

# HIV PHARMACOTHERAPY

## The Pharmacist's Role in Care and Treatment

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# Dedication

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To *Cassie*, *Eamon*, and *Alida* for always reminding me to go instead where there is no path, and to *Debbie* and *Bob S.* for believing in me.

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Thanks to my husband *Mark Pellar* and wonderful daughters *Sophie* and *Beatrice*. You inspire me every day.

*Alice L. Tseng*



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During my almost 30 years providing pharmaceutical care for persons with human immunodeficiency virus (HIV), I have witnessed remarkable advances—from discovery to rapid diagnosis, prevention, and treatment of opportunistic infections to the development of safe and effective antiretroviral therapy (ART)—in a relatively short time period. The results of these advances have saved millions of lives not only in the United States, but globally, including many low income countries most affected by HIV. For more persons with HIV to receive the full benefit of therapy, the effort must begin with early diagnosis, followed by linkage to and retention in care, receipt of appropriate ART, and continuous adherence to therapy and care.<sup>1</sup> Pharmacists at different practice settings can play critical roles in every stage of the care continuum.

The results of two large randomized controlled trials—the START and TEMPRANO studies—solidified the roles and benefits of early ART in reducing both AIDS-associated and non-AIDS comorbidities.<sup>2,3</sup> It is now well accepted that all persons with a diagnosis of HIV infection should be started on ART regardless of their CD4+ T-cell count. With effective ART, the life expectancy of most persons living with HIV can approximate those in persons without HIV.<sup>1</sup> With the increase in longevity resulting from ART, most patients remain free of AIDS-related symptoms, but many develop comorbidities traditionally associated with aging such as cardiovascular disease, neurocognitive impairment, and cancer. The complexity of treatment of HIV infection, opportunistic infections, and other comorbidities, with resultant polypharmacy, adverse effects, drug interactions, and adherence issues has made it essential to include a pharmacist as a member of the multidisciplinary care team. Until there is a cure for HIV infection, persons with HIV are expected to continue their ART for life. Lifelong ART poses challenges to all patients, even those who are adherent to their medications. Pharmacists and other healthcare providers need to keep partnering with patients through this long journey so that benefits from the prescribed treatments continue.

Traditionally, pharmacists consult medical textbooks, treatment guidelines, and other publications for information regarding management of patients with HIV. No single textbook has provided a focused guidance for pharmacists in HIV care. It is, thus, timely for the editors to assemble a group of pharmacists with expertise in HIV care for this new book *HIV Pharmacotherapy: The Pharmacist's Role in Care and Treatment*. In the following pages, they share their expertise and provide guidance to other pharmacists who are beginning to provide, or are already providing, pharmaceutical care for persons with HIV. This book offers a comprehensive compendium for pharmacists on different and important topics associated with caring for persons with HIV—from the time of diagnosis to initiation of ART, management of patients with virologic failure, management of different co-infections, and provision of care for special patient populations. At the end of each chapter, the authors identify important roles pharmacists should play in

the care of these patients, as well as specific resources available to consult. This textbook will be very useful both in the classroom as well as in the clinical setting.

Despite having more potent, less toxic, and easier to take ART drugs now than in earlier years, long-term adherence to therapy continues to be a challenge for some patients. Clinical and basic science research efforts are underway to identify improved treatment outcome. Some of these efforts include new investigational antiretroviral drugs and biologics that target drug-resistant HIV; longer-acting agents (e.g., injectable, implantable depots) that target less frequent dosing and improve adherence; and therapeutic vaccines and other modalities aimed at achieving functional cure of HIV with the potential for temporary or permanent discontinuation of ART. Some of these investigational approaches are in advanced clinical trials and may soon be available, while others are in earlier stages of investigation. Additionally, clinical research studies are underway to evaluate pharmaceutical approaches to pre-exposure prophylaxis such as microbicides, implants, vaginal rings, and long-acting injectables.

The management of HIV infection is continuously evolving, with treatment guidelines updated annually, or more frequently, as a result of new drug approval, new research findings, or emerging toxicities. This textbook is an excellent guide for all who provide pharmaceutical care for persons with HIV. However, the field is constantly changing, so you need to also consult the most up-to-date guidelines or publications when required. Some of these resources are outlined in the textbook, and many of them are periodically updated electronically.

The safe and effective use of ART and concomitant medications is key to treatment success for all persons with HIV. The most critical tool for this success is to have a good understanding of the principles and pharmacology of ART, to promptly recognize any potential drug interactions and/or toxicities and to design strategies to avoid both, and to be aware of unique aspects of care related to special populations. This book provides pharmacists with these basic tools all in one source. It will be a valuable reference to help in the management of patients with HIV in the years ahead.

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HIV infection remains among the most important infectious diseases worldwide. Although the epidemic has changed significantly over the years, traditional obstacles to successful care remain such as prevention, early diagnosis, stigma and public perception, linkage to care, retention in care, and adherence to antiretroviral therapy. As patients age with HIV infection, new challenges emerge increasing the importance to provide comprehensive HIV and primary care as well as identify and manage comorbid conditions and coinfections—all while maintaining virologic suppression and meeting the unique needs of key patient populations.

Pharmacists have long been recognized as essential members of the HIV healthcare team. Their involvement in managing HIV-infected patients improves outcomes. To address both the traditional and contemporary challenges of HIV care, the pharmacist's role is evolving with a focus on providing comprehensive care to all patients with HIV infection.

## **PURPOSE**

The goal of this book is to provide pharmacists with a consolidated resource that will assist them in delivering comprehensive care to patients with HIV infection. All pharmacists practicing HIV medicine will value this resource as the first comprehensive and consolidated HIV pharmacotherapy reference that they can use to facilitate learning as well as decision making in the clinical setting. This resource will also be valuable to student pharmacists and pharmacy residents eager to establish their knowledge and understanding of HIV medicine to make meaningful contributions to patient care.

## **HOW TO USE THIS BOOK**

This book covers both core and advanced concepts of HIV care. Because each chapter first introduces fundamental disease state concepts before moving on to more advanced information, new practitioners entering the field of HIV medicine can use this book to build a foundation of HIV knowledge. Because each chapter also covers advanced aspects of care and provides evidence-based, patient care recommendations, it can also serve as a resource for pharmacists who encounter patients with HIV infection as a part of their routine practice. Tables and figures that consolidate information and provide quick reference to key concepts can also assist in direct patient care decisions. Links and references to important pieces of primary literature, key practice guidelines, and online tools at the end of each chapter provide opportunities for additional learning. Each chapter also concludes with a discussion of the role of the pharmacist, highlighting evidence where available and identifying practice gaps for pharmacists that require additional study.

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This work would not be possible without the considerable efforts and contributions of the chapter authors. Thank you all for helping to develop this important resource by sharing your knowledge and expertise as well as your passion for the field of HIV medicine. Your contributions will help educate students and practitioners alike, strengthening their knowledge and improving their skills in caring for patients with HIV infection.

Lastly, thank you to Beth Campbell, Ruth Bloom, and the ASHP Publishing staff who guided us in the development of this book. It has been a privilege to have had the opportunity to work with you and to develop this important resource for pharmacists.

*Jason J. Schafer*

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