

## Electronic Health Records: Current Issues in Oncology

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The electronic world continues to advance in the 21st century. In 2009, the American Recovery and Reinvestment Act (ARRA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act were enacted; in response, hospitals and oncology physician offices have or are implementing electronic health records (EHRs). As with any new technology or process, a steep learning curve is associated with the implementation of EHRs. Often, the full impact of a sweeping, nationwide change such as EHRs is not realized for many years after implementation, and many suppositions about the usefulness and benefits of EHRs still exist. The current article focuses on the initial impact of EHRs, their role in diagnosis, and the responses of healthcare providers in patient outcomes and in research.

### Initial Impact of Electronic Health Records

In 2008, prior to ARRA and HITECH, less than 2% of hospitals (excluding the Veterans Health Administration) had comprehensive EHR systems, and less than 8% had basic systems (Caligian & Dykes, 2011). Since then, 55%–57% of all physicians have adopted some level of EHR (DesRoches, Painter, & Jha, 2012; Jamoom et al., 2012), and the questions that follow are whether care improves, how healthcare costs are affected, and what associated risks or abuses occur?

A study from the Centers for Disease Control and Prevention's National Center for Health Statistics survey of 2011 trends showed that 85% of all physicians with EHRs are satisfied with their system, and 74% reported that EHRs enhanced their overall patient care (DesRoches et al., 2012). The survey also

reported that 41% of physicians ordered more on-formulary medicines, and 29% ordered fewer laboratory tests because of electronic access to test results (DesRoches et al., 2012). In a *New York Times* article, Abelson, Crewell, and Palmer (2012) focused on the cost of EHR implementation. They stated that the goal of implementing EHRs was to improve efficiency, patient safety, and to reduce healthcare costs. Since the implementation of EHRs, hospitals received \$1 billion more in Medicare reimbursement in 2010 versus 2005, and aggressive billing by a small subset of physicians may have cost Medicare \$100 million in 2010 alone (Abelson et al., 2012). An electronic system's ability to capture and analyze all data entered contributes to billing at the highest level possible for services rendered. Overbilling, an abuse of the system, can occur if healthcare providers choose an electronic option that populates multiple fields, whether or not the actions all occurred. Some of the biggest risks associated with EHRs are the possibilities of the host server going down, back-up failure, or power failure.

A specific issue related to oncology practices is the need for access to multiple systems and areas. Physician practices may be independent of hospitals, however, the system still needs to communicate with the hospital, the radiation therapy location, and home health care. Medical EHR systems frequently are not set up like hospital or radiation therapy systems; therefore, requiring coordination across service providers makes the choice of EHR system more complicated. The complicated nature of EHR in oncology was the basis for the development of the CICERO model (Comprehensive, Integrated, Customized Electronic Records for Oncology), which provided a framework for evalu-

ating oncology-specific EHRs (Poulter, Gannon, & Bath, 2012).

Benefits associated with EHRs are numerous and may have clinical, organizational, and societal outcomes (Menachemi & Collum, 2011) (see Figure 1). Improvements in quality of care, patient safety, and patient outcome measures, as well as fewer treatment errors, are possible clinical outcomes. Organizational outcomes are seen in improved patient and healthcare provider satisfaction and efficient financial and operational performance. Improved data collection contribute to societal benefits through research and support of evidence-based care. Much of the current literature reflects data obtained from academic institutions and large health maintenance organizations where integrated EHRs were first implemented. More community oncology practices have adopted EHRs and are noting similar outcomes (Presant, Bosserman, McNatt, & Emilio, 2011).

### Electronic Health Record Use in Medical Decision Making

Having the most up-to-date clinical, evidence-based, and research information at one's fingertips is not far away. Digitized cancer registry systems can improve documentation quality, and accurate cancer registry data improves monitoring for cancer trends and more easily recognizes cancer patterns (Houser, Colquitt, Clements, & Hart-Hester, 2012). Another potentially significant benefit of oncology EHRs is the development of computer-aided diagnostic software that can capture patient-reported information and analyze the information in a personalized context inclusive of previously reported patient outcomes, current patient issues, and actions