

---

---

# TECHNOLOGY AND THE TRANSFORMATION OF ONCOLOGY CARE

---

---

LISA SCHULMEISTER

---

---

**OBJECTIVES:** *To review different types of technology and technological advances applicable to oncology care.*

**DATA SOURCES:** *Peer-reviewed studies and guidelines, magazine articles, books, websites, and online product-specific information.*

**CONCLUSION:** *Technologies that have transformed oncology care include electronic health records, data analytics, operations-related technologies, oncology-related technologies, portable and wearable technologies, and emerging technologies.*

**IMPLICATIONS FOR NURSING PRACTICE:** *Technological innovations have transformed health care from a paternalistic, physician-driven system to a system that focuses on and engages the patient.*

**KEY WORDS:** *information technology, electronic medical record, mobile technology, wearable technology.*

In his book, “The Patient Will See You Now,”<sup>1</sup> Eric Topol, MD asserts that technology has forever changed health care. We have embarked on an era of unprecedented access to information, “big data” analytics, clinical decision support, and wearable health-related technology. Now more than ever, patients are actively engaged in their own health promotion,

disease prevention, and decision-making. Patients have immediate access to their own health data, generate much of it, and now are more likely to consult a physician to *confirm* a diagnosis they have derived themselves using multiple sources of information and tools available through the internet and mobile applications. Gone are the days of paternalistic care, when physicians relied on their education and experience to diagnosis and treat disease, and patients followed the “doctor’s orders.”

Advances in technology combined with increased patient engagement in health care have improved oncology care. These advancements include the use of information technology (eg, computers, smartphones, etc.) for accessing health information, computerized order entry systems, electronic prescribing, and electronic health records (EHRs). EHRs and other information systems have

---

Lisa Schulmeister, MN, RN, ACNS-BC, FAAN: *Self-employed Oncology Nursing Consultant, New Orleans, LA.*

*Address correspondence to Lisa Schulmeister, MN, RN, ACNS-BC, FAAN, 282 Orchard Road, New Orleans, LA 70123. e-mail: [lisaschulmeister@hotmail.com](mailto:lisaschulmeister@hotmail.com)*

*© 2016 Elsevier Inc. All rights reserved.  
0749-2081*

*<http://dx.doi.org/10.1016/j.soncn.2016.02.004>*

generated what has been called “big data,” or aggregated data that is now being used to better identify effective – and ineffective – cancer treatments. Technology is also being used to improve the delivery of care, and advances include the use of technology in cancer treatment preparation, administration, and monitoring. Patients are increasingly using portable or wearable health technology to monitor their health, and some of these systems transmit health data to the patients’ healthcare providers. Emerging technologies are on the horizon and have the potential to further improve the quality and efficiency of oncology care.

### ACCESS AND KNOWLEDGE

For patients and the public to utilize health care-related technology, they must have access to it and know how to use it. According to United States (US) Census Bureau data for 2013, 84% of US households reported computer ownership, with 78% having at least one desktop or laptop computer, and 64% having a handheld computer (tablet) or smartphone.<sup>2</sup>

A 2014 Harris Poll found that Americans routinely use technology to access general health information online (eg, search for disease symptoms) but do not yet routinely use this technology to access their own personal health records. Only 36% of individuals use online patient portals, and most often use the portal to make or confirm appointments and obtain test results. However, millennials are more interested in their health records than any other content available on online patient portals. Millennials are also the most likely age group to access this information “on the go” by using a smartphone. Conversely, adults aged 55 and older use computers to access patient portals, and primarily use patient portals for prescription refill and appointment requests.<sup>3</sup>

Computers are becoming gateways to many services and can be used to enhance the delivery and accuracy of services. Patients increasingly are “checking in” to healthcare facilities using self-service computers or kiosks, and some of these systems now have integrated biometrics. Biometric identification methods (eg, fingerprint, finger vein, palm vein, iris, facial, and voice recognition) have the potential to reduce patient misidentification, decrease check-in time, and minimize the risk of identity theft.<sup>4</sup>

Portability and wide access to devices capable of utilizing health-related technology have expanded how this technology is used in health care. Computers are now mounted on mobile workstations and brought to the patient’s bed- or chair-side. Healthcare providers carry tablet computers and smartphones with them as they work. Information about patients contained in medical records, as well as clinical resource information (eg, treatment algorithms, reference texts, etc.) are now at the clinician’s fingertips.

Access to robust clinical information systems allows decision-making about diagnosis and treatment to routinely occur in the presence of the patient with their input, rather than down the hall at the nurses’ station or in a dictation booth. Dictations with voice recognition systems have eliminated delays in transcribing clinical notes and diagnostic interpretations. Even portable voice recorders as well as smartphones are being used to record “to do” lists and other reminders for clinicians at the point of care.

Electronic delivery and storage of health information are replacing paper charts, handwritten orders, and written prescriptions. In oncology, the use of standardized, regimen-level preprinted or electronic forms for chemotherapy prescribing is now a chemotherapy administration safety standard.<sup>5</sup> Technology offers immediate access to clinical pathways and clinical guidelines, which provide an evidence-based system that guides the care of a defined group of patients over a set period of time, minimizes variations in cancer care, reduces the use of unwarranted treatment regimens and services, and ultimately may improve clinical outcomes. However, clinical pathways have been criticized as a “cookie cutter” approach to care that may limit treatment options to reduce costs, which is counter to the trend of personalized medicine.<sup>6</sup>

Computerized order entry systems include chemotherapy dose-checking mechanisms and clinical decision support features for diagnostic and treatment-related orders.<sup>7</sup> Electronic prescribing (e-prescribing), the process of sending a prescription electronically from the point-of-care directly to a pharmacy, is now available in every state in the US, even for controlled substances.<sup>8</sup> E-prescribing has greatly reduced the use of handwritten or preprinted paper prescriptions and has reduced – but not eliminated – prescription errors. It is estimated that 5% of e-prescriptions contain errors, and the most common e-prescribing errors are incorrect drug quantity, dosing directions, duration of therapy, and dosage formulation.<sup>9</sup> The clinical and

Download English Version:

<https://daneshyari.com/en/article/2676384>

Download Persian Version:

<https://daneshyari.com/article/2676384>

[Daneshyari.com](https://daneshyari.com)