

SECOND EDITION

HEALTH CARE OPERATIONS MANAGEMENT

A Systems Perspective

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Courtesy of James Langabeer II, PhD, MBA

care research and teaching. Dr. Langabeer was the founding chief executive officer of Greater Houston Healthconnect (the regional health information network serving Southeast Texas) and helped move the organization from concept to reality. He was the executive vice president of a technology and consulting firm based in Boston that was widely touted as “best of class” in thought leadership on predictive modeling and business intelligence. He has lived and/or worked extensively in Boston, London, Paris, Rotterdam, and Tel Aviv, as well as Houston. He has served on the faculties of the University of Texas, Boston University, and Baylor College of Medicine.

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Courtesy of Jeffrey Helton

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Table of Contents

	List of Figures and Tables.....	xvii
	New to the Second Edition	xxi
	Preface	xxv
PART I	Operations, Systems, and Financial Management.....	1
Chapter 1	Health Care Operations and Systems Management..	3
	The Role of Health Care Operations Management.....	3
	Key Functions of Health Care Operations Management	6
	The Need for Operations Management.....	8
	Goals of the Operations Manager	8
	Competitive Advantage of Operations	12
	Factors Driving Increased Health Care Costs	13
	Learning from Other Industries	14
	Principles of Management.....	16
	The Scientific and Mathematical Schools of Management	17
	Management Decision Making	18
	Power and Decision Making in Health Care	22
	The Role of Technology	24
	Trends in Operations Management	25
	Chapter Summary.....	28
	Key Terms	29
	Discussion Questions	29
	Exercise Problems.....	30
	References	30

Chapter 2	Health Care Marketplace	33
	Hospitals Are Big Business	34
	What Is a Hospital?	35
	Teaching Hospitals	38
	Hospital Business Operations.....	41
	Hospital Policies and Regulations.....	43
	Chapter Summary.....	44
	Key Terms	45
	Discussion Questions	45
	References	45
Chapter 3	Health Care Finance for the Operations Manager ..	47
	How Hospitals Are Paid.....	48
	From Retrospective to Prospective.....	49
	Profit Margins.....	52
	Income Statements.....	54
	Income Statement Ratio Analysis.....	57
	Balance Sheet	60
	Working Capital.....	63
	Other Financial Ratios	64
	Cash Flow Statement	65
	Audited Financial Statements.....	67
	Debt in Health Care	68
	Implications for Operations and Logistics Management.....	69
	Chapter Summary.....	70
	Key Terms	70
	Discussion Questions	71
	Exercise Problems.....	71
	References	71
PART II	Quality and Productivity Management.....	73
Chapter 4	Quality Management	75
	Choices for Operations Management: Tools and Techniques	76
	Process	76
	Process Maps.....	78

	Process Improvement Methodology	79
	Improving Service Quality	86
	Quality and Lean Processes	91
	Six Sigma Versus Lean Comparison	94
	Key Questions to Promote Dramatic Changes	94
	Chapter Summary	95
	Key Terms	95
	Discussion Questions	96
	References	96
Chapter 5	Operations Research Methods	97
	Operations Research.....	98
	Management Decision Making	99
	A Brief History of Operations Research	100
	Operations Research Applied to Health Care	101
	Operations Research Applications	103
	De-bottlenecking	105
	Forecasting Patient Demand and Volumes	106
	Basic Principles of Forecasting.....	112
	Capacity Analysis	116
	Capacity Planning: Aligning Capacity with Demand	117
	Minimizing Wait Times	118
	Time and Motion Studies	123
	Improving Flows with Tracking Systems	125
	Bar Codes	126
	Radio Frequency Identification	128
	Chapter Summary	131
	Key Terms	132
	Discussion Questions	132
	Exercise Problems.....	133
	References	133
Chapter 6	Productivity and Performance Management.....	137
	The Quest for Productivity	138
	Measurement Issues.....	139
	Single Versus Multiple Factors.....	140
	Common Hospital-Wide Productivity Metrics.....	142

