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An International Look at Practice,
Trends and the Future

Edited by
Charlotte A. Weaver
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Dedications

This is for Sarah, Sam, and Jenny who enrich my life by keeping me in theirs, and as always—to my son, Kevin.

— Charlotte A. Weaver

To my extended family, who endlessly gave our shared time—especially son Jeremy, Jessica and granddaughters, Ashley, Aana, Skye & Storme Jade, and Edmond and Betty White, Sue, E. Clark, Craig, Lora & Randy, Loren & Wendy, Ann and families.

— Connie White Delaney

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— Patrick Weber

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— Robyn L. Carr
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Charlotte A. Weaver
Connie White Delaney
Patrick Weber
Robyn L. Carr
Editors
Foreword

The introduction of clinical information systems to health care institutions has been a long, slow process. The fact that it has taken nearly 30 years for the industry to reach the tipping point in relation to adopting this technology is quite astonishing. Now, as we enter the twenty-first century, the introduction, implementation, and refinement of computer applications to patient care presents clinicians and administrators with an abundance of exciting opportunities to make significant improvements in patient safety and patient outcomes.

This volume, *Nursing and Informatics for the 21st Century*, is an extraordinary contribution to the growing body of literature in this important advance. It offers important insights and information useful to everyone involved in this work, from the novice to the most experienced and from the expert clinician to the expert information technology (IT) programmer.

Of particular importance is the explication of the leadership that nurses are giving to this technologic revolution taking place across the globe. This fact may prove surprising to some readers. It is, however, a logical and essential phenomenon, owing to the role that nurses play in their everyday practice.

First and foremost, nurses are, of course, clinical caregivers. Nowhere is that more evident than in inpatient settings. Not only do they render and/or oversee the personal services that patients receive, they are responsible for the large and growing number of therapeutic treatments that are adding to the complexity and cost of health care in every country.

Beyond the caregiver role, practicing nurses are responsible for integrating the services of virtually every other discipline and department that is in any way involved with care delivery. In this "integrator" role, they are charged with ensuring that the work of such diverse people as physicians, maintenance workers, porters, and pharmacists comes together in timely and appropriate ways. In other words, they weave together the threads that create the fabric that is patient care.

The combination, then, of caregiver and integrator experience provides nurses with a unique understanding of the ways in which health care organizations operate. Simply stated, nurses have first-hand knowledge of the structure, systems, and processes required in every setting, making their contributions to the introduction of clinical information technology applications essential to the success of any such endeavor.

This book is written primarily by and for nurses, but its readers should by no means be limited to members of that profession. It clearly contains a wealth of critical information, not only regarding what nurses need to know in order to function in this brave new electronic world but, perhaps more importantly, what nurses can and must contribute to ensure success for consumers and for the health care industry.

— Margaret L. McClure, RN, EdD, FAAN
Professor, College of Nursing and School of Medicine
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Preface

This is a book that had to be written, and its imperative is linked to the explosion of electronic health record (EHR) national strategies occurring around the world. The impetus for turning to information technology (IT) in health care comes from governments' need to control spiraling health care costs and to assure value for money spent, even in the U.S. where health care is largely privately funded. Additionally, as the consumer public has become aware of the high level of error, waste, inefficiencies, and quality deficits in western medical systems broadly, governments have had to become accountable to tax payers for improving health care quality. Spurred by growing evidence that our western medical systems are marked by extensive variance in treatment approaches; surgical procedure rates; and outcomes and costs, governments, as the largest payers, began pushing for electronic medical record systems as a means to achieve standardization, safety, better efficiencies, and best practice.

Although not obvious at first, these trends are creating significant changes and opportunities for nursing. The rapid adoption of IT by health care systems is impacting nursing in a number of ways. The clinical transformation involved with bringing IT into the core clinical work processes of the health care team has required the full engagement of clinicians in multiple roles and at all levels of the organization. Nurses have been tapped to fill these roles more than any other discipline, which reflects their sheer numbers in the health care system, as well as the key role nurses play in achieving sustainable social and organizational change. The result has been the creation of new roles for nurses and career path options in leadership and explosive growth in the number of nurses working in informatics.

The EHR trend is happening simultaneously with nursing finally having achieved a standard nursing language. International standards for nursing terminology and nomenclature are now available in the marketplace with the release of ICNP® Version 1 (International Classification of Nursing Practice) and SNOMED CT.® Together, standard nursing terminology and EHR systems deliver the enabling components needed by nursing to be able to name and examine their own practice. The components of EHR systems that provide this infrastructure include the ability to apply standard nomenclatures to care components, to provide structured clinical documentation with coded outcomes, and an ability to store all data because of the provision of a clinical data repository. These two forces, the EHR and availability of a standard nursing terminology, will enable nursing for the first time to make its practice visible, to show its contribution to patient outcomes, and to demonstrate what is uniquely nursing. Given the population size and longitudinal database represented in the clinical data repository of EHR systems, the science of nursing will be further supported by the opportunity to conduct population-based research and the option to use the most rigorous of quantitative methodologies in nursing research. Collaboration between nurse researchers and nurse leaders from service provider organizations becomes key in capitalizing on the opportunities that EHR systems afford to generate new nursing knowledge and the rapid application of that new knowledge back into practice.

