

The 2018 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers

Adam J. Fein, Ph.D.
Drug Channels Institute

February 2018

Full report will be available on February 27, 2018 at
http://drugchannelsinstitute.com/products/industry_report/pharmacy/



COPYRIGHT

Copyright © 2018 by Pembroke Consulting, Inc., d/b/a Drug Channels Institute. All rights reserved.

This report is protected by copyright law and may not be copied or otherwise reproduced, repackaged, further transmitted, transferred, disseminated, redistributed, or resold, in whole or in part, in any form or manner or by any means whatsoever, by any person without prior written consent. This report may be cited in commercial documents with full and appropriate attribution. This report is for informational purposes only and is provided “as is” without any express or implied warranty. The analyses in this report are based solely on information and data that are in the public domain. All conclusions, findings, opinions, and recommendations are based on our own experienced and professional judgment and interpretations given the information available. While all information is believed to be reliable at the time of writing, the information provided here is for reference use only and does not constitute the rendering of legal, financial, commercial, or other professional advice by Pembroke Consulting, Inc., Drug Channels Institute, or the author. Any reliance upon the information is at your own risk, and Pembroke Consulting, Inc., and the author shall not be responsible for any liability arising from or related to the use or accuracy of the information in any way. Pembroke Consulting, Inc., and Drug Channels Institute do not make investment recommendations in this report or otherwise. Nothing in this report should be interpreted as an opinion by Pembroke Consulting, Inc., Drug Channels Institute, or the author on the investment prospects of specific companies.

Drug Channels® is a registered trademark of Pembroke Consulting, Inc.

LICENSE TERMS

This report is protected by copyright law. Unauthorized reproduction or distribution of this report or any portion of it may result in severe civil and criminal penalties and will be prosecuted to the maximum extent of the law. **This report may be cited in commercial documents with full and appropriate attribution. Nothing in the license is intended to reduce, limit, or restrict any rights arising from fair use under copyright law or other applicable laws.**

If you would like to quote from or otherwise cite the report, here is a suggested sample citation:

Fein, Adam J., *The 2018 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers*, Drug Channels Institute, 2018.

ABOUT THE AUTHOR

Adam J. Fein, Ph.D., is the president of Pembroke Consulting, Inc., a management advisory and business research firm based in Philadelphia. He also is the CEO of Pembroke's Drug Channels Institute, a leading management educator for and about the pharmaceutical industry.



Dr. Fein is one of the country's foremost experts on pharmaceutical economics and the drug distribution system. Top manufacturers call on Dr. Fein's insights and judgment to create successful commercial strategies and make better strategic decisions in our evolving healthcare environment.

Dr. Fein's popular and influential Drug Channels website (www.DrugChannels.net) is the go-to source for definitive and comprehensive industry analysis, delivered with a witty edge. He has published hundreds of academic and industry articles, and he is regularly quoted in such national publications as *The Wall Street Journal*, *The New York Times*, and many others.

Dr. Fein earned his doctoral degree from the Wharton School of Business at the University of Pennsylvania and a B.A., summa cum laude, from Brandeis University. He lives in Philadelphia with his wife, Paula, and their two children.

Contact information

Adam J. Fein, Ph.D.
Pembroke Consulting, Inc.
1515 Market Street, Suite 960
Philadelphia, PA 19102
Phone: 215-523-5700
Website: www.PembrokeConsulting.com
Email: afein@pembrokeconsulting.com

Visit the Drug Channels website for the latest industry updates!



DRUG CHANNELS

Expert Insights on Pharmaceutical Economics
and the Drug Distribution System

www.DrugChannels.net

ABOUT DRUG CHANNELS INSTITUTE

[Drug Channels Institute \(DCI\)](#), a division of Pembroke Consulting, Inc., is a leading provider of specialized management education for and about the pharmaceutical industry.



Drug Channels Institute combines Dr. Fein’s expertise and cutting-edge analysis—such as this *2018 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers*—into comprehensive, interactive e-learning modules that offer your team a thorough grounding in crucial industry topics. These online learning tools explain highly complex economic and business data and concepts so that you can:

- Make better decisions to achieve your business goals
- Improve relationships with key accounts
- Understand your customers, channels, and the economics of the U.S. pharmaceutical industry

View a module list at <http://drugchannelsinstitute.com/products/e-learning-modules/>.

DCI can code and brand any module for your company’s internal Learning Management System. Or you can get started quickly by letting us host your team via our online e-learning portal. DCI’s hosted e-learning modules are instantly viewable on all computer platforms, including iPads.

To learn more about how Drug Channels Institute can help your business, please contact:

Paula Fein, M.S.Ed.
V.P., Business Development
Drug Channels Institute
1515 Market Street, Suite 960
Philadelphia, PA 19102
Phone: 215-523-5700 x11
Website: www.drugchannelsinstitute.com
Email: paula@drugchannelsinstitute.com



INTRODUCTION AND GUIDE TO THIS REPORT

In 2017, U.S. drug channels continued to evolve rapidly. Many trends that we have identified in previous editions of this report accelerated. Notable developments include:

- Total prescription dispensing revenues of retail, mail, long-term care, and specialty pharmacies again exceeded \$400 billion, though revenue growth was below 1%.
- Specialty drugs now account for more than one-third of the pharmacy industry's revenues. Growth for these products was concentrated in central-fill mail pharmacies. Many of these pharmacies are owned by pharmacy benefit managers (PBMs) and health plans, which are now among the industry's largest pharmacies.
- There was fresh controversy over and renewed scrutiny of the impact of manufacturers' rebates in the U.S. drug channel. The Centers for Medicare & Medicaid Services (CMS) began evaluating the possibility of sharing rebates directly with patients.
- Retail pharmacies faced fresh pressures on pharmacy profits, caused by very low prescription growth, a plateau in the generic dispensing rate, the continued use of narrow networks, direct and indirect remuneration (DIR) fees, and intense competition.
- Mergers and acquisitions continued to reshape the industry. Walgreens Boots Alliance agreed to purchase nearly 2,000 Rite Aid stores, completed the formation of AllianceRx Walgreens Prime with Prime Therapeutics, and became a minority investor in the long-term care pharmacy PharMerica. Diplomat Pharmacy was the most active acquirer of specialty pharmacies. It also acquired two small PBMs. Meanwhile, CVS Health announced an unprecedented merger with the health insurer Aetna.

