

# BRIEF CONTENTS

*Preface*.....xv

## **Part I Introduction to Healthcare Operations**

**Chapter 1.** The Challenge and the Opportunity ..... 3  
**Chapter 2.** History of Performance Improvement ..... 21  
**Chapter 3.** Evidence-Based Medicine and Value Purchasing ..... 51  
**Chapter 4.** Use of Technology in Healthcare Delivery..... 69

## **Part II Setting Goals and Executing Strategy**

**Chapter 5.** Strategy and the Balanced Scorecard..... 83  
**Chapter 6.** Project Management ..... 107

## **Part III Performance Improvement Tools, Techniques, and Programs**

**Chapter 7.** Tools for Problem Solving and Decision Making ..... 141  
**Chapter 8.** Healthcare Analytics..... 167  
**Chapter 9.** Quality Improvement in Healthcare ..... 187  
**Chapter 10.** Lean Healthcare ..... 223

## **Part IV Applications to Contemporary Healthcare Operations Issues**

**Chapter 11.** Process Improvement and Patient Flow ..... 251  
**Chapter 12.** Scheduling and Capacity Management..... 293  
**Chapter 13.** Supply Chain Management..... 315  
**Chapter 14.** Improving Financial Performance with Operations  
Management ..... 341

**Part V Putting It All Together for Operational Excellence**

<b>Chapter 15.</b> Emerging Trends in Healthcare .....	361
<b>Chapter 16.</b> Holding the Gains.....	377
<i>Glossary</i> .....	397
<i>Index</i> .....	403
<i>About the Authors</i> .....	405

# DETAILED CONTENTS

*Preface*.....xv

## Part I Introduction to Healthcare Operations

**Chapter 1.** The Challenge and the Opportunity ..... 3  
 Overview ..... 3  
 The Purpose of This Book..... 3  
 The Challenge ..... 4  
 The Opportunity..... 10  
 A Systems Look at Healthcare ..... 12  
 An Integrating Framework for Operations  
     Management in Healthcare ..... 15  
 Conclusion..... 18  
 Discussion Questions ..... 18  
 References..... 19

**Chapter 2.** History of Performance Improvement ..... 21  
 Overview ..... 21  
 Operations Management in Action ..... 21  
 Background..... 22  
 Knowledge-Based Management..... 24  
 History of Scientific Management..... 26  
 Project Management ..... 30  
 Introduction to Quality..... 32  
 Philosophies of Performance Improvement..... 39  
 Supply Chain Management..... 43  
 Big Data and Analytics ..... 44  
 Conclusion..... 45  
 Discussion Questions ..... 46  
 References..... 46

**Chapter 3.** Evidence-Based Medicine and Value Purchasing ..... 51  
 Overview ..... 51  
 Operations Management in Action ..... 51

	Evidence-Based Medicine .....	52
	Tools to Expand the Use of Evidence-Based Medicine .....	58
	Clinical Decision Support .....	64
	The Future of Evidence-Based Medicine and Value Purchasing.....	65
	Vincent Valley Hospital and Health System and Pay for Performance .....	65
	Conclusion.....	66
	Discussion Questions .....	66
	Note .....	67
	References.....	67
<b>Chapter 4.</b>	Use of Technology in Healthcare Delivery.....	69
	Overview .....	69
	Operations Management in Action .....	69
	Introduction .....	69
	Information Flows and Types of HIT .....	70
	Impact of HITs .....	72
	Adoption and Assimilation of HITs .....	75
	Challenges with HIT Use.....	76
	Conclusion.....	78
	Discussion Questions .....	78
	References.....	78
 <b>Part II Setting Goals and Executing Strategy</b>		
<b>Chapter 5.</b>	Strategy and the Balanced Scorecard.....	83
	Overview .....	83
	Operations Management in Action .....	83
	Moving Strategy to Execution .....	84
	The Balanced Scorecard as Part of a Strategic Management System.....	87
	Elements of the Balanced Scorecard System.....	88
	Conclusion.....	105
	Discussion Questions .....	105
	Exercises .....	105
	References.....	106
<b>Chapter 6.</b>	Project Management .....	107
	Overview .....	107
	Operations Management in Action .....	107

Definition of a Project .....	109
Project Selection and Chartering .....	110
Project Scope and Work Breakdown .....	117
Scheduling .....	123
Project Control .....	127
Quality Management, Procurement, the Project Management Office, and Project Closure .....	130
Agile Project Management .....	134
The Project Manager and Project Team .....	135
Conclusion .....	137
Discussion Questions .....	137
Exercises .....	137
References .....	138