The impetus for this book originated from discussions with nurse leaders from around the world at the 8th International Congress of Nursing Informatics (NI) in Rio de Janeiro in June 2003. The picture that emerged from these late night discussions was one of rapid adoption of EHR initiatives and of IT across the globe. It became apparent from these and following discussions that the national EHR initiatives were impacting nursing practice, science, and education internationally in profound ways. Change was occurring at a rapid pace internationally, and nursing was in the middle of this massive transformation. To delay in capturing this transition and the forces driving the changes meant that this turning point in nursing might be missed. For that reason, this book is an international look at nursing and the way in which IT is affecting practice, competencies required, roles, and opportunities.

Many of the nurse informatics leaders that participated in those late night informal “think tank” discussions at the NI 2003 Rio de Janeiro conference are contributors to this book. Although the focus of this book is informatics and the explosive change happening within nursing, this is not a
nursing informatics book. The book title starts with “Nursing” because this body of work focuses on capturing the significant historical shift taking place within our profession today. Book contributions include recognized experts as well as innovators who rarely publish but who push the edge by using IT to bring new solutions to quality and efficiency challenges.

The book is organized into six sections, and its thirty-four chapters are richly peppered with thirty case studies from diverse international settings. Section I, entitled “Revolutionizing Nursing: Technology’s Role,” provides the opening framework for the book. In Chapter 1, Angela McBride gives a comprehensive overview of informatics in nursing practice that establishes the revolutionary impact on current trends in nursing. Other subjects covered include nursing knowledge, informatics competencies needed within all nursing roles, shifts in nursing education policy, the rise of consumerism, and the historical emergence of nursing informatics. Section II addresses the new roles and leadership opportunities being created for nurses in today’s marketplace. This section also examines the leadership competencies required of nurse executives. Section III looks at the innovative work being done to use IT within nursing education. The contributions cover the use of virtual simulation laboratories to teach clinical skills, the embedding of core curriculum content into EHR clinical systems to teach nursing content and process, and multi-institution collaboration to leverage faculty and resources for informatics programs.

Section IV is devoted to covering the leading areas of innovation applied through informatics in the areas of evidence-based practice, nursing knowledge, and knowledge representation in clinical systems. Sermec and colleagues present a multinational analysis of the impact of instituting diagnostic-related groupings systems and opportunities that this trend has created for inclusion of nursing information. Other leading edge subjects expand to include decision support and best practice, nursing management decision support, organizational analysis and modeling for decision support, quality improvement, and patient safety. Section V divides the globe into five geographic areas and systematically reviews the current state of nursing and IT across these geopolitical areas illustrated by case studies from seventeen countries.

Section VI closes the book by looking to the future. Subjects range from the promise of genomics for clinical practice and health services delivery to the growing emphasis on patient and family-centered care that extends beyond consumerism. Nursing’s importance in any country can be assessed by the extent to which it is included in health policy and research funding. Brennan’s chapter on the National Institutes of Health (NIH) Roadmap demonstrates that although progress is being made, there is still significant room for growth. The final chapter by Strachan, Delaney and Sensmeier critically examines the question of organizational affiliation and professional home for nurse informaticians. This closing chapter is a thoughtful review of the professional status of nurses within national and international informatics organizations and poses strategies for the future. During this first decade in the twenty-first century, it is clear that nursing is standing on a threshold looking out at tremendous opportunity for our science, practice, and profession. We hope this leaves each reader energized and inspired to step across that threshold and fully engage in seizing the opportunity that is now there for nursing.

Charlotte A. Weaver
Connie White Delaney
Patrick Weber
Robyn L. Carr
Editors

References
Nursing and Informatics for the 21st Century: An International Look at Practice, Trends and the Future provides the first look at how and why information technology is evoking revolutionary changes in nursing at every dimension. The book chronicles the huge historical shift occurring in nursing linked to the explosion of electronic health record (EHR) national strategies and health policies occurring around the world. This book presents a thoughtful examination of nursing practice, professionalism, education and new executive leadership roles against the backdrop of informatics.

While the book’s primary benchmark is the developments and status of nursing in the U.S., there are in-depth and richly descriptive contributions from over 17 countries and 84 international authors. Capturing the nursing revolution that is being driven by the massive infusion of information technology into healthcare, the book features 30 case studies that draw from the best innovative work occurring across the four corners of the world, allowing for comparisons across industrial, developed and developing nations.

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ABOUT HIMSS

The Healthcare Information and Management Systems Society (HIMSS) is the healthcare industry's membership organization exclusively focused on providing leadership for the optimal use of healthcare information technology (IT) and management systems for the betterment of human health. Founded in 1961 with offices in Chicago, Washington D.C., and other locations across the country, HIMSS represents more than 17,000 individual members and over 275 member corporations that employ more than 1 million people. HIMSS frames and leads healthcare public policy and industry practices through its advocacy, educational and professional development initiatives designed to promote information and management systems' contributions to ensuring quality patient care.