Understanding an Evolving Marketplace

The 2018 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers remains the most comprehensive, fact-based tool for understanding the industry's evolution. This ninth edition integrates information about pharmacy dispensing channels, third-party payers, pharmacy benefit managers (PBMs), patients' financial contributions, and drug wholesalers. It will aid pharmaceutical manufacturers, wholesalers, pharmacists, pharmacy owners, hospitals, buyers, benefit managers, managed care executives, policy analysts, investors, consultants—anyone who wants to understand and benefit from this ever-changing industry.

This definitive, nonpartisan resource synthesizes a wealth of statistical data, research studies, financial information, and my own unique business consulting experience. It's the ultimate guide to the complex web of interactions within the U.S. prescription distribution and reimbursement system. It contains the most current financial and industry data along with information about the strategies and market positions of the largest companies.



Thousands of companies operate within the U.S. system, enabling more than 5.8 billion equivalent prescriptions to be dispensed and paid. The table below highlights the largest public companies that operate in the drug channel. Many of these firms are among the largest businesses on the *Fortune* 500 list.

Major Public Companies Operating in Pharmacy Drug Channels

Company	Stock Ticker	Primary U.S. Channel Role
CVS Health	CVS	Chain drugstore/Pharmacy benefit manager
Diplomat Pharmacy	DPLO	Specialty pharmacy
Kroger	KR	Supermarket with pharmacy
Rite Aid Corporation ¹	RAD	Chain drugstore/Pharmacy benefit manager
PharMerica ²	PMC	Long-term care pharmacy
Walgreens Boots Alliance	WBA	Chain drugstore
Walmart Stores, Inc.	WMT	Mass merchant with pharmacy
AmerisourceBergen Corp.	ABC	Pharmaceutical wholesaler
Cardinal Health, Inc.	CAH	Pharmaceutical wholesaler
McKesson Corporation	MCK	Pharmaceutical wholesaler
Express Scripts, Inc.	ESRX	Pharmacy benefit manager/Mail & specialty pharmacy
Humana Pharmacy Solutions	HUM	Pharmacy benefit manager/Mail & specialty pharmacy
OptumRx (UnitedHealth Group)	UNH	Pharmacy benefit manager/Mail & specialty pharmacy

1. In 2017, Rite Aid agreed to sell nearly 2,000 of its locations to Walgreens Boots Alliance

2. In 2017, PharMerica was acquired by investment firm KKR and Walgreens Boots Alliance (WBA). Its common stock stopped trading in December 2017.

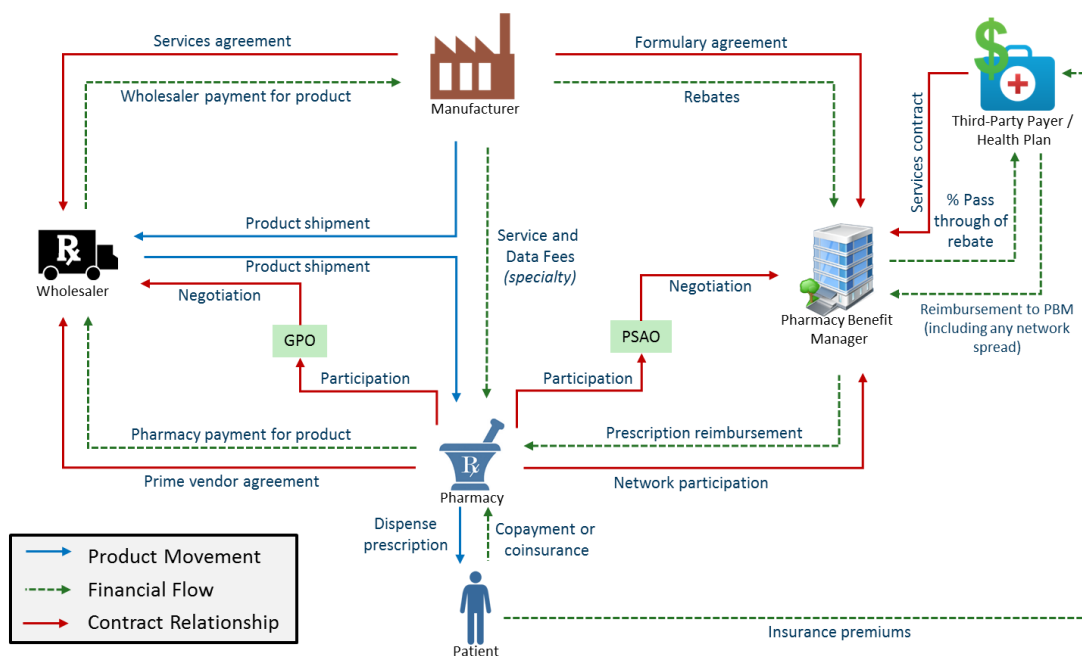
Source: Drug Channels Institute research

These and other companies discussed in this report operate within a complex distribution and reimbursement system, illustrated on the next page. We discuss three key channel flows in *The 2018 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers*:

- **Product movement**, which traces shipments from pharmaceutical manufacturers to the drug wholesalers that supply pharmacies. Retail, mail, long-term care, and specialty pharmacies mark the final step in which a prescription is dispensed to a patient.
- **Financial flows**, which transfer money from third-party payers to pharmacy benefit managers (PBMs), which in turn reimburse pharmacies. Funds flow to manufacturers via pharmacies, which purchase drugs from wholesalers. Funds flow from manufacturers in the form of rebates to PBMs. The PBMs share a portion of these payments with plan sponsors, reducing net prescription costs. Manufacturers' rebates to PBMs and other third-party payers do not flow through wholesale or retail channels.
- **Contractual relationships**, which govern the relationships between: 1) payers and PBMs; 2) PBMs and pharmacies; 3) pharmacies and wholesalers; 4) wholesalers and manufacturers; and 5) manufacturers and PBMs.

