

# PREFACE

Could a hurricane in Puerto Rico affect clinical practice in Washington, DC, eight weeks later?

Yes. In fact, it did just that. Before Hurricane Maria destroyed the island in the fall of 2017, Puerto Rico supplied more pharmaceutical products to the US market than did any other state or territory—nearly \$40 billion worth. These products included intravenous (IV) bags that contain saline solution to which drugs are added later or that are preloaded with a mixture of medications. Plants in Puerto Rico that manufactured the IV bags were shut down in the aftermath of the hurricane, leading to a shortage of these bags in US hospitals. Patients at MedStar Washington Hospital Center in Washington, DC, for example, who typically received IV medications, were administered the pill forms of the drugs instead (Kodjak 2017).

All parts of the world, along with their endeavors and challenges, have become increasingly interconnected. What happens in one system (e.g., community, territory, country) affects in some ways the activities and outcomes in other systems. As evidenced by the long-range effects of the catastrophe in Puerto Rico, the health system is affected by environmental, infrastructure, manufacturing, economic, and many other systems.

We believe that information technology (IT) informed by these interconnected systems (what we refer to as *health systems informatics*) is necessary to properly support clinical care, clinical decision making, and healthcare management. Health systems informatics has the power to enable the transformation of the US health system and individual healthcare organizations into entities characterized by information sharing, coordinated care, patient centeredness, and evidence-based clinical decisions.

In this second edition of *Health Informatics: A Systems Perspective*, we once again cover both conceptual and physical IT systems that interact with and affect healthcare processes and outcomes. All chapter and case study authors come from both academic and practice settings and represent a wide range of training and experience in the health informatics field. Such a diversity imparts a balanced theoretical and practical perspective to this book.

This book examines health systems informatics in the context of clinical decision making across the health professions (chapters 2, 3, and 6), knowledge management (chapter 5), interactions and interdependencies among the health

professions (chapters 1, 3, 7, and 14), developments in IT and data representation (chapters 10, 12, and 13), cybersecurity (chapter 16), population health and global health (chapter 11), management and corporate systems (chapters 4 and 15), Big Data (chapters 9 and 16), advances in science and scientific medicine (chapter 9), healthcare financing and valuation (chapter 15), and the role of patients and e-health (chapters 3 and 8).

Each chapter offers the following:

- Learning Objectives that list the main takeaways from the discussion
- Key Concepts that list the major topics explored and terms used
- Sidebars that present extra information, examples, scenarios, or opportunities for critical thinking and application
- Terminology definitions on the page
- Chapter Discussion Questions that serve as a framework for reviewing, conceptualizing, or articulating the concepts
- Case Study that translates the theories into real-world situations
- Case Study Discussion Questions that challenge the reader's understanding and judgment
- Additional Resources that point to websites, books, and journal articles relevant to the concepts discussed
- References that include both current and classic publications

A glossary, an appendix (Professional Societies, Accrediting Agencies, and Additional Insights in Health Informatics), and an index round out the book.

Writing this second edition with a systems perspective was a daunting but rewarding task. We hope you find the culmination of our work to be beneficial and valuable to your studies and career.

Gordon Brown, Kalyan Pasupathy, and Timothy Patrick

## Reference

- Kodjak, A. 2017. "Hurricane Damage to Manufacturers in Puerto Rico Affects Mainland Hospitals, Too." Published November 15. <http://wuwu.com/post/hurricane-damage-manufacturers-puerto-rico-affects-mainland-hospitals-too>.

## Instructor Resources

This book's instructor resources include the authors' responses to the chapter and case study discussion questions; guidance on how the case studies may be used; PowerPoint slides of the exhibits, to supplement classroom discussions and lectures; and suggested activities for exploring chapter topics, including data sets.

For the most up-to-date information about this book and its instructor resources, go to [ache.org/HAP](http://ache.org/HAP) and browse for the book by title or author names.

This book's instructor resources are available to instructors who adopt this book for use in their course. For access information, please e-mail [hapbooks@ache.org](mailto:hapbooks@ache.org).