	Improving Productivity	143
	Principles of Productivity Management.....	146
	Return on Investment: Capital Versus Labor Substitutions	148
	Staffing and Labor Scheduling Models.....	149
	Basics of Labor Hour Management.....	150
	Productivity and Performance Scorecard	158
	Chapter Summary.....	159
	Key Terms	160
	Discussion Questions	160
	Exercise Problems.....	161
	References	161
Chapter 7	Operational Metrics in Health Care	
	Organizations	163
	Input Measures for Operating Metrics	164
	Sources of Data for Operational Metrics	166
	Output Measures	169
	Common Operating Metrics.....	171
	Other Operational Metrics.....	175
	Using Operational Metrics	177
	Chapter Summary.....	178
	Key Terms	178
	Discussion Questions	179
	References	179
Chapter 8	Basics of Project Management	181
	Defining Projects.....	182
	Power, Influence, and Project Management.....	183
	Project Success	184
	Key Phases of Project Management.....	185
	Change Management	191
	Rapid Prototyping.....	193
	Risks Involved in Project Management	194
	Departments of Performance Improvement	195
	Chapter Summary.....	196
	Key Terms	196

	Discussion Questions	196
	Exercise Problems.....	197
	References	197
Chapter 9	Operational Planning	199
	Why Plan?.....	199
	The Planning Process	200
	Analyze Operations and Environment.....	201
	Generate Strategic Alternatives.....	211
	Breakeven Analysis	212
	Implement, Measure, and Revise.....	215
	Chapter Summary.....	215
	Key Terms	216
	Discussion Questions	216
	Exercise Problems.....	216
	References	217
Chapter 10	Return on Investment Analysis	219
	Lack of Capital Investment Models in Health Care ..	220
	The Politics of Capital Investment	221
	Recommendations for Implementing a Capital Investment Approach	221
	Validating Return on Investment at Multiple Stages.....	226
	Calculating Return on Investment	227
	Time Value of Money	231
	Calculating Multiple Cash Flows	232
	Other Return on Investment Techniques	233
	Chapter Summary.....	236
	Key Terms	237
	Discussion Questions	237
	Exercise Problems.....	237
	References	238
PART III	Supply Chain Management	239
Chapter 11	Supply Chain Management	241
	Defining Supply Chains.....	241
	Process Flows in Supply Chain.....	244