We trace these flows in the chart on the next page. In Sections II and III, we revisit the chart below to associate each flow with the corresponding chapters that explain and analyze it. That supplemental version of the chart appears as [Exhibit 56](#) (page 90).

The U.S. Pharmacy Distribution and Reimbursement System for Patient-Administered, Outpatient Brand-Name Drugs



GPO = Group Purchasing Organization; PSAO = Pharmacy Services Administrative Organization
 Source: Drug Channels Institute research. Chart illustrates flows for Patient-Administered, Outpatient Drugs. Please note that this chart is illustrative. It is not intended to be a complete representation of every type of product movement, financial flow, or contractual relationship in the marketplace.

Structure of the 2018 Report

The 2018 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers retains the structure of last year’s edition, and the chapters correspond to those of previous editions. We have updated all market and industry data with the most current information available, including our annual analyses of the market positions of the largest pharmacies and PBMs.

Many sections and chapters have been expanded or reorganized to better cover the latest industry developments. Significant updates in this 2018 edition include:

- The Industry Overview ([Chapter 1](#)) has been streamlined to provide a more straightforward introduction to the industry and its participants.
- Our analysis and data on specialty drugs and specialty pharmacies in [Chapter 3](#) have been expanded to account for continued growth in this part of the market. Note that historical revenue data for specialty dispensing revenues are somewhat higher than the figures reported in previous editions of this report. We explain this issue in our updated analysis of the specialty pharmacy industry market size.

- [Chapter 5](#) now includes additional information and data concerning manufacturer rebates to various third-party payers. We have also added new material on the Medicaid Drug Rebate Program and on direct and indirect remuneration (DIR) in Medicare Part D.
- In [Chapter 6](#), the data on patient out-of-pocket expenses have been expanded and reorganized. We now include additional data on cost sharing for different payer types, new information on average out-of-pocket spending, and a new discussion of point-of-sale (POS) rebates.
- [Chapter 10](#) includes additional data on how pharmacies participate in the 340B Drug Pricing Program. This chapter also adds an expanded discussion of how DIR fees affect pharmacy profits.
- Additional historical trending information has been added throughout the report.

This report analyzes the industry in three major sections, comprising ten total chapters:

SECTION I: THE U.S. PHARMACY INDUSTRY

- [Chapter 1: Industry Overview](#) (page 8) provides a foundation for the entire report. It defines the industry and its regulatory framework, describes the different products and prescriptions that a pharmacy dispenses, delineates among different pharmacy industry participants, and quantifies differences among dispensing formats. This chapter includes our updated analysis of retail clinics and pharmacist-provided clinical services, including medication therapy management services.
- [Chapter 2: Pharmacy Industry Market Structure](#) (page 34) analyzes the industry's prescription and revenue growth trends. It identifies the largest pharmacies based on prescription revenues. It then analyzes recent market share trends for each dispensing format and for the major national companies.
- [Chapter 3: Specialty Drugs and Specialty Pharmacies](#) (page 53) provides a comprehensive overview of the pharmacies dispensing specialty medications. It includes our exclusive analysis of national market share for pharmacy-dispensed specialty drugs. It also provides a competitive analysis of the various organizations that compete to dispense specialty medications. The chapter also reviews the channel strategies that pharmaceutical manufacturers use for specialty drugs and considers the outlook for pharmacy-dispensed biosimilars.

SECTION II: THIRD-PARTY PAYMENT AND PHARMACY BENEFITS

- **Chapter 4: Payment and Spending for Prescription Drugs** (page 91) examines the primary payers for prescription drugs at retail, mail, long-term care, and specialty pharmacies. It analyzes recent changes in the payer mix and spending on traditional vs. specialty drugs. It presents the outlook for net prescription drug spending, gross spending changes on traditional and specialty drugs, and the future payer mix. Chapter 4 also provides our updated projections for the pharmacy industry’s product mix and revenues in 2022.
- **Chapter 5: Pharmacy Benefit Management** (page 106) has been expanded and reorganized for the 2018 edition. It identifies the services of pharmacy benefit managers (PBMs) and describes the structure of the PBM industry. The chapter explores rebate negotiations with manufacturers, explains trends in gross-to-net drug prices, and reveals the impact of rebates on third-party payers. Chapter 5 also describes the relationship between PBMs and the pharmacies that participate in a PBM’s network, reviews how pharmacy services administrative organizations (PSAOs) intermediate between retail pharmacies and PBMs, and explains how plan sponsors compensate PBMs for benefit management services.
- **Chapter 6: Consumer Copayments and Coinsurance** (page 139) analyzes the benefit designs and plan structures that determine patients’ out-of-pocket spending for the major third-party payers: employer-sponsored health plans, Health Insurance Marketplace (HIM) plans, Medicare Part D, and Medicaid. We also explore manufacturers’ copay offset programs and present new data on patient out-of-pocket expenses.
- **Chapter 7: Narrow Pharmacy Networks** (page 163) analyzes the structure, utilization, and economics of narrow network models. We explain the use and economics of narrow networks for pharmacies in commercial health plans and Medicare Part D. We review the use of mail and retail pharmacies as narrow network options for maintenance prescriptions. This chapter also evaluates the latest data on payer-defined networks for specialty drug dispensing.

SECTION III: DRUG CHANNEL ECONOMICS

- **Chapter 8: Prescription Reimbursement by Third-Party Payers** (page 184) explains the current formulas and methodologies for computing a pharmacy’s revenue from brand-name, generic, and specialty prescriptions. This chapter compares traditional list price methods with acquisition-cost reimbursement approaches. We also review the economics of mail vs. retail pharmacies for payers and consumers. The chapter concludes by illustrating how prescription reimbursement, formulary rebates, and consumer copayments affect a plan sponsor’s net costs for a typical traditional and specialty prescription.