### Part III Performance Improvement Tools, Techniques, and Programs

<b>Chapter 7.</b> Tools for Problem Solving and Decision Making .....	141
Overview .....	141
Operations Management in Action .....	141
Decision-Making Framework .....	142
Mapping Techniques .....	144
Problem Identification Tools .....	148
Analytical Tools .....	158
Implementation: Force Field Analysis .....	162
Conclusion .....	164
Discussion Questions .....	164
Exercises .....	164
References .....	165
<b>Chapter 8.</b> Healthcare Analytics .....	167
Overview .....	167
Operations Management in Action .....	167
What Is Analytics in Healthcare? .....	167
Introduction to Data Analytics .....	170
Data Visualization .....	175
Data Mining for Discovery .....	181
Conclusion .....	184
Discussion Questions .....	185
Note .....	185
References .....	185

<b>Chapter 9.</b>	Quality Improvement in Healthcare .....	187
	Overview .....	187
	Operations Management in Action .....	187
	Pharmacist-Led Project Reduces Cost of Care .....	187
	Optimizing Sepsis Care Improves Early Recognition and Outcomes .....	188
	Systematic, Data-Driven Approach Lowers Length of Stay and Improves Care Coordination .....	188
	Defining Quality .....	189
	Cost of Quality.....	190
	Quality Analytics and Dashboards.....	191
	The Six Sigma Quality Program.....	193
	Additional Quality Tools .....	208
	Riverview Clinic Six Sigma Generic Drug Project .....	213
	Conclusion.....	216
	Discussion Questions .....	218
	Exercises .....	218
	References.....	220
<b>Chapter 10.</b>	Lean Healthcare .....	223
	Overview .....	223
	Operations Management in Action .....	223
	What Is Lean? .....	224
	Types of Waste .....	225
	The Lean Dashboard.....	226
	The Lean Toolkit .....	228
	Kaizen.....	240
	The Merging of Lean and Six Sigma Programs .....	243
	Conclusion.....	245
	Discussion Questions .....	245
	Exercises .....	245
	References.....	246
 <b>Part IV Applications to Contemporary Healthcare Operations Issues</b>		
<b>Chapter 11.</b>	Process Improvement and Patient Flow .....	251
	Overview .....	251
	Operations Management in Action .....	251
	Problem Types .....	252
	Patient Flow.....	253
	Process Improvement Approaches .....	254

	The Science of Lines: Queuing Theory .....	264
	Process Improvement in Practice .....	276
	Conclusion.....	290
	Discussion Questions .....	291
	Exercises .....	291
	References .....	292
<b>Chapter 12.</b>	Scheduling and Capacity Management.....	293
	Overview .....	293
	Operations Management in Action .....	293
	Hospital Census and Rough-Cut Capacity Planning .....	294
	Staff Scheduling .....	296
	Job and Operation Scheduling and Sequencing Rules ....	300
	Patient Appointment Scheduling Models .....	304
	Advanced-Access Patient Scheduling.....	307
	Conclusion.....	311
	Discussion Questions .....	311
	Exercises .....	311
	References.....	312
<b>Chapter 13.</b>	Supply Chain Management.....	315
	Overview .....	315
	Operations Management in Action .....	315
	Supply Chain Management.....	316
	Tracking and Managing Inventory.....	316
	Demand Forecasting .....	319
	Order Amount and Timing .....	324
	Inventory Systems .....	331
	Procurement and Vendor Relationship Management.....	333
	Group purchasing organizations .....	334
	Care Coordination and Supply Chain Challenges.....	334
	Strategic View .....	335
	Conclusion.....	336
	Discussion Questions .....	336
	Exercises .....	337
	References.....	338
<b>Chapter 14.</b>	Improving Financial Performance with Operations	
	Management .....	341
	Overview: The Financial Pressure for Change .....	341
	Operations Management in Action .....	341

Making Ends Meet on Medicare Revenue and the Pressure of Narrow Networks .....	343
Conclusion.....	355
Discussion Questions .....	357
Exercises .....	358
Note .....	358
References.....	358

## **Part V Putting It All Together for Operational Excellence**

<b>Chapter 15.</b> Emerging Trends in Healthcare .....	361
Overview: Emerging Trends In Healthcare .....	361
Operations Management in Action .....	361
Introduction .....	361
Patient-Centered Care.....	362
Blockchain and Decentralized Applications in Healthcare .....	364
Virtual Care .....	367
Home Health.....	368
Care Providers' Involvement in Population Health .....	371
Other Advancements in Healthcare .....	372
Conclusion.....	375
Discussion Questions .....	375
References.....	375
 <b>Chapter 16.</b> Holding the Gains.....	377
Overview .....	377
Approaches to Holding Gains.....	377
Which Tools to Use: A General Algorithm.....	382
Data and Analytics .....	390
Operational Excellence .....	390
The Healthcare Organization of the Future .....	393
Conclusion.....	394
Discussion Questions .....	394
Case Study .....	394
References.....	395
 <i>Glossary</i> .....	397
<i>Index</i> .....	403
<i>About the Authors</i> .....	405