Components in the Chain244

Business Processes in the Supply Chain.....247

Supply Chain Strategy for Hospitals and
Health Care..... 248

Patient (Customer) Demand Drives Supply Chains ..249

Demand Chains250

Principles of Supply Chain Management251

Strategy and Logistics Capabilities252

Efficient Versus Responsive Supply Chain
Management Strategy.....253

Reverse Logistics257

Supply Chain Information Systems.....258

Evolution of Supply Chain Technology.....260

Recommendations for Supply Chain
Management Technology.....264

Supply Chain Collaboration.....265

Sales and Operations Planning.....265

Objectives of Sales and Operations Planning266

The Basic Sales and Operations Planning Process267

Collaborative Planning, Forecasting,
and Replenishment.....271

Objectives of Collaborative Planning,
Forecasting, and Replenishment271

Collaborative Planning, Forecasting, and
Replenishment Guidelines.....272

Collaboration Performance Metrics.....273

Chapter Summary.....273

Key Terms274

Discussion Questions275

References275

Chapter 12 Purchasing and Materials Management..... 279

Materials Management Organization279

Culture of Materials Management.....281

Revenue Generation in Materials Management.....283

Optimizing Facility Layout and Design287

Cost Minimization Models290

Purchasing.....293

Purchasing Internal Controls.....	299
Spend or Value Analysis	301
Group Purchasing Organizations	304
Trends in Hospital Purchasing.....	306
Resources for Materials Professionals.....	308
Customer Service in Materials Management	309
Laundry and Linen	311
Chapter Summary.....	314
Key Terms	314
Discussion Questions	315
References	315
Chapter 13	Inventory Management and Accounting..... 317
Inventory and Its Role in Health Care	318
The Costs of Supplies and Inventory	320
Differences Between Supply Expense and Inventory.....	322
Effect of Timing on Expenses.....	322
Important Facts About Inventory.....	323
Criteria for Inventory	325
Valuation Methods.....	325
Lower of Cost or Market.....	329
Periodic Versus Perpetual Systems	329
Accounting Entries for Supply and Inventory	332
Inventory Errors.....	335
Inventory Ratios.....	336
Other Inventory Calculations.....	338
Limitations of Inventory Ratios	341
Inventory Policies and Procedures	342
Inventory Planning	344
Inventory Audit.....	347
Inventory Management Expectations	351
Chapter Summary.....	352
Key Terms	352
Discussion Questions	353
Exercise Problems.....	353
References	354

Chapter 14	Forecasting and Supply Chain	
	Management Systems	355
	Items and Attributes.....	355
	Data Hierarchies	357
	The Need for Standards	358
	United Nations Standard Products and Services Code	360
	Item Masters in the Enterprise Resource Planning System.....	361
	Enterprise Resource Planning Systems	363
	The Item Life Cycle	365
	Product Usage Patterns.....	370
	Chapter Summary.....	372
	Key Terms	373
	Discussion Questions	373
	Exercise Problems.....	374
	References	374
Chapter 15	Operations Management in the Hospital Pharmacy	375
	The Modern Pharmacy	375
	The Pharmaceutical Supply Chain	377
	Managing Items Using the National Drug Code.....	380
	Process Workflow and Automation in the Pharmacy	381
	Key Operations Management Trends for Pharmacies.....	383
	Effect on Pharmacy Performance	385
	Chapter Summary.....	388
	Key Terms	388
	Discussion Questions	388
	References	388
PART IV	Summary	389
Chapter 16	Operations Analysis and Benchmarking	391
	Operations Analysis.....	392
	Benchmarking.....	401

	Chapter Summary.....	408
	Key Terms.....	409
	Discussion Questions.....	409
	References.....	410
Chapter 17	Best Practices for Health Care Operations	
	Management.....	411
	Best Practices for Successful Operations Managers....	412
	Achieving Success in Operations Management.....	419
	Chapter Summary.....	420
	Key Terms.....	421
	Discussion Questions.....	421
	References.....	421
Appendix A	Major Teaching Hospitals.....	423
Appendix B	Answers to Selected Chapter	
	Exercise Problems.....	441
	Glossary of Terms.....	445
	Index.....	481

List of Figures and Tables

Figures

- P1-1 Operations Management in Health Care
- 1-1 Operations Management Counters the Extrinsic Pressures
Deflating Health Care Margins
- 1-2 Variability Creates Chaos and Inefficiency
- 1-3 The Operations Management Process
- 1-4 Controlling Exponential Price Increases in Health Care
- 1-5 Traditional Decision-Making Process
- 2-1 Hospital Breakdown by Ownership Type, 2012
- 2-2 Funding Sources for U.S. Hospitals, 2012
- 3-1 Hospital Industry Economics: Inpatient Supply Falling and
Demand Rising (Community Hospitals)
- 3-2 Average Hospital Profit Margins
- 4-1 Operations Management—Tools and Techniques
- 4-2 Example Process Maps
- 4-3 Flowchart Symbols
- 4-4 Process Improvement Methodology
- 4-5 Causes of Errors During Patient Check-In
- 4-6 Statistical Process Control Charts Manage Variability
- 4-7 Sigma Levels and DPMO
- 5-1 Time Line of Significant OR Events
- 5-2 Process De-Bottlenecking
- 5-3 Forecasting Volumes in Excel
- 5-4 Wait Time Simulation Models
- 5-5 Bar Code Symbology
- 5-6 Radio Frequency ID Tags
- 6-1 Trends and Benchmarks in Productivity Management
- 6-2 Operational Productivity and Performance Scorecard
- 8-1 Defining Project Success
- 8-2 Phases of Project Management
- 8-3 Scheduling Projects—Gantt Charts
- 8-4 Nodes in a Network

