Preface to the Second Edition

Over the last 100 years, quality of life and human longevity have improved in most of the industrialized world as a result of advances in human health. We have benefited from reduced exposure to disease (through such measures as vaccinations and improved water quality) and developed treatments that reduce the consequences of disease once exposed. Nevertheless, humans continue to suffer because they do not have access to appropriate healthcare, or because healthcare is delivered in a manner that is confusing or inefficient. The gap between the science and the practice of healthcare is large.

This book is dedicated to improving healthcare through reducing the delays experienced by patients. One aspect of this goal is to improve the flow of patients, so that they do not experience unnecessary waits as they flow through a healthcare system. Another aspect is ensuring that services are closely synchronized with patterns of patient demand. Still another aspect is ensuring that ancillary services, such as housekeeping and transportation, are fully coordinated with direct patient care. Past experience shows that effective management of healthcare delays can produce dramatic improvements in medical outcomes, patient satisfaction, and access to service, while also reducing the cost of healthcare.

Within the 21 chapters of this book—the *Second Edition of Patient Flow: Reducing Delay in Healthcare Delivery*—readers will be exposed to a set of techniques and strategies that can be used by clinicians and administrators to substantially reduce delays in healthcare delivery. The second edition expands on the first by providing more information on the consequences of delay, prioritizing patients, modeling integrated systems, and implementing change, all in an effort to improve healthcare in hospitals, clinics, and healthcare offices. Reflecting the highly interdisciplinary nature of this book, the chapters have been written by doctors, nurses, industrial engineers, system engineers, and geographers. Reflecting the global challenges of patient flow, authors reside in eight countries and four continents. These perspectives provide the comprehensive view needed to address the problem of patient delay.

In the first part, the book begins by examining healthcare as an integrated system. Chapter 1 provides a hierarchical model of healthcare, rising from

departments, to centers, regions, and the "macro system." The chapter also demonstrates system modeling for a large urban hospital. This is followed by a new chapter that demonstrates the use of simulation to assess the interaction of system components while seeking to achieve performance goals. The part concludes with Chap. 3, providing hands-on methods for developing process models, using these models to identify and remove bottlenecks, and developing facility plans.

The next part addresses crowding and the consequences of delay. Two new chapters (Chaps. 4 and 5) focus on delays in emergency departments, which are particularly prone to delays. The impact of delays is further explored in Chap. 6, which examines medical outcomes that result from waits for surgeries.

The third part concentrates on the management of demand, including appointments, prioritization, and triage. Chapter 7 presents a set of breakthrough strategies that use real-time monitoring systems for continuous improvement. Chapter 8 focuses on the patient appointment system, particularly through the approach of advanced access, which makes appointments more immediately available to patients. Chapter 9 concentrates on management of waiting lists for surgeries and the allocation of available capacity to meet patient demands. The part concludes with Chap. 10, an examination of triage outside of emergency departments, with a focus on allied health programs.

Part IV offers analytical tools and models to support the analysis of patient flows. Chapter 11 offers techniques for scheduling staff to match patterns in patient demand, and thus reducing predictable delays. The literature on simulation modeling, which is widely used for both healthcare design and process improvement, is surveyed in Chap. 12. The next chapter, Chap. 13, is new to the second edition and demonstrates the use of process mapping to represent a complex regional trauma system. Chapter 14 provides methods for forecasting demand for healthcare on a region-wide basis. Then Chap. 15 presents queueing theory as a general method for modeling waits in healthcare. Last in the group, Chap. 16 focuses on the rapid delivery of medication in the event of a catastrophic event, such as a pandemic or terrorist attack.

The last part of the book concentrates on achieving change. Chapter 17 provides a diagnostic for assessing the state of a hospital and using the state assessment to select improvement strategies. Chapter 18 demonstrates the importance of optimizing care as patients transition from one care setting to the next with an emphasis on clinical outcomes and the business case. Chapter 19 is new to the second edition and shows how to implement programs that improve patient satisfaction while also improving flow. Chapter 20 illustrates how to evaluate the overall portfolio of patient diagnostic groups to guide system changes. Lastly, Chap. 21 provides project management tools to guide the execution of patient flow projects.

Since the first edition was completed, considerable change has occurred in American healthcare policy, through the passage of the Affordable Care Act. This legislation aims to make healthcare insurance more available and affordable to consumers. But to achieve its larger aims of reducing the cost of healthcare, change will be needed to improve healthcare efficiencies and effectiveness, like those provided in this book.

This book is intended to motivate and guide change so that healthcare systems around the world give more priority to reducing patient delay and implement changes that dramatically improve healthcare. The chapters of this book illustrate that radical changes in the management of patient flow and patient delay are not only possible but also essential to ensuring that advances in medical practice keep pace with advances in medical science.

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