The term “big data” is often defined as data that exceeds computer processing capacity using conventional methods. Either the data is too big, in too many forms, moves too fast or does not fit the structure of the existing database system. As a result, how data is collected, stored, processed and analyzed is rapidly changing. For example, small sensors embedded in your phone, car, home and even your clothing can continuously collect data about you. Massive amounts of data from social network sites, digital images and audio signals are being stored in the cloud and through distributed file systems such as Hadoop. These large-scale data stores are managed efficiently through new software applications such as MapReduce and parallel computer processing. And the approaches used by analysts to mine and analyze data include advanced computational methods with names such as association rule learning, classification tree analysis, genetic algorithms, machine learning, regression analysis, and sentiment and social network analysis. Collectively these new methods and technologies allow analysts to process big data in ways that, in the past, were prohibitively expensive and time consuming. In many ways the new technologies and methods just described allow Big Data to speak to us. Through patterns or “knowledge value” revealed in the data, we can describe and predict important events before they happen. Examples might include calculating the risk of hospital readmissions, patient falls or pressure ulcers. Knowledge value can be represented as algorithms coded in software and then embedded in patient care technology and information systems. It is the ongoing creation of knowledge value from big data that will change how and where nurses provide care in the future. Through learning systems integrated into electronic health records and mobile technology, the next generation of clinical decision support systems will enable providers to safely shift more care from hospitals to outpatient clinic and home environments. The chapters and case studies in this part first discuss the new technologies and methods used by data scientists today, which allow the creation of knowledge value from large-scale data sets. The authors then go on to describe how knowledge value, embedded in electronic health records, mobile devices and other forms of technology are changing how and where nurses provide care through advanced clinical decision support. In the final chapter, we provide one illustration of how knowledge value is created and translated for clinical use, through the OptumLabs Research Collaborative, a unique academic and corporate partnership.