xviii LIST OF FIGURES AND TABLES

- 9-1 The Process of Crafting Operations Strategy
- 9-2 Analyzing Internal Operations Using Radar Diagrams
- 9-3 Breakeven Analysis
- 10-1 IT Portfolio Management
- 10-2 Multiple Points for ROI Analysis in Project Life Cycle
- 10-3 ROI Analysis Tool
- 11-1 Health Care Supply Chain
- 11-2 Cost Behaviors in Logistics
- 11-3 Evolution of SCM Systems
- 12-1 Materials Management Organizational Structure
- 12-2 Layout Impact Costs and Throughput
- 12-3 Cost Minimization Layout Model 2: Construct Node Diagrams and Assess Costs
- 12-4 Cost Minimization Layout Model 3: Apply Minimization Formula and Simulate
- 12-5 Standard Purchasing Methodology
- 12-6 Supplier Evaluation Scorecard
- 12-7 Value/Spend Analysis
- 14-1 Stock-Keeping Unit Categories
- 14-2 The Scope of ERP Systems
- 14-3 Phases in an Item's Life Cycle
- 14-4 Common Item Utilization Patterns
- 15-1 Pharmaceutical Goods Control Hierarchy
- 15-2 Pharmaceutical Value Chain
- 15-3 Manufacturers Winning the Value Battle
- 15-4 Pharmacy National Drug Codes
- 17-1 The Future of Health Care Operations Management
- 17-2 Visibility and Tracking in Health Care Control Centers

Tables

- 1-1 Key Functions and Issues in Health Care Operations Management
- 1-2 Teachings from Other Industries
- 1-3 Roles and Trends in Health Care Operations Management
- 3-1 Hospital Income Statement
- 3-2 Hospital Balance Sheet
- 3-3 Statement of Cash Flows
- 4-1 Sample Log for Six Sigma
- 4-2 Six Sigma Versus Lean

- 6-1 Single- and Multifactor Productivity Example
- 6-2 Full-Time Equivalent Employee Definitions by Time Period
- 6-3 Commonly Used Department Workload Units
- 7-1 Examples of Sources of Operational Data
- 7-2 Sample Income Statement and Summary Operating Statistics
- 8-1 Elements of a Business Case
- 11-1 The Largest Health Care Distributors
- 11-2 Health Care Organization SCM Strategy
- 11-3 JIT versus STS
- 12-1 Cost Minimization Layout Model 1
- 13-1 Example Purchase and Inventory Data for Hypothetical Hospital
- 13-2 Comparison of Expense Recorded and Ending Inventory Values
- 13-3 Inventory Accounting
- 13-4 Listing of Items in the Inventory at Hometown Hospital
- 13-5 Inventory Listing Sorted by Annual Usage
- 13-6 Assignment of ABC Classifications
- 14-1 Item Master Attributes
- 16-1 Example Operational Analysis Report Format
- 16-2 Example Trended Operational Analysis Format
- 16-3 Examples of External Benchmark Sources
- 16-4 Data Envelopment Analysis Benchmarking Example
- 16-5 Relative Efficiency Comparison from Data Envelopment Analysis
- 16-6 Input Targets Calculated Using Data Envelopment Analysis

New to the Second Edition

In recent years, there has been a heightened awareness of the effect that efficient and successful management of the health care organization can provide. New federal policies and new payer reimbursement models are just two examples of how the industry is changing. The discipline of health care operations management is key to the success of these changes and to organizations in general. Operations management focuses on improving clinical and administrative processes, streamlining costs, and ensuring high-quality outcomes while optimizing available resources—all of these are critical to organizations that are struggling to compete and survive in an era of constrained reimbursements. The first edition of this book was widely adopted by universities throughout the world, and due to demand and our desire to make operations management current and relevant, it seemed an appropriate time to introduce the second edition. This revision of the book offers an expanded coverage of quality, financial, and systems management.