- [Chapter 9: Relationships With Pharmaceutical Wholesalers](#) (page 200) explores pharmacies' interactions with their primary wholesale suppliers of drugs. It explains wholesalers' channel roles and services, identifies the largest wholesale suppliers, and analyzes how wholesalers affect pharmacies' acquisition costs for drugs. We present our latest data on pharmacy group purchasing organizations and the generic sourcing relationships between wholesalers and large pharmacies.
- [Chapter 10: Pharmacy and Prescription Profitability](#) (page 215) unites the reimbursement and cost discussion from Chapters 8 and 9 by presenting the latest data on pharmacy and prescription profitability. This chapter documents overall drugstore profitability, pharmacy margins for prescriptions from different dispensing formats, profit differences between brand and generic prescriptions, and PBMs' per-prescription profits from network and mail pharmacies. Chapter 10 includes new material on the per-prescription DIR fee payments that pharmacies make to PBMs and health plans. Finally, we consider pharmacies' role and profits in the 340B Drug Pricing Program.

How to Use the 2018 Report

The chapters are self-contained and do not need to be read in order. We include extensive internal clickable hyperlinks to help you navigate the entire document and customize it to your specific needs. After clicking a link, use the following shortcuts to return to your previous location in the document:

- Windows: **ALT+Left Arrow**
- Mac: **Command+Left Arrow**

There are nearly 500 [endnotes](#), most of which have hyperlinks to original source materials. The report also includes a list of the [Acronyms and Abbreviations](#) used within it. To search the entire PDF document for every occurrence of a word or phrase, use the following keyboard shortcuts:

- Windows: **Shift+CTRL+F**
- Mac: **Shift+Command+F**

As always, I welcome your feedback. Please contact me if you have any questions or comments about *The 2018 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers*.

Adam J. Fein
February 2018

P.S. [Click here for post-publication errata.](#)

CONTENTS

PREFACE: INDUSTRY TRENDS AND KEY REPORT THEMES	1
SECTION I: THE U.S. PHARMACY INDUSTRY	7
Chapter 1: Industry Overview	8
1.1. Pharmacy Fundamentals.....	8
1.1.1. Defining the Practice of Pharmacy.....	8
1.1.2. Pharmacies and the Drug Supply Chain Security Act.....	9
1.2. The Products That Pharmacies Dispense	11
1.2.1. Brand vs. Generic Drugs.....	11
1.2.2. Traditional vs. Specialty Drugs	13
1.2.3. Top Therapy Classes and Average Prescription Costs.....	15
1.3. Pharmacy Industry Participants	17
1.3.1. Pharmacy Dispensing Formats.....	17
1.3.2. Differences Among Outpatient Retail Dispensing Formats	18
1.3.3. Pharmacist Salaries and Employment.....	22
1.4. Healthcare and Clinical Services	25
1.4.1. Retail Clinics	25
1.4.2. Medication Therapy Management (MTM), Clinical Services, and Provider Status	28
1.4.3. Immunization	32
Chapter 2: Pharmacy Industry Market Structure.....	34
2.1. Industry Trends	34
2.1.1. Total and 30-Day Equivalent Prescriptions.....	34
2.1.2. Prescription Dispensing Revenues	36
2.2. National Prescription Dispensing Market Share, by Company	37
2.3. Trends by Dispensing Format.....	39
2.3.1. Revenues, Prescriptions, and Number of Pharmacies: 2012 to 2017 Trends	39
2.3.2. Market Changes in 2017	41
2.3.3. National Retail Chains	42
2.3.4. Regional Drugstore Chains.....	46
2.3.5. Independent Pharmacies	47

2.3.6. Mail Pharmacies.....	50
Chapter 3: Specialty Drugs and Specialty Pharmacies	53
3.1. Specialty Pharmacies.....	53
3.1.1. Defining Specialty Pharmacy.....	53
3.1.2. Clinical and Data Services	54
3.1.3. Accreditation.....	57
3.2. Specialty Pharmacy Market Structure	59
3.2.1. Specialty Pharmacy Industry Market Size.....	59
3.2.2. Number of Accredited Specialty Pharmacies.....	61
3.2.3. National Market Share for Specialty Dispensing, by Company	62
3.2.4. Mergers and Acquisitions Among Specialty Pharmacies in 2017	63
3.3. Trends by Specialty Dispensing Format	65
3.3.1. Overview	65
3.3.2. Pharmacy Benefit Managers and Health Plans.....	67
3.3.3. Independent Specialty Pharmacies.....	69
3.3.4. Retail Community Pharmacies.....	72
3.3.5. Hospitals and Health Systems.....	74
3.3.6. Physician Practices	76
3.3.7. Pharmaceutical Wholesalers.....	79
3.4. Manufacturer Channel Strategies for Specialty Drugs.....	80
3.4.1. Manufacturer-Defined Dispensing Networks	80
3.4.2. Manufacturers’ Distribution Strategies for Specialty Drugs	82
3.4.3. Specialty Hub Services	84
3.5. The Outlook for Pharmacy-Dispensed Biosimilars.....	85
SECTION II: THIRD-PARTY PAYMENT AND PHARMACY BENEFITS.....	90
Chapter 4: Payment and Spending for Prescription Drugs	91
4.1. U.S. Healthcare Spending.....	91
4.1.1. Enrollment in Health Insurance	91
4.1.2. Prescription Drugs and U.S. Healthcare Spending	92
4.2. Payer and Spending Trends.....	95
4.2.1. Payment for Outpatient Prescription Drugs	95

