraced this particular skill as an opportunity for pharmacists to shine. But most especially, I am humbled by the patients who have allowed me to share in their final journal, which may or may not have included the need for an opioid conversion calculation.

*Mary Lynn McPherson*  
June, 2009



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