We would like to thank Jones & Bartlett Learning for their leadership in publishing this second edition. We would also like to thank the thousands of readers and dozens of professors who read the first edition and offered their opinions and insights for revisions. We truly appreciate your help with and continued support of this second edition.

The encouragement of friends and family helped us complete this book, which was quite an undertaking! We would also like to acknowledge the wonderful editorial assistance from Elizabeth Vogler, MA from the University of Texas School of Biomedical Informatics. She was tremendously helpful in organizing chapters and giving all of the material a final read.

Many changes, improvements, and additions were made in response to valuable comments by readers and users. First, there were several errors in the text and these have all been fixed. Dr. Jeffrey Helton, a significant researcher in health care finance and operations management, was added as a coauthor to the text to provide greater coverage on certain topics. All chapters were made current in terms of statistics and updated references and were edited for the purpose of clarifying some material, correcting a few minor errors, improving language and syntax, and generally updating material. Some chapters were merged and combined, and a few new chapters were created. In all, the second edition contains 17 chapters, which will allow the academic reader to complete one chapter per week during the semester. The more significant changes are encapsulated as follows:

- Chapter 1, “Health Care Operations and Systems Management,” was augmented greatly by the addition of sections on management decision making. Because the ultimate purpose of operations management tools and methods is to improve decision outcomes, we felt it was appropriate to expand the discussion of decision making.
- Chapter 2, “Health Care Marketplace,” provides greater detail on current health policies and their effect on the health care environment. There is a discussion of the Affordable Care Act and other relevant federal policies.
- Chapter 3, “Health Care Finance for the Operations Manager,” was expanded and reworked to include new reimbursement models, information on how payers reimburse provider organizations, and an examination of how an organization is paid can effect operations management.
- Chapter 4, “Quality Management,” provides significantly more detail on Six Sigma and Lean methods, which have been continuously increasing in adoption in recent years.
- Chapters 5 and 6 were updated and augmented with additional theory around operations research and practical examples.
- Chapter 7, “Operational Metrics in Health Care Organizations,” is a new chapter that details the key metrics in operations management. These metrics include discussion of full-time equivalent, adjusted patient days, and other productivity metrics. Additional details on sources of labor data to enhance the accuracy of calculating labor management metrics are also included.

- Chapters 8 through 10 were updated and information was consolidated.
- Chapters 11 through 15 represent the supply chain management areas. These chapters were consolidated where needed and also revised and improved. They include greater coverage of forecasting and supply chain management systems.
- Chapter 16 blends a new component focused around operational analysis and benchmarking and provides integrative examples for operations management. Because analysis and comparison of units to others has become so widespread, we felt it important to add sections on how to make proper comparisons.

Preface

Although less than 5% of the American population currently works in a health care system, the overwhelming majority of adults have been a patient or a guest at a hospital, clinic, or physician's office. Of those, while most remember the quality and care given by nurses and physicians, many have left the facility with an overwhelming feeling of disdain for the inefficient and time-consuming business processes. Excessive wait times, lack of coordination among different departments, duplicate entry of personal information in multiple manual forms, unfriendly facilities, and general lack of customer service are typical attributes assigned to health care organizations. Although outcome data suggest that the quality of medical care is improving for most types of illness, the attention to detail in day-to-day operational management has not kept pace.

In a time when hospitals' financial situations are increasingly being called into question, hospitals are now starting to get serious about creating operational efficiencies to become more competitive and financially viable. Do hospitals and clinics exist to make profits? Some do; however, most do not. Either way, if hospitals are to survive dimly poor health care economics, escalating costs, and increasing competitive pressures, they must apply sound business management. This will ensure that hospitals earn the reasonable return on investment necessary to continue to invest in and upgrade buildings, programs, and employees.