4.2.2. Trends in Drug Spending, by Payer	96
4.2.3. Trends in Drug Spending: Traditional vs. Specialty	98
4.2.4. Deconstructing Changes in Cost vs. Utilization.....	100
4.3. The Drug Spending Outlook	101
4.3.1. Generic Drugs and the Specialty Boom.....	101
4.3.2. U.S. Net Drug Spending Projections.....	103
4.3.3. Projections for Payment for Outpatient Prescription Drugs	104
Chapter 5: Pharmacy Benefit Management	106
5.1. Overview of Pharmacy Benefit Management.....	106
5.1.1. Services for Plan Sponsors	107
5.1.2. Formulary Development and Management	108
5.1.3. Utilization Management	109
5.2. PBM Industry Structure.....	112
5.2.1. National Market Share, by PBM.....	112
5.2.2. Business Strategies of Largest PBMs.....	113
5.3. Rebates.....	116
5.3.1. Gross-to-Net Drug Pricing	117
5.3.2. How Commercial Payers Access Rebates.....	120
5.3.3. Rebates and DIR in Medicare Part D.....	122
5.3.4. The Medicaid Drug Rebate Program.....	124
5.3.5. Formulary Exclusions	126
5.4. Relationships Between PBMs and Pharmacies	129
5.4.1. Pharmacy Participation in PBM Networks	129
5.4.2. PBM-Pharmacy Negotiations	130
5.4.3. Pharmacy Services Administrative Organizations (PSAOs)	130
5.5. PBM Compensation by Plan Sponsors	134
5.5.1. Spread Pricing	135
5.5.2. Pass-Through Pricing.....	136
5.5.3. Plan Sponsors' Satisfaction With PBMs	137
Chapter 6: Consumer Copayments and Coinsurance	139
6.1. Cost Sharing in Pharmacy Benefit Design	139

6.1.1. Employer-Sponsored Health Plans.....	140
6.1.2. Health Insurance Marketplace Plans	144
6.1.3. Medicare Part D	147
6.1.4. Medicaid	151
6.2. Manufacturer Out-of-Pocket Payment Support	151
6.2.1. Copayment Offset Programs.....	151
6.2.2. Patient Assistance Programs.....	155
6.3. Out-of-Pocket Expenses	156
6.3.1. Average Patient Out-of-Pocket Spending on Prescriptions	156
6.3.2. Point-of-Sale (POS) Rebates	160
Chapter 7: Narrow Pharmacy Networks	163
7.1. Overview of Pharmacy Benefit Network Models.....	163
7.1.1. Network Options.....	163
7.1.2. The Appeal of Narrow Networks	165
7.1.3. Legal and Regulatory Restrictions on Network Design	167
7.2. Retail Pharmacy Networks.....	168
7.2.1. Preferred Retail Networks in Medicare Part D	168
7.2.2. Narrow Retail Networks in Commercial and Other Plans.....	175
7.2.3. Narrow Networks for Maintenance Prescriptions.....	176
7.3. Payer-Defined Specialty Dispensing Networks	179
SECTION III: DRUG CHANNEL ECONOMICS	183
Chapter 8: Prescription Reimbursement by Third-Party Payers.....	184
8.1. The Basics of Prescription Reimbursement	184
8.1.1. Estimated Acquisition Cost (EAC).....	184
8.1.2. Dispensing Fees.....	186
8.1.3. Service and Data Fees	187
8.2. Reimbursement for Brand-Name and Specialty Prescriptions	189
8.2.1. Wholesale Acquisition Cost (WAC) and Average Wholesale Price (AWP) List Prices	189
8.2.2. Average AWP Discounts for Pharmacy Reimbursement	190
8.2.3. Why Mail Pharmacies Accept Lower Reimbursements	191
8.3. Reimbursement for Generic Prescriptions.....	192

8.3.1. Challenges for List-Price Benchmarks	192
8.3.2. Maximum Allowable Cost (MAC) Limits.....	192
8.3.3. Regulations and Laws Regarding MAC Limits	193
8.3.4. Medicaid and Federal Upper Limits	194
8.4. Acquisition Cost Reimbursement.....	195
8.5. How Prescription Reimbursement, Formulary Rebates, Consumer Copayments, and PBM Expenses Affect Plan Sponsor Costs	196
Chapter 9: Relationships With Pharmaceutical Wholesalers	200
9.1. Overview of Wholesale Drug Channels.....	200
9.1.1. Industry Participants	200
9.1.2. Product Distribution.....	201
9.1.3. Financial Intermediation	202
9.1.4. Influence on Pharmacy Reimbursement.....	203
9.2. Wholesalers’ Relationships With Pharmacies.....	203
9.2.1. Services for Smaller Pharmacies	203
9.2.2. Wholesale Suppliers to the Largest U.S. Pharmacies.....	205
9.3. Determinants of Pharmacies’ Acquisition Costs	207
9.3.1. Wholesaler Pricing of Brand-Name Drugs to Pharmacies	207
9.3.2. Wholesaler Pricing Trends for Specialty Drugs	209
9.3.3. Pharmacy Group Purchasing Organizations.....	210
9.3.4. Generic Sourcing Relationships Between Wholesalers and Large Pharmacies	212
Chapter 10: Pharmacy and Prescription Profitability	215
10.1. Overall Drugstore Gross Margins	215
10.1.1. Industry Averages	215
10.1.2. Chain Drugstores.....	217
10.2. Pharmacy Per-Prescription Profits	217
10.2.1. Sources of Per-Prescription Profits	217
10.2.2. Average Per-Prescription Profits for Pharmacies	218
10.2.3. PBM Per-Prescription Profits from Network and PBM-Owned Pharmacies.....	221
10.2.4. The Impact of Brand-Name Inflation on Prescription Profits	223
10.2.5. Pharmacy Profits With Acquisition Cost-Based Reimbursement	225

10.3. Profitability for Generic Prescriptions.....	226
10.3.1. Lifecycle Profits for Traditional Generic Drugs	226
10.3.2. Generic Price Deflation and Inflation.....	230
10.3.3. Cash-Pay Prescriptions.....	233
10.4. DIR Fees in Medicare Part D Networks	235
10.4.1. Computation of DIR Fees	235
10.4.2. Financial Impact of DIR Fees	236
10.4.3. Controversy Over DIR Fees	238
10.5. Pharmacy Profits from the 340B Drug Pricing Program	238
10.5.1. Overview of the 340B Program.....	239
10.5.2. 340B Contract Pharmacies.....	239
10.5.3. Flow of Funds With a Contract Pharmacy.....	242
10.5.4. Pharmacy and Covered Entity Profits from 340B Prescriptions	243
10.5.5. 2018 Outlook for the 340B Program.....	244
Acronyms and Abbreviations	246
Endnotes	247

