

Opportunities for Analytical and Cognitive Technology Innovation in Cardiac Oncology

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Background

Recent proliferation of information technologies supporting various aspects of patient care, fueled by infusion of federal funding for meaningful use, led to digitization of medical records keeping and opportunities for secondary data analysis. However, this exponential growth has been segmental and generated standalone computer applications that do not sufficiently serve interdisciplinary medical subspecialties. Onco-cardiology may benefit from a focused approach to information support and has unique needs and characteristics.

Discussion

There are several examples of opportunities for information systems integration to serve onco-cardiology needs. Automated population of diagnosis dates for cancer, chemotherapy regimen, and information about last treatment cycle, could assist cardiologist in the process of evaluating ECHO findings to better understand patient condition and make appropriate conclusions. Electronically populating information about previous left ventricular ejection fraction and global longitudinal strain into current ECHO report, to replace manual entry, would not only expedite evaluation but could also automate follow-up steps for support personnel and clinical team, i.e. immediately notify oncologist and/or cardiologist about drops of LVEF over 10%. A reconciliatory feature such as chemotherapy regimen information in the report would also be a critical element of cardiac oncology care. Longer term opportunities in imaging have potential for partial evaluation of images using currently researched techniques, such as graph and pattern mining.

Conclusion

Information support for onco-cardiology is a critical element in patient care. Even subtle changes in information needs require complex integration of computer applications that interact with cardiology related data. Cognitive computer functions are necessary to provide analytical services to cardiologist through information analysis, history retrieval, and integration of patient information sources. Despite potentially high cost of development, advances in information technologies supporting onco-cardiology have potential to reduce cost, increase safety, and enhance efficiency of clinical support.