A very active debate continues at the national level, primarily focused on health policy research. New programs and policies centered around the concepts of "pay for performance," quality and accreditation, flawed government funding mechanisms, federal and state regulations, publication and sharing of outcome data with the public, and other aspects of the U.S. health care system continue to address structural issues that affect the quality and costs of care in general. In addition, behavioral research into physician judgment and mechanisms to

encourage elimination of unnecessary tests and treatments will likely change medical education in the future. All of these can help improve the industry's economics and market structure. But, for now, hospitals and systems must continue to look internally at their own operations and management to adapt and thrive in current conditions. Hospitals cannot wait for policy to address the structural issues driving health care costs—they must apply inspired management to improve organizational performance today.

Principles of operations management, whether they focus on productivity or supply chain management, are common in other industries but have yet to really catch on in health care. There has been a reluctance to admit the applicability of business optimization techniques to the health care industry in general. This, coupled with the lack of sophistication and management education on the part of health care managers, limits the ability to fully understand and utilize the concepts, methods, and techniques offered.

Up until about two decades ago, business managers in health care were considered low-level “paper pushers.” Senior administrators at most hospitals tended to be clinically trained and did not see as much value in managing business issues as medical ones. Of course, at that time most hospitals were reimbursed fully for all operational costs and capital costs, plus a small margin. With guaranteed profits, there was not a big drive for efficiency and productivity management. Times have changed.

However, most books on health care business management still focus primarily on issues of either governance or finance—both of which are important topics but alone are not comprehensive. Coverage of revenue cycle issues such as reimbursement, patient billing, coding, and collections are well addressed, as are basic accounting and financial reporting topics. Similarly, governance issues such as improving physician relations are well documented. Yet, as important as these topics are, it leaves most of business operations fairly uncovered.

This text focuses on the practical application of operations management techniques in health care organizations, including hospitals, clinics, multiple-hospital systems, and other facilities in an integrated delivery network. For clarity purposes, however, the term *hospital* is widely used in this book, and it refers broadly to any large organizational entity—*hospital* is simply easier to use as the unit of measure than

integrated delivery network, health care system, clinic, or the like. Hospitals remain the predominant hub of the health care system, and they employ the majority of workers and resources, so they make more lucid examples for most concepts illustrated here. The tools and techniques used in this text, however, are just as relevant to other health care facilities.

This book concerns itself primarily with the topics that have not been extensively treated in health care texts, which are the operational components of health care. These include all areas that help hospitals improve productivity, reduce cycle times, measure performance, analyze activities, compare organizations to others, improve cost management, and generally create business value by converting resources into services. Hospital operations management concerns itself with a few key themes, all of which will be covered in this text: productivity analysis, supply chain management, business process and service design, quality management, inventory management, technology and systems, operational planning and scheduling, and performance improvement. All of these are traditional operations research topics that, when applied to hospitals and health care organizations, cover the majority of resource consumption.

This book was written to help practicing executives and administrators, as well as students in undergraduate and graduate health care administration programs, understand the importance of sound operational management by using business strategy and logistics to create a competitive advantage for their organization. It presupposes that there will be a growing need for improved cost efficiencies and economics in the coming years, and this mindset is required if hospitals are to survive competitive pressures. The significance and role of business professionals in health care will continue to evolve and improve over time, and therefore it is mandatory that the skills and expertise of hospital business officers continue to improve.

The framework for this book uses a practical perspective of operations management and attempts to set a path for hospitals to pursue a strategy of operational excellence. Therefore, the problems this book addresses are those that are integrated around operations and logistics management, as displayed in **Figure P1-1**.

This book will help hospital and health care administrators to address important operational and day-to-day issues in this rapidly evolving industry. This book should be used as a reference guide for those

working in hospital administration, clinic management, performance improvement, and all other areas of management and it serves three purposes:

1. Present concepts and techniques about improving daily operations capabilities and capacity in health care.
2. Educate students and administrators on the value of clinic and business operations, with a strong focus on analytical models for decision making.
3. Help health care organizations improve their performance and outcomes.

It is our hope that this book will stimulate significantly more research and publication on mastering operations research in health care and using advanced techniques to drive improved competitiveness into health care.