LIST OF EXHIBITS

Exhibit 1: Timeline of DSCSA Requirements for Pharmacies (Dispensers), 2013-2023	9
Exhibit 2: Unbranded and Branded Generics, Share of U.S. Prescriptions, 2002-2022F	12
Exhibit 3: Generic Dispensing Rate, Top Traditional vs. Specialty Therapy Classes, 2016.....	14
Exhibit 4: Top Traditional Therapy Categories and Average Prescription Cost, 2016	16
Exhibit 5: Top Specialty Therapy Categories and Average Prescription Cost, 2016	16
Exhibit 6: Long-Term Care Pharmacy, Customer Mix, by Pharmacy Ownership, 2015	18
Exhibit 7: Average Annual Number of Prescriptions per Pharmacy, by Retail Dispensing Format, 2017	19
Exhibit 8: Average Annual Prescription Revenue per Pharmacy Outlet, by Retail Dispensing Format, 2017	20
Exhibit 9: Average Revenue per 30-Day Equivalent Prescription, by Dispensing Format, 2012-2017	20
Exhibit 10: Top Four Reasons for Pharmacy Selection, by Dispensing Format, 2016.....	21
Exhibit 11: Customer Satisfaction With Pharmacies, by Dispensing Format, 2017	22
Exhibit 12: Pharmacist Employment and Salaries, by Dispensing Format, 2016	22
Exhibit 13: Pharmacists and Healthcare Workers, Change in Annual Average Salary, by Employer, 2011-2016	23
Exhibit 14: Pharmacist Employment, by Industry and Dispensing Format, 2016 vs. 2026.....	24
Exhibit 15: Number of U.S. Retail Clinics, 2004-2017	25
Exhibit 16: Number of Retail Clinics, by Chain Location, 2018	26
Exhibit 17: Providers of Medication Therapy Management Services, Medicare Part D, 2016 vs. 2017.....	30
Exhibit 18: Current Procedural Terminology (CPT) Codes Used by Pharmacists.....	31
Exhibit 19: Adult Influenza Vaccination, by Place of Vaccination, 2012-13 vs. 2017-18	32
Exhibit 20: Consumer Use of Immunization Shots, by Dispensing Format, 2016	33
Exhibit 21: Total U.S. Pharmacy Industry Prescription Revenues, Prescriptions, and Locations, by Dispensing Format, 2017	34
Exhibit 22: Prescriptions, Annual Total and Growth, 2012-2017	35
Exhibit 23: 30-Day Equivalent Prescriptions, Annual Total and Growth, 2012-2017	35
Exhibit 24: 90-Day Prescriptions As a Percentage of Total Prescriptions, by Dispensing Format, 2012 vs. 2017	36
Exhibit 25: Pharmacy Industry Prescription Revenues, Annual Total and Growth, 2012-2017	37
Exhibit 26: Largest 15 U.S. Pharmacies, by Total Prescription Revenues, 2017	38
Exhibit 27: Total Change in 30-Day Equivalent Prescriptions Dispensed and Prescription Revenues, by Pharmacy Format, 2012-2017E	40
Exhibit 28: Prescriptions Dispensed per Location, Chain Drugstores vs. Independent Pharmacies, 2008-2017	40
Exhibit 29: Number of 30-Day Equivalent Prescriptions, by Dispensing Format, 2016 vs. 2017E	41
Exhibit 30: Prescription Dispensing Revenues, by Dispensing Format, 2016 vs. 2017E	42
Exhibit 31: Year-Over-Year Change in Same-Store Prescription Count, by Chain, 2013-2017	43
Exhibit 32: Largest Regional Chain Drugstores, by Total Prescription Revenues, 2016	46
Exhibit 33: Number of Independent Pharmacies, 1992-2017	47

Exhibit 34: Pharmacy Franchise and Marketing Programs, 2016	49
Exhibit 35: Share of Mail Pharmacy Dispensing Revenues, by Company, 2017	52
Exhibit 36: Employer Perceptions of Specialty vs. Retail Pharmacies, 2014 vs. 2017	57
Exhibit 37: Specialty Prescription Dispensing Revenues, Annual Total and Growth, 2012-2017	59
Exhibit 38: Specialty Drugs As a Percentage of Pharmacy Industry Prescription Revenues, 2011-2017	60
Exhibit 39: Specialty Drugs As a Percentage of Pharmacy Benefit Spending, by PBM, 2011 vs. 2016	60
Exhibit 40: Number of Pharmacy Locations With Specialty Pharmacy Accreditation, by Organization, 2015 to 2017	61
Exhibit 41: Locations With URAC Specialty Pharmacy Accreditation, 2008-2018E	62
Exhibit 42: Prescription Revenues and Market Share from Specialty Pharmaceuticals, by Company, 2017	63
Exhibit 43: Merger and Acquisition Transactions, Specialty Pharmacy and Infusion Services, 2007-2016	63
Exhibit 44: Pharmacy Locations With Specialty Pharmacy Accreditation, by Corporate Ownership, 2015 vs. 2016 ..	65
Exhibit 45: Specialty Drug Prescription Revenues, by Dispensing Format, 2017	66
Exhibit 46: Specialty Drug Spending, by Dispensing Channel and Therapeutic Class, 2017	67
Exhibit 47: Fastest-Growing Private Specialty Pharmacies, 2016	71
Exhibit 48: Retail Chains With Specialty Pharmacy Businesses, 2017	73
Exhibit 49: Hospital Ownership of Specialty Pharmacy, by Number of Staffed Beds, 2016	75
Exhibit 50: Percentage of Oncology Practices With In-Practice Oral Oncology Drug Dispensing, 2013-2016	77
Exhibit 51: Patient-Administered Oncology Volume, by Dispensing Channel, 2016	78
Exhibit 52: Alternative Channels to Specialty Pharmacies in Limited Dispensing Networks	82
Exhibit 53: Diplomat Pharmacy, Drug Purchases, by Supplier, 2012-2017	83
Exhibit 54: Leading Specialty Hub Services Providers, 2017	85
Exhibit 55: Number of U.S. Biosimilar Development Programs, 2013 to 2017	86
Exhibit 56: Chapter Coverage of Flows in the U.S. Distribution and Reimbursement System	90
Exhibit 57: Health Insurance Enrollment, by Payer, 2006 vs. 2016	91
Exhibit 58: Share of U.S. National Health Expenditures, by Category, 2016	93
Exhibit 59: Share of U.S. National Health Expenditures, by Major Spending Category, 1977 to 2017	93
Exhibit 60: Outpatient Prescription Drugs As a Share of U.S. National Health Expenditures, by Payer, 2005 vs. 2016	94
Exhibit 61: Prescription Expenses per Person, by Age, 2014	95
Exhibit 62: Source of Payment for Outpatient Prescription Drug Expenditures, 2016	95
Exhibit 63: Change in Net Spending for Outpatient Prescription Drugs, by Payer, 2015 vs. 2016	96
Exhibit 64: Annual Growth in National Health and Outpatient Prescription Drug Expenditures, 2007 to 2016	97
Exhibit 65: Change in Commercial Payer Drug Spending, Traditional vs. Specialty Drugs, by PBM, 2016	98
Exhibit 66: Express Scripts, Change in Drug Spending, Traditional vs. Specialty Drugs, by Payer, 2016	99
Exhibit 67: Components of Change in Commercial Payer Drug Spending, by PBM, 2016	100
Exhibit 68: Components of Change in Specialty Drug Spending, by PBM, 2016	101
Exhibit 69: Brand Revenues Lost to Generic Launches, 2009 to 2022	102

Exhibit 70: Pharmacy Industry Prescription Revenues, Traditional vs. Specialty Drugs, 2012-2022	103
Exhibit 71: Projected Growth Rates in National Health and Outpatient Prescription Drug Expenditures, 2016 to 2026	103
Exhibit 72: Source of Payment for Outpatient Prescription Drug Expenditures, 2022	104
Exhibit 73: Pharmacy Benefit Management Contracting Approach, by Company Size, 2017	108
Exhibit 74: Prevalence of Utilization Management Tools to Manage Specialty Drug Costs, Employer-Sponsored Health Plans, 2015 vs. 2017	111
Exhibit 75: PBM Market Share, by Total Equivalent Prescription Claims Managed, 2017	112
Exhibit 76: Pharmaceutical Manufacturers’ Off-Invoice Discounts, Rebates, and Price Concessions, 2007-2016....	117
Exhibit 77: Price Increases for Brand-Name Drugs, Invoice vs. Net Price Growth, 2011-2016	118
Exhibit 78: Change in List vs. Net Price, by Manufacturer, 2016	118
Exhibit 79: Percentage of Employers Receiving Rebates for Brand and Specialty Drugs, by Employer Size, 2017 ...	120
Exhibit 80: PBM Rebate Arrangements for Traditional Medications in Employer-Sponsored Plans, by Employer Size, 2014 vs. 2017	121
Exhibit 81: PBM Rebate Arrangements for Specialty Medications in Employer-Sponsored Plans, by Employer Size, 2014 vs. 2017	121
Exhibit 82: Manufacturer Rebates As a Percentage of Total Drug Costs, Medicare Part D, 2007 to 2017	123
Exhibit 83: Medicaid Program, Gross Spending and Prescriptions, Fee-For-Service vs. Managed Medicaid, 2016..	125
Exhibit 84: Medicaid, Gross vs. Net Spending on Outpatient Drugs, 2015 to 2016	126
Exhibit 85: Number of Products on PBM Formulary Exclusion Lists, 2012-2018.....	127
Exhibit 86: PBM Formulary Exclusions, by Therapeutic Category, 2018	128
Exhibit 87: Largest Pharmacy Services Administrative Organizations, by Members and Ownership, 2017	132
Exhibit 88: Key Components of PBM Compensation	134
Exhibit 89: Plan Sponsors’ Perceived Transparency of PBM Relationship, by PBM Size, 2017	135
Exhibit 90: Plan Sponsors’ Satisfaction With Their PBMs, by Degree of Transparency, 2016	138
Exhibit 91: Common Pharmacy Benefit Plan Designs	139
Exhibit 92: Distribution of Cost Sharing Formulas for Prescription Drug Benefits in Employer-Sponsored Plans, 2004 vs. 2017.....	140
Exhibit 93: Average Copayments by Prescription Drug Tier, Employer-Sponsored Plans, 2017	141
Exhibit 94: Cost Sharing Arrangements for Prescription Drug Benefits in Employer-Sponsored Plans, 2017.....	142
Exhibit 95: Distribution of Coinsurance Structures for Prescription Drug Benefits, Employer-Sponsored Plans, Fourth and Specialty Tiers, 2017	142
Exhibit 96: Percentage of Employer-Sponsored Plans With Pharmacy Benefit Deductibles, 2012 to 2017	143
Exhibit 97: Percentage of Covered Workers With a Separate Prescription Drug Deductible, by Plan Type, Fourth and Specialty Tiers, 2017	144
Exhibit 98: Average Copayments by Prescription Drug Tier, Bronze and Silver Health Insurance Marketplace Plans, 2017	145
Exhibit 99: Type of Cost Sharing for Prescription Drug Benefits, Health Insurance Marketplace Plans, Silver Plans, 2017	146

Exhibit 100: Percentage of Silver Plans That Place All Covered Drugs in the Class on the Specialty Tier, 2014 to 2016	146
Exhibit 101: Standard Medicare Prescription Drug Benefit, 2017	147
Exhibit 102: Distribution of Cost Sharing Formulas for Medicare Part D Plans, 2017	148
Exhibit 103: Median Copayments by Prescription Drug Tier, Medicare Part D PDPs, 2017	149
Exhibit 104: Prevalence of Coinsurance for Brand-Name Drugs, Medicare Part D Plans, 2016	149
Exhibit 105: Median Cost Sharing Amounts for 10 Largest Medicare Part D Plans, 2017	150
Exhibit 106: Manufacturer Spending on Copay Offset Programs, 2010 to 2017	152
Exhibit 107: Prevalence of Copayment Offset Programs for Specialty Drugs, 2016 vs. 2017	152
Exhibit 108: Average Annual Benefit for Copayment Offset Program, by Specialty Therapy Class, 2016 vs. 2017 ..	153
Exhibit 109: Employer Views on Specialty Copayment Assistance Programs, 2014 vs. 2016	153
Exhibit 110: Largest Pharmaceutical Manufacturer Charitable Foundations, 2014	155
Exhibit 111: Consumers’ Out-of-Pocket Spending Share of Outpatient Prescription Drug Expenditures, 1966-2016	156
Exhibit 112: Average Per-Prescription Patient Out-of-Pocket Costs, by Type of Prescription, 2013 to 2016	157
Exhibit 113: Distribution of Average Per-Prescription Out-of-Pocket Costs, by Type of Prescription, 2016	158
Exhibit 114: Distribution of Annual Patient Out-of-Pocket Costs, by Type of Health Plan, 2017	158
Exhibit 115: Specialty Drugs, Share of Prescriptions and Patient Out-of-Pocket Spending, by Type of Cost-Sharing, 2015	159
Exhibit 116: CVS Health, Quarterly Retail Prescription Revenues, 2014 to 2017	160
Exhibit 117: Employers’ Use of Formulary Rebates, 2017	161
Exhibit 118: Summary of Pharmacy Benefit Network Design Options	164
Exhibit 119: Medicare Part D PDPs With Preferred Pharmacy Networks, 2011-2018	168
Exhibit 120: Median Copayments at Preferred vs. Standard Pharmacies, Medicare Part D, 2016	169
Exhibit 121: Medicare Part D Beneficiary Access, Preferred Pharmacies vs. All Network Pharmacies, 2017	169
Exhibit 122: Participation As Preferred Cost Sharing Pharmacies in Selected Medicare Part D PDPs, by Retail Chain, 2018	171
Exhibit 123: Enrollment in Medicare Part D PDPs With Preferred Cost Sharing Networks, by Pharmacy Chain, 2017 vs. 2018	173
Exhibit 124: Participation As Preferred Cost Sharing Pharmacies in Selected Medicare Part D PDPs, by PSAO, 2018	174
Exhibit 125: Retail Pharmacy Network Design in Employer-Sponsored Plans, 2013 to 2017	175
Exhibit 126: Mandatory Mail Pharmacy Utilization for Maintenance Medications, Employer-Sponsored Plans, 2013 to 2017	177
Exhibit 127: TRICARE, Net Spending on Outpatient Prescriptions, by Dispensing Outlet, 2012-2016	177
Exhibit 128: CVS Health, Maintenance Choice Covered Lives, 2008 to 2017E	178
Exhibit 129: Oral Oncology Agents, by Dispensing Channel, 2009 vs. 2016	181
Exhibit 130: Payer Methodologies for Computing a Pharmacy’s Estimated Acquisition Cost	186
Exhibit 131: AWP Reimbursement and Copayments for Brand-Name Prescriptions, by Dispensing Format, 2017 ..	190

Exhibit 132: AWP Reimbursement and Copayments for Generic Prescriptions, by Dispensing Format, 2017	193
Exhibit 133: Prescription Economics for a Third-Party Payer—Traditional Brand-Name Drug Example.....	197
Exhibit 134: Prescription Economics for a Third-Party Payer—Specialty Brand-Name Drug Example.....	199
Exhibit 135: U.S. Drug Distribution and Related Revenues at Big Three Wholesalers, 2017	200
Exhibit 136: Largest U.S. Pharmacies and Their Primary Wholesale Suppliers, 2017.....	205
Exhibit 137: Determination of a Pharmacy’s Brand-Name Drug Acquisition Cost from a Wholesaler	208
Exhibit 138: Pharmacy Buying Groups and Primary/Preferred Wholesaler Relationships, by Number of Pharmacies, 2017	210
Exhibit 139: Share of U.S. Generic Purchasing Volume, by Organization, 2017	212
Exhibit 140: Overall Gross Margins for Chain and Independent Drugstores, 1996-2015.....	216
Exhibit 141: Total Gross Profits for Chain and Independent Drugstores, 2006-2015.....	216
Exhibit 142: Overall Gross Margins for Chain Drugstores, by Company, 2016.....	217
Exhibit 143: Example of Brand-Name Prescription Economics for a Pharmacy	218
Exhibit 144: Independent Pharmacies, Average Per-Prescription Gross Profits and Margins, 2012 to 2016	219
Exhibit 145: Diplomat Pharmacy, Average Per-Prescription Gross Profits and Margins, 2012 to 2017	220
Exhibit 146: PharMerica, Average Per-Prescription Gross Profits and Margins, 2011-2017	221
Exhibit 147: PBM, Average Per-Prescription Gross Profit and Gross Margin, by Dispensing Channel and Drug Type, 2016.....	222
Exhibit 148: Illustrative Effect of Brand-Name List Price Increases on a Prescription’s Gross Profit	223
Exhibit 149: Lifecycle of Per-Prescription Gross Profits, Brand vs. Multisource Generic	227
Exhibit 150: Median AWP Discount for Generic Drugs Sold to Retail Pharmacies, By Number of Manufacturers, 2017	229
Exhibit 151: Average Generic Price Relative to Brand Price After Loss of Exclusivity	230
Exhibit 152: Gleevec, Average Pharmacy Acquisition Cost, Brand vs. Generic, 2016 to 2018	231
Exhibit 153: Average Year-Over-Year Change in Pricing of Mature Generic Drugs, 2014-2017	231
Exhibit 154: Cash-Pay Prescriptions As Share of Total Prescriptions, 2012 to 2016	233
Exhibit 155: Diplomat Pharmacy, DIR Fees As Percentage of Revenues and Gross Profit, 2016 vs. 2017E	237
Exhibit 156: 340B Contract Pharmacy Locations, by Chain, 2017	240
Exhibit 157: 340B Contract Pharmacy Locations, by Chain, 2013 vs. 2017	240
Exhibit 158: Hospital Systems With the Largest 340B Contract Pharmacy Networks, July 2017	241
Exhibit 159: Flow of Funds and Product for a 340B Contract Pharmacy Network	242
Exhibit 160: Hypothetical Profits for a 340B Entity From a Third-Party Prescription Dispensed by a 340B Contract Pharmacy	244